Transcript Exhibit(s)

Docket #(s): W-01303A-10-0448

Exhibit # : A24-A36, A38-A44

PART 3 of 6

EXHIBIT
A-24

PENGAD 800-631-6989

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

GARY PIERCE, Chairman
BOB STUMP
PAUL NEWMAN
SANDRA D. KENNEDY
BRENDA. BURNS

IN THE MATTER OF THE APPLICATION OF ARIZONA-AMERICAN WATER COMPANY, AN ARIZONA CORPORATION, FOR A DETERMINATION OF THE CURRENT FAIR VALUE OF ITS UTILITY PLANT AND PROPERTY AND FOR INCREASES IN ITS RATES AND CHARGES BASED THEREON FOR UTILITY SERVICE BY ITS AGUA FRIA WATER, HAVASU WATER AND MOHAVE WATER DISTRICTS	DOCKET NO. W-01303A-10-0448

**SECOND REBUTTAL TESTIMONY
OF
PAUL G. TOWNSLEY
ON BEHALF OF
ARIZONA-AMERICAN WATER COMPANY
NOVEMBER 17, 2011**

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EXECUTIVE SUMMARY

Paul G. Townsley testifies that:

He is providing rebuttal to certain positions made by the Class of Homeowner Association witnesses Mr. Watkins and Mr. Shaw.

He also discusses the financial condition of the Company and the consequences of a significant disallowance of the White Tanks Plant on Arizona-American.

I INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Paul G. Townsley. My business address is 2355 North Pinnacle Peak Road, Suite 300, Phoenix, AZ 85027.

Q. ARE YOU THE SAME PAUL G. TOWNSLEY WHO SUBMITTED TESTIMONY IN THIS CASE?

A. Yes.

II PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. Please see my Executive Summary.

III RESPONSES TO CLASS OF HOMEOWNERS ASSOCIATION WITNESSES WATKINS AND SHAW

Q. IN HIS TESTIMONY, MR. WATKINS REFERENCES THE APPLICATION AAW MADE IN 2005 REGARDING THE WHITE TANKS PROJECT. WAS THIS THE ONLY TIME AAW DISCUSSED THE WHITE TANKS PROJECT AT THE COMMISSION?

A. No. The White Tanks Plant has been discussed extensively for over six years, in a number of Commission proceedings dating from 2005 to the present. And during this period of time most all parties to these cases have agreed of the necessity to construct the White Tanks Plant.

In 2005, after almost four years of planning and work, Arizona-American reached a tentative agreement with the Maricopa County Water District ("MWD"), in which MWD would build and own the White Tanks Plant, and Arizona-American would obtain treatment services for its customers through a long-term capital lease. Arizona-American filed an application with the Commission in Docket W-01303A-05-0718 for approval of the capital lease and related authorizations.

In September 2006, after the tentative agreement with MWD expired, Arizona-American filed a revised application asking the Commission for authority to increase hook-up fees to provide Arizona-American the opportunity to fund the cost of the White Tanks Plant. To date this hook up fee has paid for more than $3,000,000 of the White Tanks plant. The revised application reiterated the immediate regional need for a surface water treatment plant to reduce groundwater pumping. Other parties recognized that the White Tanks Plant was needed and that it would benefit both current and future customers.

In its brief in the case Commission Staff summarized:

> AAW is an entity regulated by the Commission. The Commission has ordered AAW to provide water service to its customers within its CC&N territory. AAW has identified an item of infrastructure necessary to accomplish its directive. The company has exhausted the options available in procuring that infrastructure and has requested permission to proceed using hook-up fees. The single issue the Commission needs to decide is whether or not AAW's proposal is in the interest of AAW ratepayers.

In its brief RUCO stated:

> The facts, which are not in dispute, are that the Company needs to serve its customers and construction of a treatment plant is necessary to meet the Company's service requirements. ... The Company's proposal is reasonable and should be adopted by the Commission.

With the support of Commission Staff and RUCO, the Commission approved Arizona-American's financing request in Decision No. 69914, dated September 27, 2007. Based on that Decision, Arizona-American immediately began construction of the White Tanks Plant and placed it into service in late 2009. That Decision also clearly contemplated the possibility that hook-up fees would not be sufficient to completely fund the White Tanks Plant and that Arizona-American might subsequently be filing a rate case to include the White Tanks Plant in rate base.

In March 2008, Arizona-American filed a rate case (Docket W-01303A-08-0227) that included its Agua Fria Water District. In the rate filing, Arizona-American updated the Commission on the status of the White Tanks Plant and proposed an innovative remedy to mitigate the decline in hook-up fees and to reduce the future rate impact of the White Tanks Plant when it was included in rates. In that case, Arizona-American proposed to include $25 million in Construction Work in Progress in rate base.

Most recently, Arizona-American filed an application over a year ago in September 2010 (Docket W-01303A-10-0448) seeking to place the White Tanks Plant in rate base. That is the subject we are here discussing today.

The subject of Arizona-American's White Tanks Plant has been extensively reviewed and discussed by all relevant parties at the Commission over the past six-years, the facility has been in operation over the past two-years, and what the Company is now seeking is to place this critical facility into rate base.

Q. ON PAGES 12 AND 13 OF HIS TESTIMONY, MR. SHAW ATTEMPTS TO CHARACTORIZE THE WHITE TANKS PLANT AS A GAMBLE MADE BY THE COMPANY. DO YOU AGREE?

A. No, of course not. Mr. Shaw seeks to persuade others that this was a gamble which Arizona-American should not have taken. But what Mr. Shaw does not acknowledge in his position is that Arizona-American had and continues to have a responsibility to serve its customers in the Agua Fria service area. This responsibility includes providing water resource planning and water supply management that allows Arizona-American to provide its customers a reliable and safe drinking water supply not only today but also into the future. At the time we began construction, the White Tanks Plant was needed to provide a reliable and safe drinking water in the Agua Fria District. No other party in the earlier White Tanks cases disagreed. The gamble that Mr. Shaw apparently would rather have Arizona-American take would be to not invest in needed infrastructure projects in a timely manner and instead risk not having enough water to serve all its customers and suffer the consequences of continued groundwater depletion. That gamble is not one that a responsible water utility can or should take.

His position also ignores the long history of the White Tanks Plant before this Commission. As noted in detail above, Arizona-American has received support for the White Tanks Plant from the Commission and from parties to those prior proceedings. To say that the Company's shareholders took a gamble and lost is an unfair and inaccurate representation of the history of the White Tanks Plant.

Q. WOULD YOU SUMMARIZE THE WATER MANAGEMENT ISSUES FACING THE AGUA FRIA DISTRICT?

A. As shown on the map attached as PGT Exhibit-1, the Agua Fria District is located on the western edge of the Phoenix metropolitan area near the base of the White Tank Mountains. The Agua Fria District is within the West Salt River Sub Basin of the Phoenix Active Management Area (AMA). The Phoenix AMA is one of five Active Management Areas mandated by the Groundwater Code. The Active Management Areas were formed to provide a regulatory framework for addressing severe groundwater overdraft in areas where groundwater supplies were rapidly diminishing.

The Agua Fria District has experienced extensive groundwater depletion and faces more difficult water management challenges relative to other locations in the West Salt River Sub Basin and other locations in the Phoenix AMA. This is due in part to the water usage patterns in the area and its location near the base of the White Tank Mountains at the western edge of the West Salt River Sub Basin where the depth to bedrock is relatively shallow. Two of the more difficult water management challenges faced by the Agua Fria District are reduced well capacities and diminished groundwater quality.

These are not new challenges. The area in and around Arizona-American's Agua Fria Water District has long been recognized as one of the most severely impacted groundwater depletion and land subsidence areas in the metropolitan Phoenix region. A map from the Third Management Plan (PGT Exhibit 2) is attached documenting groundwater declines of over 300' in the West Salt River Sub Basin from 1900 to 1998.

More problematic than the documented historic groundwater decline is the projected continued severe groundwater depletion projected for the Agua Fria District. These projections are not new and are reflected in assured water supply studies dating back to the 1980's. Arizona-American's response to Data Request Sun City Grand 10-23 contains well over a dozen studies documenting existing and continued groundwater depletion. The response also cites ADWR files containing numerous additional studies documenting existing and continued groundwater depletion. For example, assured water supply studies prepared for Sun City Grand predict groundwater levels of 981 feet below land surface after 100 years. Another example is the July 2010 report titled *100-YEAR PREDICTIVE SCENARIOS USED FOR THE DETERMINATION OF PHYSICAL AVAILABILITY IN THE PHOENIX ACTIVE MANAGEMENT AREA* prepared by the Arizona Department of Water Resources. The report was prepared to detail various 100-year predictive scenarios that were developed as part of the Assured Water Supply re-

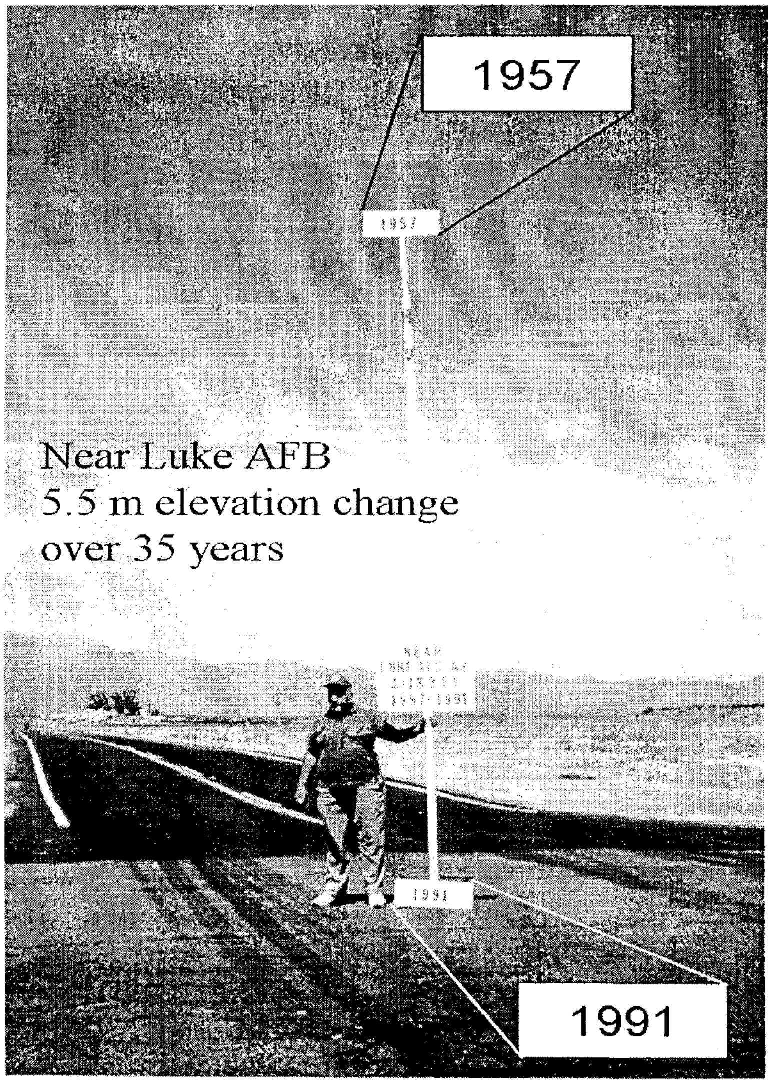
Designation process completed in 2010. As shown on Figure 31 from the study (PGT Exhibit 3), the study projects depth to water of between 900 and 1,000 feet below land surface in the Agua Fria District in 2108. These groundwater level declines, caused by the depletion of groundwater, are well known and understood by virtually everyone involved in water resource management in the Phoenix AMA.

This widespread understanding of the historic and projected groundwater declines in the West Salt River Sub Basin was one of the primary drivers behind the development and publication of the WESTCAPS report in 2001, which directly led to the development of the White Tanks Project. In the Executive Summary of the WESTCAPS report, it stated,

> A 1995 study authorized by the Arizona legislature showed that most of the WSRV [West Salt River Valley] has experienced significant groundwater decline, resulting in up to 17 feet of land subsidence in portions of the WSRV. Other portions of the West Valley are facing groundwater quality issues that will increase the cost of continued groundwater use.

Later in the 2001 WESTCAPS report it stated,

> WESTCAPS has developed a water delivery plan to shift the communities' reliance from groundwater to renewable surface water supplies by 2025. Groundwater would be used in a peaking or reserve role.



This photograph taken near Arizona-American's Agua Fria District clearly shows the effect of land subsidence in this area. While the photo itself dates from 1991, continued groundwater depletion and land subsidence continue to this day. The attached PGT Exhibit 4 are maps from the Arizona Department of Water Resources. They show land subsidence in western metropolitan Phoenix based on satellite data during the period from January 2007 to February 2010. These maps indicate that the Agua Fria District and neighboring areas still face significant threats of continued groundwater depletion and resulting land subsidence.

Q. MR. WATKINS CONCLUDES THAT THAT THE WHITE TANKS PLANT "PROVIDES LITTLE TO NO USEFULNESS TO THE COMPANY'S RATEPAYERS OR TO SYSTEM RELIABILITY." DO YOU AGREE?

A. Of course not. First, Mr. Watkins' conclusions are based on faulty assumptions and analysis as described in the Second Rebuttal Testimony of Mr. Ian Crooks. Second, Mr. Watkins' testimony ignores the realities facing the Agua Fria District and the very serious water management issues that the Company has faced and will continue to face in the future.

Q. WHAT ARE THE IMPACTS OF GROUNDWATER DEPLETION?

A. Groundwater depletion causes land subsidence, cracking of the land surface (earth fissuring), aquifer compaction resulting in the loss of aquifer storage space, and degradation of groundwater quality due to the migration of poor quality water and general deterioration of aquifer water quality with depth. The changing land surface and deteriorating aquifer in turn cause property damage to both private property and public works projects, directly impacting water utilities and their customers. In addition, declining aquifers reduce well capacities, damage well casings, create the need to deepen or replace wells and create the need for groundwater treatment facilities to be constructed. In some cases groundwater depletion makes it economically infeasible to pump groundwater.

Q. WHAT WATER MANAGEMENT STRATEGY HAS ARIZONA-AMERICAN ADOPTED TO ADDRESS GROUNDWATER DEPLETION IN THE AGUA FRIA DISTRICT?

A. Based on planning efforts dating back to at least 1994, in the early 2000's Arizona-American concluded that direct treatment and delivery of surface water, including the Agua Fria District's CAP allocation should be the cornerstone of the water management strategy for the Agua Fria District and that a surface water treatment plant should be constructed at the earliest opportunity.

Q. WHY WAS A DIRECT TREATMENT STRATEGY ADOPTED?

A. Arizona American recognized that reliance on groundwater as the primary water source was not a viable long-term strategy. This is due to continued groundwater depletion and the expected difficultly in successfully drilling potable water wells in southerly portions of its water service area due to water quality constraints, well production declines, and well spacing regulations. Arizona-American witnesses Ian Crooks and Joe Gross provide more detail in their testimonies on the difficulty faced by the Company in finding, drilling, and equipping wells during that period. The alternative to the non-viable long-term strategy of continued well drilling was to move to a direct use of surface water in the District, a strategy being used by most other large water providers in the Phoenix Active Management Area (Phoenix AMA).

Q. IS GROUNDWATER RECHARGING A PART OF ARIZONA-AMERICAN'S WATER MANAGEMENT STRATEGY?

A. Yes. Groundwater recharge, either through the use of Groundwater Savings Facilities (GSF) or Underground Storage Facilities (USF), is an important part of Arizona-American's water management strategy. Groundwater recharge is used to supplement direct treatment and delivery efforts by recharging those water supplies that cannot be used directly.

Q. WHY WASN'T RECHARGE ADOPTED AS THE PRIMARY WATER MANAGEMENT STRATEGY FOR THE AGUA FRIA DISTRICT?

A. Simply put, because direct treatment and delivery is an established and proven method of using renewable water supplies that provides the maximum level of direct benefit to the Agua Fria District.

Q. DO YOU AGREE WITH MR. WATKINS' ASSERTION THAT USING CAP WATER THROUGH DIRECT TREATMENT OR GROUNDWATER RECHARGE IS A ZERO-SUM GAME?

A. No I do not. First I will note that Mr. Watkins is careful to limit this assertion to the impact on groundwater resources, effectively ignoring other benefits of direct treatment, including eliminating constraints on our ability to site new wells in the Agua Fria District, avoidance of increased pumping costs from deeper wells, avoidance of increased capital and operating costs to treat contaminants and other impurities from new wells, and use of a renewable sustainable surface water supply in lieu of a diminishing groundwater supply. Nevertheless, even in his limited application to the impact on groundwater resources, the assertion that it is a zero-sum game is incorrect.

Q. MR. SHAW MAKES A SIMILAR ASSERTION. DO YOU AGREE WITH HIS ASSERTION?

A. Mr. Shaw states that the net effect of CAP water use on the groundwater resources in the area is zero and that there is no net benefit to the groundwater system. Again, I do not agree with this assertion.

Q. WHY ARE GROUNDWATER RESOURCES IN THE AGUA FRIA AREA BENEFITED WHEN DIRECT TREATMENT IS USED INSTEAD OF RECHARGE?

A. There are two factors that make direct treatment and delivery by Arizona-American more beneficial to groundwater resources in the Agua Fria District.

First, recharge capacity is limited and is fully subscribed. There are only three recharge facilities[1] useable by Arizona-American near the Agua Fria District that could provide some benefit to the aquifer beneath the Agua Fria District. Each of the facilities already operates at its full operational capacity, with requests for recharge capacity regularly exceeding the facilities capability to accept water for recharge. In other words, the amount of groundwater recharged at the facilities would be unchanged whether or not the Arizona-American's Agua Fria District participates in the recharge projects. Accordingly, Agua Fria groundwater resources benefit most by (i) the direct treatment and delivery of CAP water in the Agua Fria District (thereby offsetting groundwater pumping by Arizona-American), and (ii) groundwater recharge by others using the limited available recharge capacity.

Second, direct treatment and delivery provides instantaneous positive local impact while recharge provides delayed, diminished and questionable local impact. Unlike recharge, direct treatment and delivery actually eliminates dewatering of the aquifer at each and every well location where water would have otherwise been pumped. Accordingly, all of the negative impacts of groundwater depletion associated with those withdrawals which I have discussed in my testimony are instantaneously and positively eliminated. In

[1] The facilities are the Maricopa Water District Groundwater Savings Facility, the Hieroglyphic Mountains Recharge Project and the Agua Fria Recharge Project.

contrast, recharge does not eliminate groundwater withdrawal by Arizona-American. Instead, the groundwater depletion continues and groundwater is recharged (in the case of a USF) or someone else's pumping is reduced (in the case of a GSF), in a different location than where the original groundwater withdrawal occurred. The result is that on a localized basis, the negative effects of groundwater depletion will still be experienced. The degree to which the groundwater is depleted and the negative impacts will be felt is related to the distance from which the recharge is made relative to the groundwater withdrawal. Let's look at the specific example of recharge in the Tonopah Desert Recharge Project which is used by the Arizona-American's Agua Fria District. Since the Tonopah Desert Recharge Project is in located on the other side of the White Tanks Mountains and in a different sub-basin than the Agua Fria District, recharge at that location has zero impact on groundwater resource used by the Agua Fria District and zero impact on groundwater depletion beneath the Agua Fria District. In contrast, direct treatment and delivery in the Agua Fria District has a gallon for gallon impact on the groundwater resource used by the Agua Fria District.

Q. MR. WATKINS CLAIMS THAT THE BURDEN OF MEETING THE FUTURE WATER NEEDS IN THE WEST VALLEY AS WELL AS SUSTAINING THE AREA'S GROUNDWATER SUPPLIES FALLS ON REAL ESTATE DEVELOPERS. DO YOU AGREE?

A. No I do not, and few if any water managers would agree. Mr. Watkins misinterprets Arizona's laws and rules pertaining to groundwater replenishment and assured water supplies. Arizona has a long history of successful, cooperative water management involving water providers, developers, regulators, law makers and other interest groups. Arizona water providers, including Arizona-American, are a key element of establishing and maintaining Arizona's track record of successful water management. Arizona-

American is a recognized leader in water management with a track record of promoting water conservation, effluent reuse, effluent recharge and renewable CAP water use in its service areas. Contrary to Mr. Watkins' assertion, water management, including planning for growth related water needs as well as making provisions for sustainable water supplies, is an essential function of any responsible water utility. The water community and the developers have worked and will continue to work together on Arizona water issues, including growth. But his attempt to pin groundwater sustainability and future water supplies solely on developers laughs in the face of all that we have accomplished in regards to water policy in the State.

Q. WHEN A DEVELOPER OBTAINS A CERTIFICATE OF ASSURED WATER SUPPLY IS A SUSTAINABLE WATER SUPPLY REQUIRED?

A. No, an assured water supply certification is obtained by making a showing that specific minimum regulatory requirements are met. In the case of the Phoenix AMA, the requirement for certification of a groundwater based assured water supply is that after 100 years the groundwater aquifer can be no lower than 1,000 feet below land surface. In other words, an assured water supply certification could be obtained by relying on non-sustainable groundwater depletion that goes on for decades, rather than providing for safe yield in which no change to the groundwater level occurs. This is exactly the situation in the Agua Fria District. The current assured water supply certificates issued by Arizona Department of Water Resources for the Agua Fria District are based on continued groundwater depletion to levels very near 1,000 feet below land surface[2]. Current assured water supply projections are even worse. Attached, as PGT Exhibit 5, is a map developed by Arizona-American using the Arizona Department of Water Resources

[2] See reports provided in response to Data Request Sun City Grand 10-23.

groundwater flow model currently used for evaluating applications for assured water supplies. As depicted on the map, groundwater levels in 2109 are projected to exceed 1,000 feet below land surface over much of the Agua Fria District. Clearly, this is not a sustainable water supply.

Q. WHO THEN IS RESPONSIBLE FOR SUSTAINING THE GROUNDWATER SUPPLIES IN THE AGUA FRIA DISTRICT?

A. While there is not a simple answer to that question, I believe the ultimate responsibility rests with the water provider in the area, in this case Arizona-American.

As noted by Mr. Watkins, the Central Arizona Water Conservation District (CAWCD) has a responsibility to replenish groundwater pumping. However, that responsibility is much more limited than stated by Mr. Watkins. The CAWCD must replenish only groundwater pumping in excess of allowable groundwater pumping and only for groundwater pumping that is associated with certificates of assured water supply issued pursuant to assured water supply rules that became effective in 1995. Furthermore, the CAWCD has no obligation to provide for groundwater replenishment in the area where the groundwater is withdrawn. The result, in the case of the Agua Fria District, is that much of the groundwater pumping is not subject to replenishment at all, and the groundwater replenishment that is being done is not sufficiently close to the Agua Fria District to effectively mitigate the ongoing groundwater depletion. Department of Water Resources modeling predicts continued and severe groundwater depletion beneath the Agua Fria District, even after considering replenishment by the CAWCD.

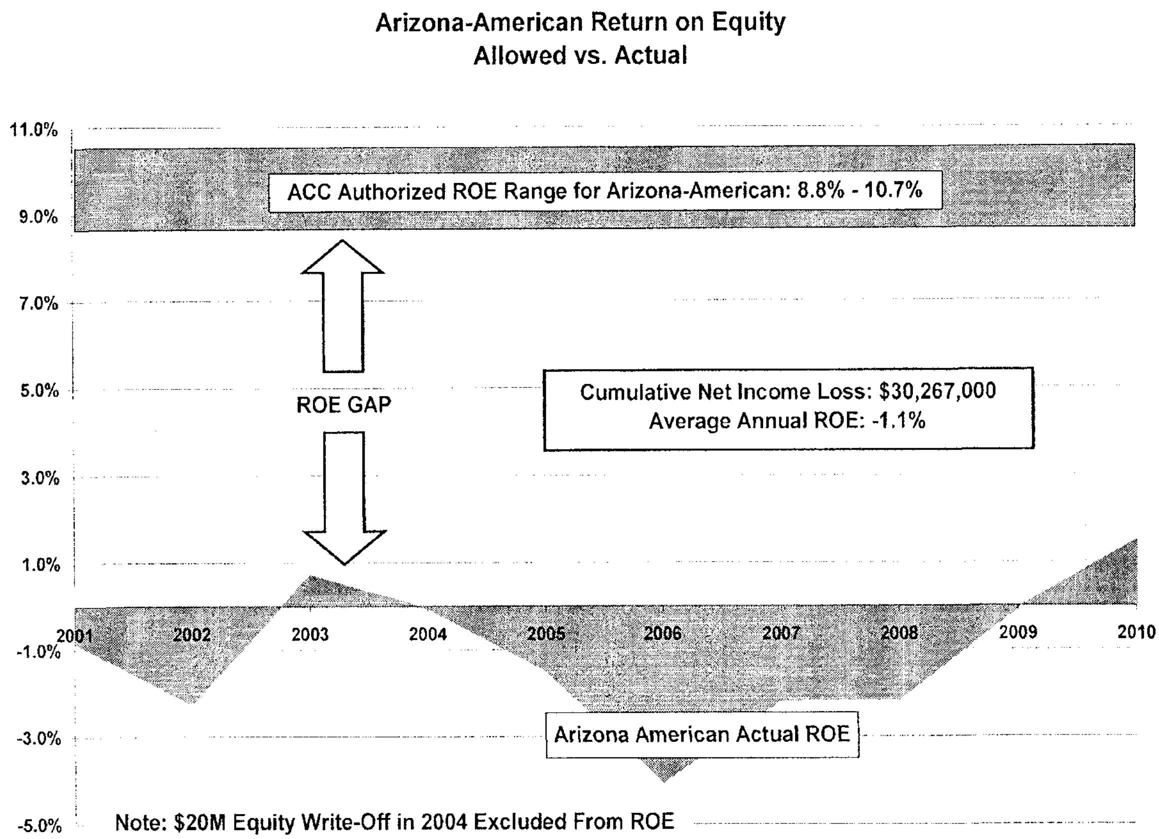
In the face of the reality of the water resources challenge facing the Agua Fria District, rather than gamble, Arizona-American accepted its responsibility to act. Arizona-American adopted and implemented a water management strategy centered on direct delivery and treatment of renewable water supplies. The strategy is consistent with good water management principles employed by other large water providers throughout the Phoenix AMA, and it is consistent with the water management goals of the State of Arizona. That strategy ultimately resulted in the construction of the White Tanks Plant, a plant which should be allowed in the rate base of the Agua Fria District as requested by Arizona-American.

IV UPDATE ON THE FINANCIAL CONDITION OF ARIZONA-AMERICAN AND CONSEQUENCES OF A DISALLOWANCE OF THE WHITE TANKS PLANT

Q. WILL YOU PLEASE EXPLAIN THE FINANCIAL CONSEQUENCES OF A COMMISSION DECISION TO DISALLOW THE INCLUSION OF THE WHITE TANKS PLANT IN RATE BASE IN THIS CASE?

A. The financial consequences of a Commission disallowance of the White Tanks Plant in rate base would be devastating to Arizona-American.

As I discussed in more detail in my direct testimony, Arizona-American's financial condition continues to be fragile at the same time that the Company has needed to confront making necessary capital investments such as the White Tanks Plant. Arizona-American's operating districts have under-earned for many years, and, as a whole, have lost over $30 million between 2002 and 2010. Arizona-American had a net loss of $0.1 million in 2009, which was an improvement over its $3.1 million loss in 2008. In 2010 Arizona-American finally had positive net income of $2.3 million on $343.2 million in capitalization. And even after new rates from the pending case are implemented, the Company will still not come close to earning its authorized return. This causes for this authorized return earnings gap are due to the strict nature of the historic test years used in Arizona for water utilities, the excessive amount of time it takes to complete rate proceedings at the Commission, the lack of pass-through mechanisms for costs beyond the control of the water utility and for systematic capital investments such as DSIC, and other reasons. It is for many of these causes that the Commission initiated its own Generic Investigation on water utility ratemaking issues (Docket W-0000C-06-0149) which is just now being completed at the Commission. In April 2011, Janney Capital released a report[3] that ranked Arizona dead last among reviewed states evaluating regulatory climate. On a scale ranging from plus four (+4) to minus four (-4), the Arizona regulatory climate was rated minus four. I have attached this report as PGT Exhibit 6. All these reasons show why Arizona-American's actual return on equity is far below its authorized rate of return as shown below which I have updated from my direct testimony to reflect 2010 financial results.



[3] Introducing the Janney RCI: Our Ranking of Water Utility Regulation & Valuation, Janney Water Journal - April 2011

Arizona-American has worked diligently to finally be able to create positive net income on its invested assets after years of losses, and a disallowance by the Commission of all or a significant portion the White Tanks Plant will abruptly and dramatically reverse that progress. That is simply not a situation that can be tolerated. The consequences of a disallowance are described in the Confidential Rejoinder Testimony of Greg Barber, Arizona-American's Director of Finance.

Q. DOES THIS CONCLUDE YOUR SECOND REBUTTAL TESTIMONY?

A. Yes.

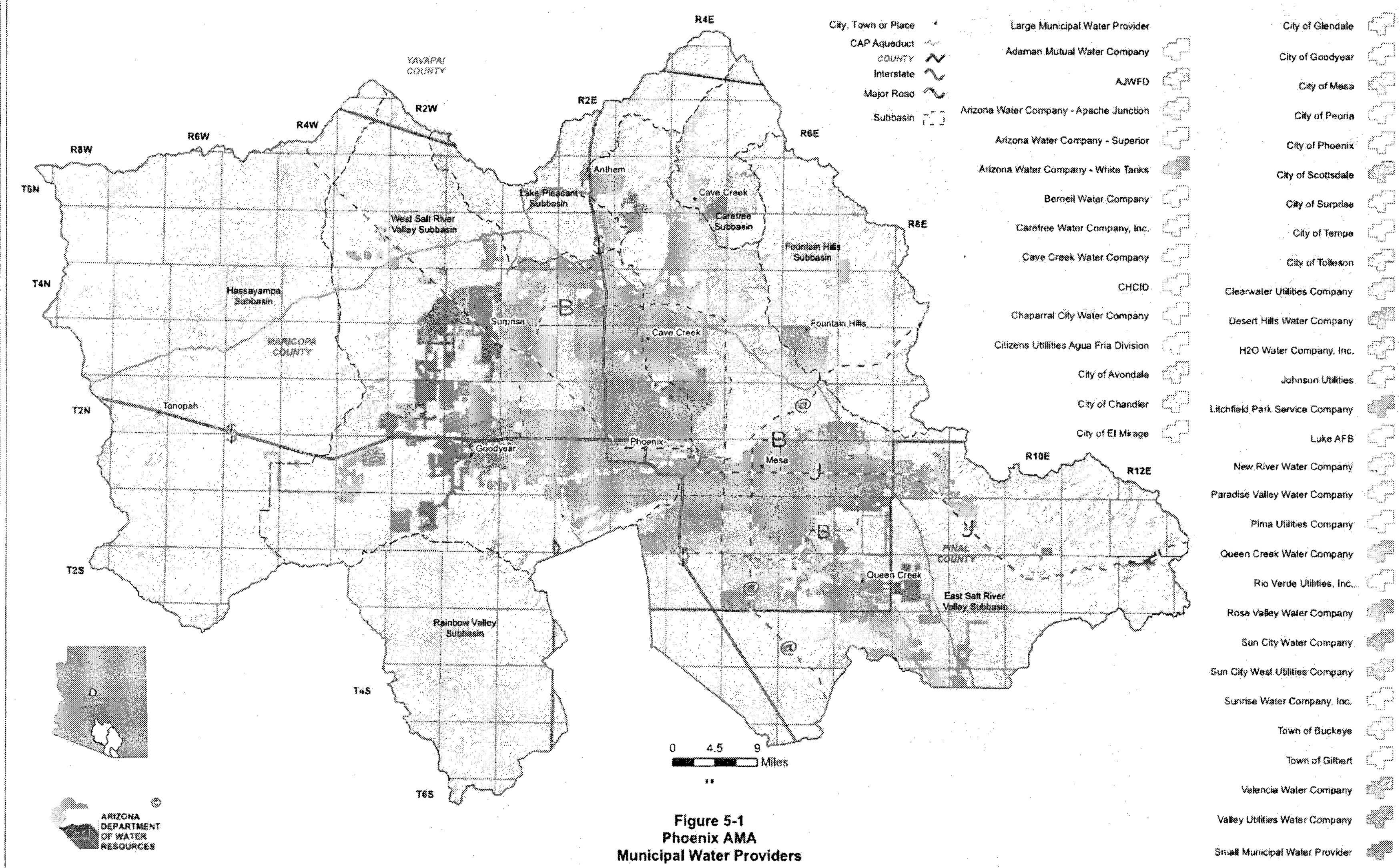
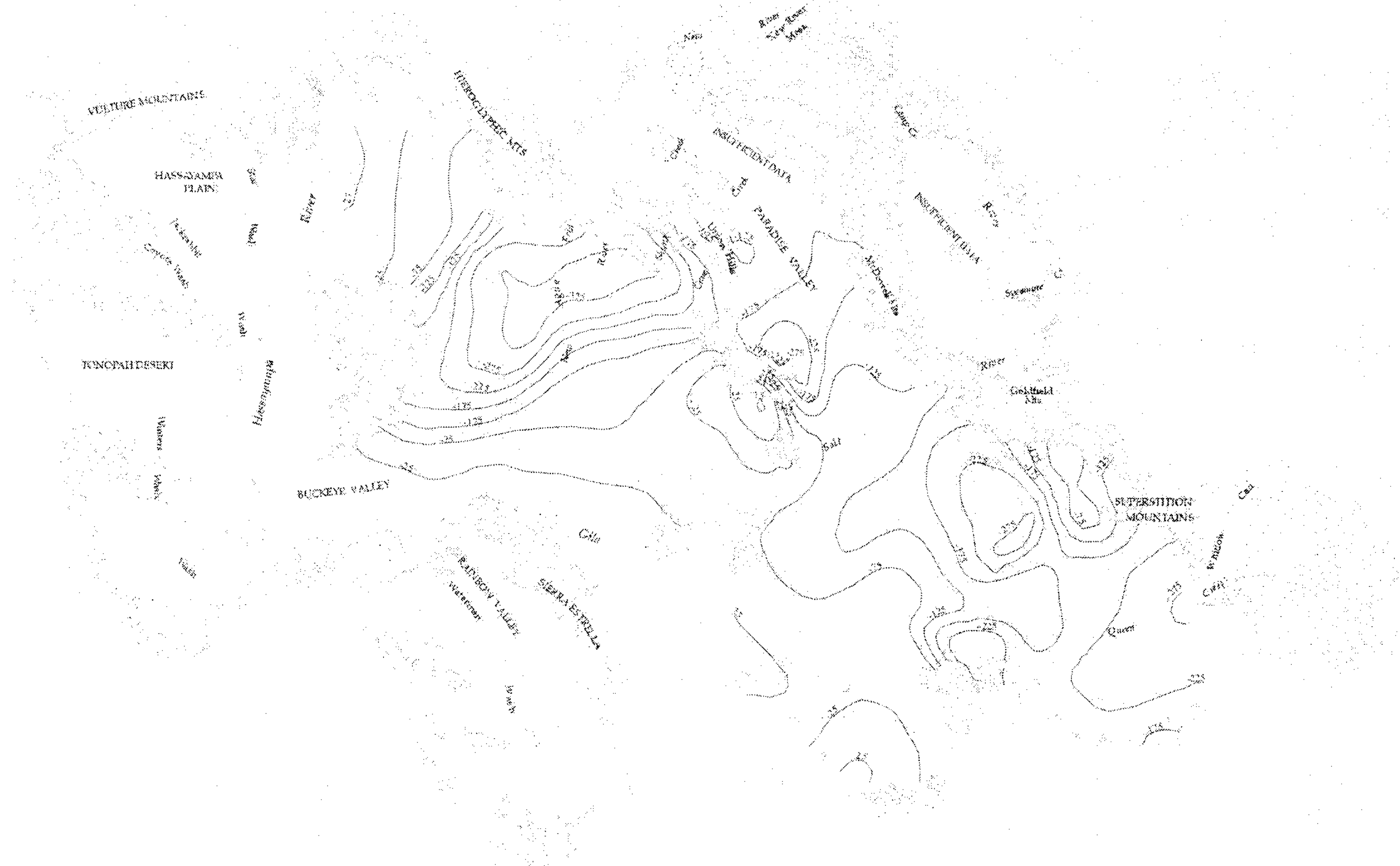


Figure 5-1
Phoenix AMA
Municipal Water Providers

PHOENIX AMA



Phoenix AMA Boundary
Water Elevation Change Isolines (Feet)
-20 Water Level Decline
20 Water Level Rise
Hardrock
River
Groundwater Subbasins

Figure 2-4

Water Elevation Change
1900 - 1998 Lower Aquifer

0 3 6 9 12 Miles North

ORIGINAL SOURCE
Arizona Department of Water Resources
Hydrology Division

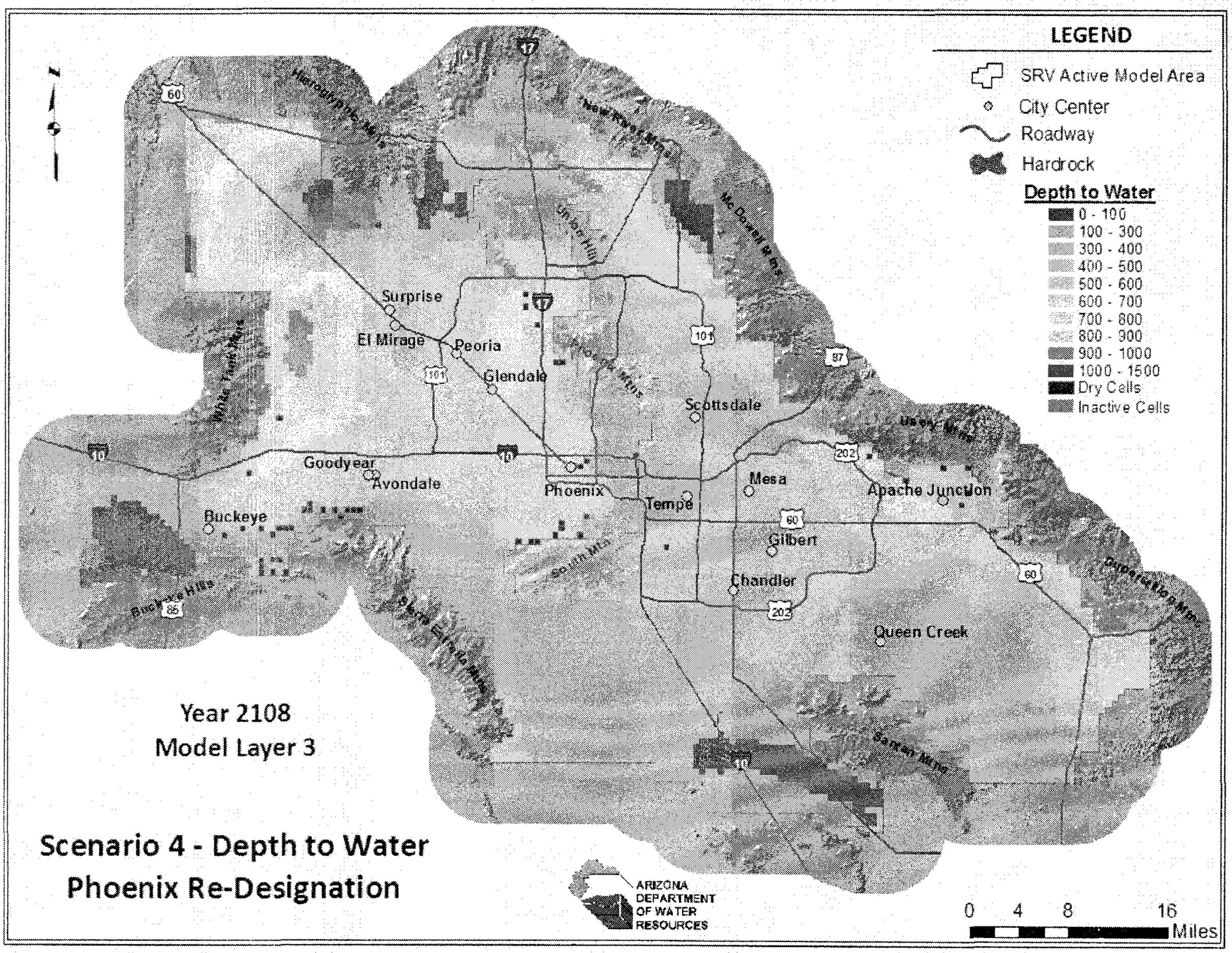
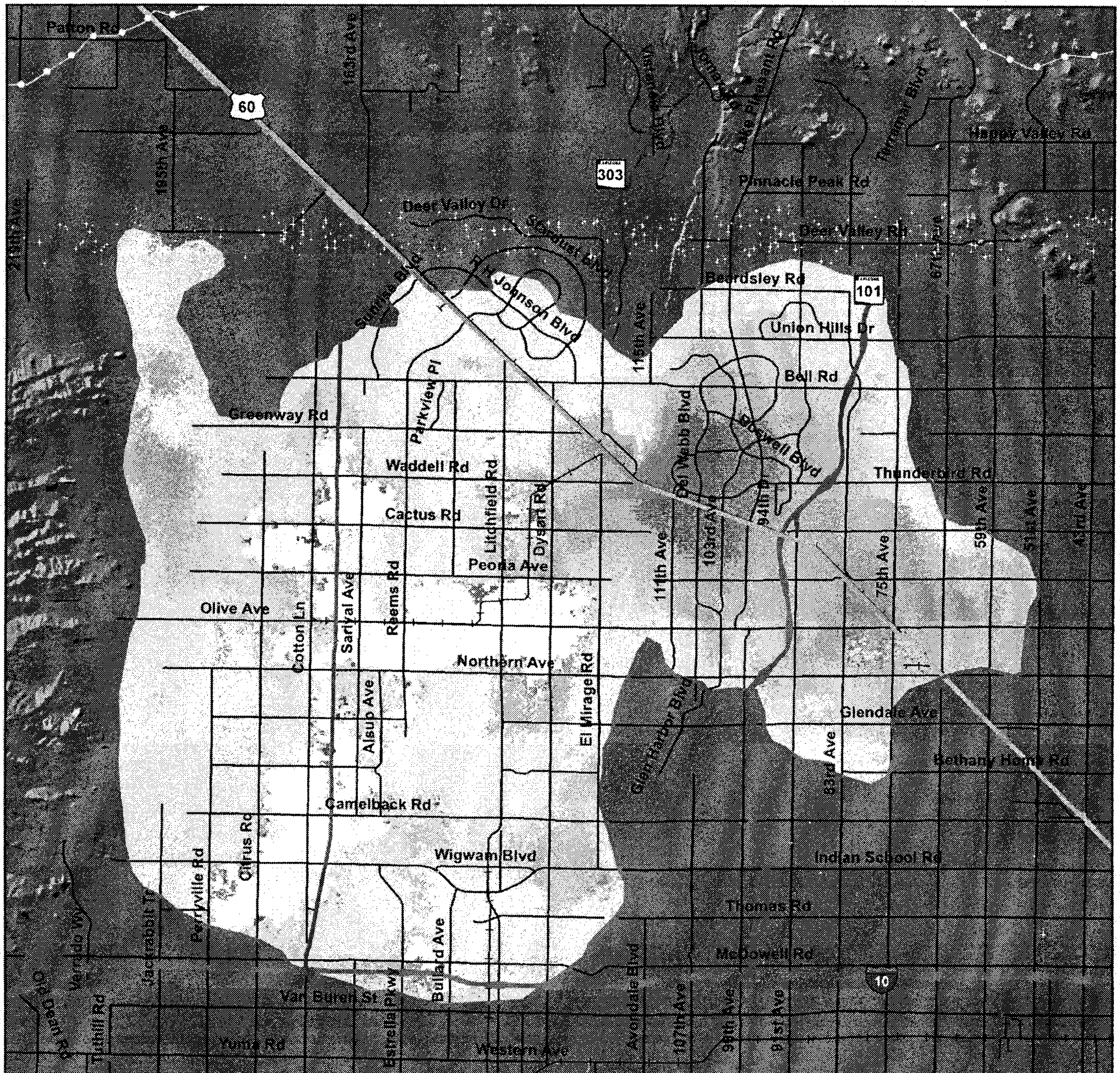


Figure 31. Scenario 4 - Depth to Water (DTW) of Layer 3 for the year 2108.



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Land Subsidence in Western Metropolitan Phoenix
Based on ADWR EnviSat Time-Series InSAR Data

Time Period of Analysis: 1.1 Years 01/22/2007 To 02/11/2008

01/22/2007 To 02/11/2008

Subsidence

- Decorrelation/No Data
- -2.0 To -3.0 cm
- -1.5 To -2.0 cm
- -1.0 To -1.5 cm
- -0.5 To -1.0 cm
- 0 To -0.5 cm

- Subsidence Feature
- Hardrock
- CAP Canal

Arizona Highways and Interstates

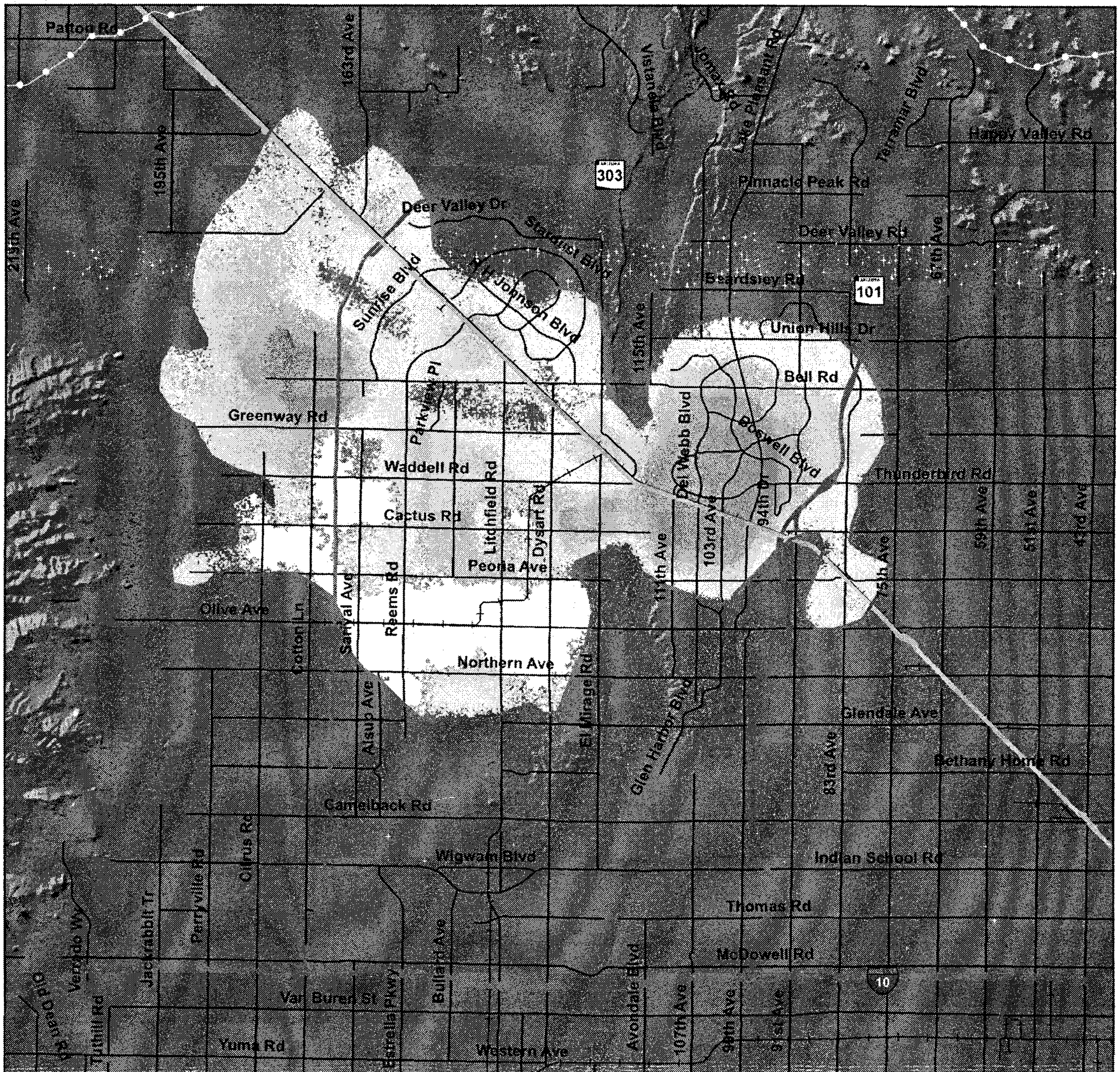
- Interstate
- US
- State
- Roads
- Railway

1:183,029

0 1 2 4 6 8 Miles

Decorrelation (white areas) are areas where the phase of the received satellite signal changed between satellite passes, causing the data to be unusable. This occurs in areas where the land surface has been disturbed (i.e. bodies of water, snow, agriculture areas, areas of development, etc).

ARIZONA DEPARTMENT OF WATER RESOURCES



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Land Subsidence in Western Metropolitan Phoenix
Based on ADWR EnviSat Time-Series InSAR Data
Time Period of Analysis: 2.0 Years 02/11/2008 To 02/15/2010

02/11/2008 To 02/15/2010

Subsidence

- Decorrelation/No Data
- 4.0 To 5.0 cm
- 3.0 To 4.0 cm
- 1.5 To 3.0 cm
- 1.0 To 1.5 cm
- 0.5 To 1.0 cm
- 0 To 0.5 cm

- Subsidence Feature
- Hardrock
- CAP Canal

Arizona Highways and Interstates

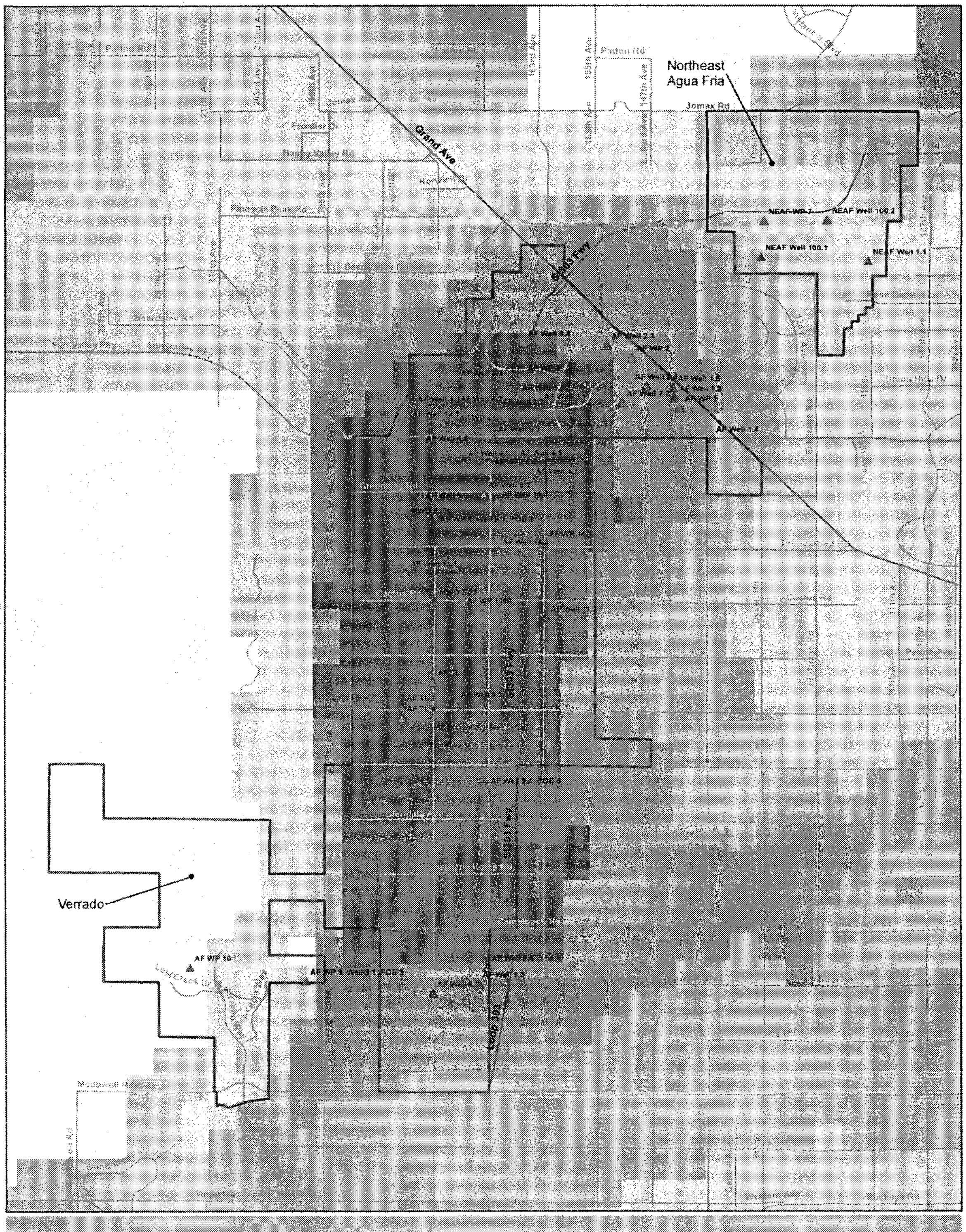
- Interstate
- US
- State
- Railway
- Roads

1:183,029

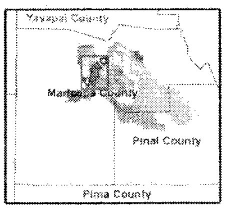
0 1 2 4 6 8 Miles

Decorrelation (white areas) are areas where the phase of the received satellite signal changed between satellite passes, causing the data to be unusable. This occurs in areas where the land surface has been disturbed (i.e. bodies of water, snow, agriculture areas, areas of development, etc).

ARIZONA DEPARTMENT OF WATER RESOURCES



Location Map:



Legend: 1" = 1 3/4 Miles

Depth to Water (Feet)

- 0 - 100
- 100 - 300
- 300 - 400
- 400 - 500
- 500 - 600
- 600 - 700
- 700 - 800
- 800 - 900
- 900 - 1,000
- 1,000 - 1,161
- Agua Fria Service Area
- Highway
- Major Road
- Well

Data Source: AZ American Water; Maricopa County
Date: December 16, 2010

Created by: JP
File name: G:\GIS\MXDs\ADWR_maps\ADWR_DTW.mxd

Figure 15
Agua Fria
Depth to Groundwater
2109

Arizona American Water
15626 N. Del Webb Blvd.
Sun City, AZ 85351

Janney
CAPITAL MARKETS

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Introducing the Janney RCI: Our Ranking of Water Utility Regulation & Valuation

Janney Water Journal - April 2011

INVESTMENT CONCLUSION:

Having followed the water utility industry for years and - like many others - danced delicately around the issue of comparing state regulatory environments, we decided the time has come for a transparent, quantitative ranking system. Indeed, we believe regulatory climate is the single most important factor driving shareholder returns for water utilities, and that a clear scoring system on this key issue substantially demystifies the investment decision making process. With this in mind, we introduce our Janney Regulatory Climate Indicator (RCI), which assigns a numerical score to each state of relevance for the water utility peer group based upon key factors such as Returns on Equity and the existence (or lack thereof) of progressive regulatory mechanisms such as DSIC and Future Test Years. While we recognize that no such system is perfect and any attempt to tackle the issue will be controversial (hence the Street's historical reticence to do so), our system is transparent, easily understandable, and accurately depicts the relative attractiveness of various regulatory jurisdictions. In any event, we believe even detractors will find the Janney RCI a useful, refreshing step in the right direction toward a more open and candid discourse on the issue. Below we offer several key take-aways from our inaugural RCI rankings, and in the following pages we summarize our methodology and detail our findings.

KEY POINTS:

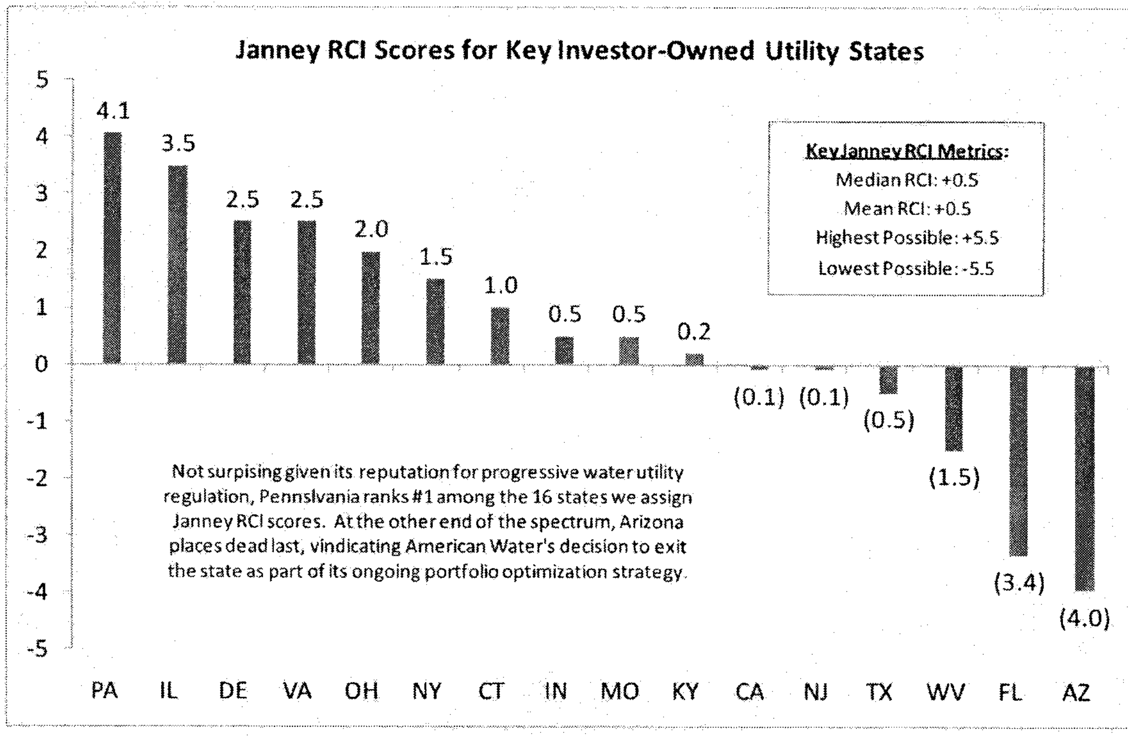
- **The States: PA on top as expected, but some surprises down the league table.** Not surprising given the PA PUC's near unanimous reputation as the most progressive of the state utility commissions on water issues, Pennsylvania ranks #1 of the 16 key states with a Janney RCI score of 4.1 (out of a possible range of -5.5 to +5.5). Among other key states - Illinois ranks #2 (RCI: 3.5), Delaware #3 (RCI: 2.5), Connecticut #7 (RCI: 1.0), California and New Jersey tie for #11 (RCI: -0.1), and Texas ranks #13 (RCI: -0.5). For detailed rankings and inputs see table on page 6.
- **American Water (AWK-BUY): RCI reinforces AWK as our top water utility idea.** Among the anxieties of this type of analysis is the fear that the results will contradict one's previously held views, but our 100% objectively designed system reinforces AWK as the most compelling stock idea in the space. While the company's weighted-average RCI (1.2) lies below key peer Aqua America (2.6), our implied fair value analysis suggests the valuation disconnect between the two companies more than reflects this. In addition, the potential implementation of a DSIC in New Jersey (20% of regulated revenue) represents a potentially significant regulatory catalyst.
- **Aqua America (WTR-Neutral): Premium valuation justified, but upside limited.** With its strong position in top-ranked Pennsylvania and diversified mix of additional states, Aqua America's RCI score (2.6) is second to only Pennsylvania pure-play York Water Company (YORW-BUY). Still, our RCI-based implied fair value analysis indicates that WTR's premium valuation appropriately reflects the company's favorable regulatory exposure, and upside remains limited. Overall, Aqua America remains the "best-of-breed" player in the investor-owned water utility space, and we believe any meaningful pullback in WTR shares should be viewed as buying opportunity.
- **California: CA regulation sub-par already, and uncertainty continues to loom.** While water utility regulation has improved in recent years, the state lacks key regulatory mechanisms and remains a below average capital destination in our view. Overall, we continue to believe that the discount valuations currently assigned to California-centric utilities American States Water Company (AWR-Neutral) and California Water Service Company (CWT-Neutral), appropriately reflect the fact that California regulation (though improved from years ago) remains so-so at best and that recent changes to the CA Public Utility Commission heighten uncertainty going forward.

Equity Research
Industry Report

Research Analyst Certifications and Important Disclosures are on pages 7 - 8 of this report

JANNEY RCI: NOT PERFECT, BUT A USEFUL PIECE OF THE PUZZLE

After following the water utility industry for more than five years and frequently speaking with investors frustrated by the difficulty of comparing regulatory environments, we believe the time is right for a simple, easy to understand system for making these comparisons. While we recognize that no such system is perfect, we are firm believers in not allowing the "perfect to be the enemy of the good" and therefore launch our Janney Regulatory Climate Indicator (RCI). Predictable given its attempt to quantify the unquantifiable, the RCI has its flaws, but we believe it will provide a useful tool for investors as they formulate a mosaic of the space. Our RCI scoring system, described in more detail on page 3, essentially starts each state at a baseline score of "0", applies an adjustment factor based upon recent awarded returns on equity (the higher the better), and then further adjusts this figure depending on whether a state has implemented key progressive regulatory mechanisms (DSIC, future test year, single tariff, etc).

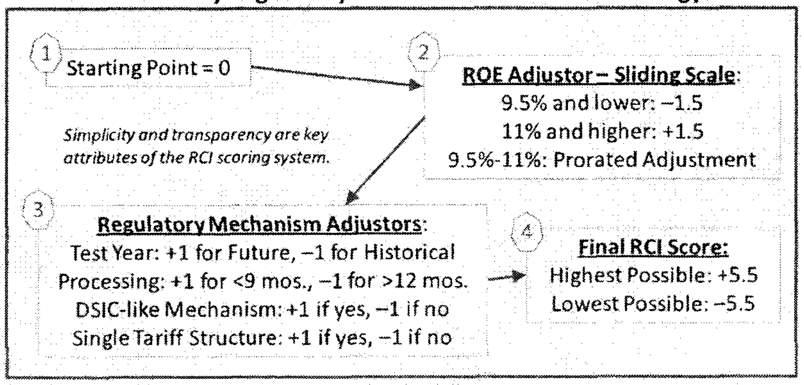


As mentioned above, we realize that no rating system of this type is perfect, and we acknowledge the inevitable criticisms that will come from states (and companies operating therein) ranking poorly. Still, inputs to the Janney RCI formula were carefully deliberated with an eye toward favoring those states whose regulatory systems facilitate strong returns on capital and investment outperformance, and the RCI rankings pass a key sanity check in that the rankings correspond with the more informal pecking order of state regulatory environment we've arrived at after years of following the space. For example, the state of Pennsylvania places #1 in the rankings with an RCI score of 4.1 while Arizona places dead last with an RCI of –4 (note that possible RCI scores range from –5.5 to +5.5). Given that Pennsylvania is universally regarded as the most progressive regulatory jurisdiction in the nation and that major publicly-traded companies like American Water (AWK-BUY) and American States Water (AWR-Neutral) have been exiting Arizona, these outcomes confirm the soundness of the Janney RCI scoring methodology.

JANNEY RCI: SUMMARY OF METHODOLOGY

In designing a system for quantifying the relative attractiveness of various state regulatory systems, we adhere to the maxim that "less is more" and deliberately favor elegance over complexity. Although a more intricate approach would have benefits, we believe a simple, transparent system sacrifices little in the way of accuracy while possessing the key advantage of being easily understandable.

The Janney Regulatory Climate Indicator: Methodology



Step-by-Step RCI Calculation:

1. **Starting Point.** All states are created equal, beginning the process with a baseline score of 0.

2. **Allowed Return on Equity Adjustment.** The first, and most significant, adjustment to the baseline score of 0 is the ROE adjustor. Using an average of recent awarded ROEs in the state, the baseline score is adjusted to reflect the attractiveness of returns on capital. States with ROEs of 9.5% and below have 1.5 points subtracted from the baseline, while states with ROEs of 11% and above have 1.5 points added to their baseline score. States with ROEs in between 9.5% and 11% receive a pro-rated adjustment according to their position in this range, with any state exactly at the midpoint of 10.25% receiving no adjustment to the starting point.

3. **Regulatory Mechanism Adjustments.** The next set of adjustments takes into account whether a state has in place key regulatory mechanisms that we believe reduce regulatory lag or otherwise improve the investment climate. These simple +1/–1 adjustments are as follows:

   - +1 if a state has in place a DSIC, –1 if not.
   - +1 point if a Future Test Year is used, –1 if Historical (0 for Historical/Updated).
   - +1 if rate cases must be processed in 9 months or less, –1 if 12 months or more.
   - +1 if a state has in place single tariff rate structures, –1 if not.

4. **Summation = Final RCI Score.** After all adjustments have been made to the initial starting point of 0, the end result is the Janney RCI score. The highest possible RCI score is +5.5 (0 + 1.5 for an 11% ROE + 1 for DSIC + 1 for Future Test Year + 1 for 9 month rate case processing + 1 for Single Tariff = 5.5). Conversely, the lowest possible score is –5.50. Interpreting RCI scores is easy: higher scores denote states with more capital-friendly regulatory environments.

JANNEY RCI: A LOOK AT KEY REGULATED TERRITORIES

Pennsylvania: The Gold Standard (#1 of 16). With its reputation for progressive regulation and status as a preferred capital destination, it's not surprising that Pennsylvania places #1 among the states included in our RCI rankings. A number of factors contribute to Pennsylvania's status as the gold standard in water utility regulation, but the key driver is that the Pennsylvania Public Utility Commission holds true to a simple concept: grant highly competitive allowed returns on capital and minimize the drag that the regulatory process creates on realized returns. The importance of the latter part of this equation cannot be understated, and the PA PUC has a long history of open mindedness toward forward-looking, creative regulatory mechanisms on this front. A notable example is that the state pioneered the Distribution System Improvement Charge (DSIC), which has long been viewed as an industry best practice and is increasingly seen by investors as a baseline standard of an acceptable regulatory environment.

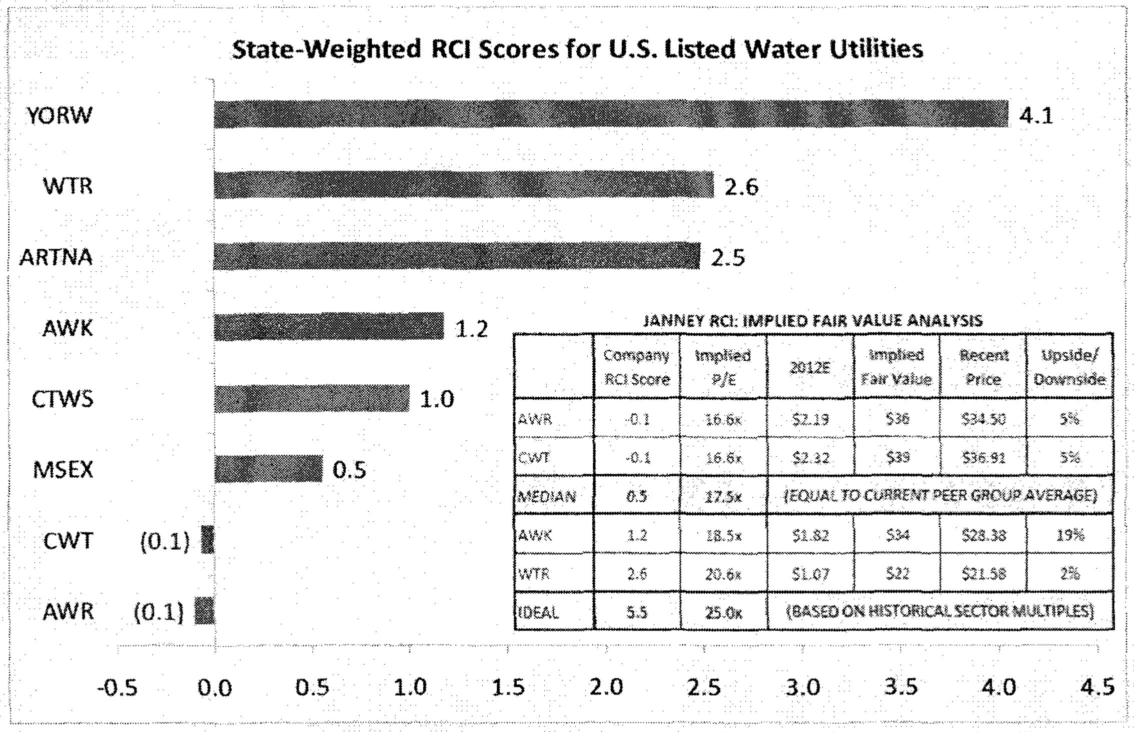
Connecticut: WICA Changes the Game (#7 of 16). Long viewed as a challenging place for regulated water utilities to do business, Connecticut's Department of Public Utility Control has been slowly evolving toward a more progressive regulatory approach in recent years. The cornerstone of the state's gradual positive trajectory was the adoption of an infrastructure surcharge mechanism, dubbed the Water Infrastructure and Conservation Charge (aka "WICA"), implemented in 2007. While granted returns on equity remain sub-par (Connecticut Water's latest granted ROE was 9.75%), the WICA closes the gap meaningfully between granted and realized returns, and is a significant driver of Connecticut's placing above the median in our RCI rankings. With the WICA and other regulatory best-practices (single tariff billing, prompt rate case processing) in place, only Connecticut's non-competitive ROEs (CT ranks dead last on this metric) keep the state from moving into the upper echelon of regulatory jurisdictions.

New Jersey: Late-Blooming Up & Comer (#11 of 16). Also viewed historically as a difficult regulatory environment, New Jersey looks likely to follow Connecticut's path of adopting (albeit belatedly) a DSIC-like mechanism. With comment sessions ongoing, we believe the Board of Public Utilities is likely to adopt a surcharge mechanism in the near-term, and that this would be a significant step in the right direction that would make New Jersey much more attractive from a capital allocation perspective. Indeed, given the significant impact of regulatory lag on realized returns in New Jersey and the fact that granted returns on equity are actually quite competitive (recent allowed ROEs have been in the 10.3% range), adoption of a DSIC-like system would (depending on the exact terms) immediately vault New Jersey into the top echelon of water regulatory jurisdictions. Given its prevalence in the industry (AWK, MSEX, and WTR all have significant NJ operations), New Jersey is a key state to watch going forward.

California: Is Decoupling a *Good* Thing? (#12 of 16). California water utility regulation is a case of good news/bad news, with the CA Public Utility Commission progressive on some key issues (eg. a true future test year) but notably behind the times on others (eg. no DSIC). Ironically, one of the supposed crowning achievements in CA water regulation – so-called "decoupling" – is counterproductive in our view and emblematic of the CPUC getting "too cute" rather than sticking with tried and true best practices with proven results in other states. By allegedly mitigating some of the "risk" associated with operating a water utility business in California, decoupling opens the door to the argument that lower returns are appropriate. In addition, the sheer complexity of the "balancing accounts" used to implement the system has proven a turn-off for investors. Ultimately, we believe the recently revamped CPUC would be well advised to focus on the basics, such as improving ROEs and implementing a DSIC mechanism.

STATES ARE INTERESTING, BUT HOW DO THE COMPANIES STACK UP?

While the Janney RCI is designed as a tool for comparing regulation on a state-by-state basis, the trend in recent years among water utilities has been toward greater geographic diversification. Therefore in order to use the RCI to compare the regulatory mix of individual companies, below assign company-specific RCI scores using a weighted average based on the percentage of regulated revenue each company derives from various states. Not surprisingly, the tails of this analysis are those companies with concentrated exposure to individual regulatory jurisdictions. Of course, this can work out for better or worse depending on which state(s) each company is levered to. York Water (YORW-BUY), for example, is at the head of the class with an RCI score of 4.1 – a product of its being the lone pure-play on top-ranked PA. At the other end of the spectrum, American States Water (AWR) and California Water (CWT) score poorly on this metric, a function of their concentrated exposure to California, whose RCI lies below the median.



JANNEY RCI: IMPLIED FAIR VALUE ANALYSIS

	Company RCI Score	Implied P/E	2012E	Implied Fair Value	Recent Price	Upside/ Downside
AWR	-0.1	16.6x	$2.19	$36	$34.50	5%
CWT	-0.1	16.6x	$2.32	$39	$36.91	5%
MEDIAN	0.5	17.5x	(EQUAL TO CURRENT PEER GROUP AVERAGE)			
AWK	1.2	18.5x	$1.82	$34	$28.38	19%
WTR	2.6	20.6x	$1.07	$22	$21.58	2%
IDEAL	5.5	25.0x	(BASED ON HISTORICAL SECTOR MULTIPLES)			

Meanwhile, those investor-owned water utilities boasting more diversified state regulatory exposure – most notably BUY-rated American Water Works (serving 20 states) and Neutral-rated Aqua America (serving 12 states) – lie somewhere in between the single-state utility extremes. Aqua America's heavy footprint in Pennsylvania enables the company to garner a significant edge over American Water Works, which comes as no surprise given that investors historically value WTR shares at a significant premium not only to AWK but also to most others in the peer group. Middlesex Water's (MSEX-BUY) weighted RCI score looks so-so at best, but we would note that the New Jersey Board of Public Utilities is actively considering a DSIC-like surcharge mechanism, which would provide Middlesex an RCI boost given the company's heavy exposure to New Jersey (75% of revenue). A NJ DSIC would also accrue to American Water's benefit given that the company derives more than 20% of regulated revenue from New Jersey.

JANNEY REGAULATORY CLIMATE INDICATOR: METHODOLOGY, STATE DETAIL AND LEAGUE TABLE

REG. ELEMENT	GRANTED ROE	TEST YEAR	PROCESSING	DSIC	SINGLE TARIFF	RCI SCORE	RCI RANK
RCI PARAMETERS	Sliding Scale 9.5% & Below = -1.5 11% & Above = +1.5	Future = +1 Historical/Updated = 0 Historical = -1	<9 mos. = +1 9-12 mos. = 0 >12 mos./None = -1	Yes = +1 No = -1	Yes = +1 No = -1		
PENNSYLVANIA	1.1	1	0	1	1	4.1	1
ILLINOIS	0.5	1	0	1	1	3.5	2
DELAWARE	-0.5	0	1	1	1	2.5	3
VIRGINIA	0.5	1	1	-1	1	2.5	3
OHIO	0.0	0	0	1	1	2.0	5
NEW YORK	-0.5	0	0	1	1	1.5	6
CONNECTICUT	-1.0	-1	1	1	1	1.0	7
INDIANA	-0.5	-1	0	1	1	0.5	8
MISSOURI	-0.5	-1	0	1	1	0.5	8
KENTUCKY	-0.8	1	0	-1	1	0.2	10
CALIFORNIA	-0.1	1	-1	-1	1	-0.1	11
NEW JERSEY	-0.1	0	0	-1	1	-0.1	11
TEXAS	1.5	-1	-1	-1	1	-0.5	13
WEST VIRGINIA	-0.5	-1	0	-1	1	-1.5	14
FLORIDA	-0.3	-1	0	-1	-1	-3.4	15
ARIZONA	-1.0	-1	0	-1	-1	-4.0	16

Source: Janney Capital Markets, Company Reports, State Regulatory Agencies

IMPORTANT DISCLOSURES

Research Analyst Certification

I, Ryan M. Connors, the Primarily Responsible Analyst for this research report, hereby certify that all of the views expressed in this research report accurately reflect my personal views about any and all of the subject securities or issuers. No part of my compensation was, is, or will be, directly or indirectly, related to the specific recommendations or views I expressed in this research report.

Janney Montgomery Scott LLC ("JMS") Equity Research Disclosure Legend

Individual disclosures for the companies mentioned in this report can be obtained by calling or writing Janney Montgomery Scott LLC as provided on the first page of this report.Disclosure Site

Definition of Ratings

BUY: Janney expects that the subject company will appreciate in value. Additionally, we expect that the subject company will outperform comparable companies within its sector.

NEUTRAL: Janney believes that the subject company is fairly valued and will perform in line with comparable companies within its sector. Investors may add to current positions on short-term weakness and sell on strength as the valuations or fundamentals become more or less attractive.

SELL: Janney expects that the subject company will likely decline in value and will underperform comparable companies within its sector.

Janney Montgomery Scott Ratings Distribution as of March 31, 2011

			IB Serv./Past 12 Mos.	
Rating	**Count**	**Percent**	**Count**	**Percent**
BUY [B]	185	53	15	8
NEUTRAL [N]	160	45	9	6
SELL [S]	8	2	0	0

***Percentages of each rating category where Janney has performed Investment Banking services over the past 12 months.**

Other Disclosures

Investment opinions are based on each stock's 6-12 month return potential. Our ratings are not based on formal price targets, however our analysts will discuss fair value and/or target price ranges in research reports. Decisions to buy or sell a stock should be based on the investor's investment objectives and risk tolerance and should not rely solely on the rating. Investors should read carefully the entire research report, which provides a more complete discussion of the analyst's views.
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EXHIBIT
A-25

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

KRISTIN K. MAYES, Chairman
GARY PIERCE
PAUL NEWMAN
SANDRA D. KENNEDY
BOB STUMP

IN THE MATTER OF THE APPLICATION OF ARIZONA-AMERICAN WATER COMPANY, AN ARIZONA CORPORATION, FOR A DETERMINATION OF THE CURRENT FAIR VALUE OF ITS UTILITY PLANT AND PROPERTY AND FOR INCREASES IN ITS RATES AND CHARGES BASED THEREON FOR UTILITY SERVICE BY ITS AGUA FRIA WATER, HAVASU WATER AND MOHAVE WATER DISTRICTS	DOCKET NO. W-01303A-10-

**DIRECT TESTIMONY
OF
JOSEPH E. GROSS, P.E.
ON BEHALF OF
ARIZONA-AMERICAN WATER COMPANY
NOVEMBER 3, 2010**

DIRECT TESTIMONY
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NOVEMBER 3, 2010

TABLE OF CONTENTS

EXECUTIVE SUMMARY

The following major capital projects were completed well before the end of the test year and are included in the requested rate base:

- White Tanks Regional Water Treatment Plant (Agua Fria)
- Sierra Montana Storage Tank (Agua Fria)
- Route 303 Waterline Relocation (Agua Fria)
- Big Bend Acres Storage Tank (Mohave)

The Company is also requesting the inclusion in rate base of one post-test year project, the Lake Mohave Highlands Storage Tank.

White Tanks Regional Water Treatment Plant (Agua Fria)

At a total project cost of $63.9 million, the White Tanks Regional Water Treatment Plant was placed in service November 30, 2009. This was the culmination of a regional planning process dating back to the mid 1990s. Annual ground water savings in the first year of the Plant's operation are estimated to be three billion gallons.

This plant has allowed the Company to aggressively pursue the reduction of future wells in the Agua Fria Water District. Arizona-American is coordinating with MWD to provide portions of its Agua Fria River water allocation to developers for treatment and delivery to Arizona-American's future customers residing within the Agua Fria Water District. Arizona-American estimates that this agreement would result in up to 21,000 acre-feet per year of additional surface water being available for direct treatment and delivery at build-out of the Agua Fria Water District. This initiative will also eliminate the need for associated groundwater treatment facilities required to address the contaminants prevalent in the Agua Fria Water District, such as arsenic, nitrates, and fluorides. Significant future O&M costs for treatment plants will also be avoided.

Sierra Montana Storage Tank (Agua Fria)

The 2.2 million gallon Sierra Montana Storage Tank was placed in service on December 8, 2008 to increase storage capacity at Arizona-American's Water Plant 8. The added capacity was needed to address an existing storage capacity deficit in the service area and accommodate additional water supplies from Waddell Haciendas Well and from Water Plant 4. This additional storage capacity also allowed Water Plant 8 to meet projected summer peaking demands of 3.5 MGD, in addition to fire-flow requirements. The total project cost for this storage tank was $1,796,175.

Route 303 Waterline Relocation (Agua Fria)

The Arizona Department on Transportation (ADOT) embarked on a major upgrade of Route 303 in the fall of 2008. ADOT required relocation of the Company's waterlines at the Company's expense in locations where the ADOT right of way pre-dated the installation of the Company's waterline. To minimize customer costs, the Company contracted with the firms retained by

ADOT to design and construct the intersection crossings. The relocation project design began in September 2008, and was placed into service on March 31, 2010, at a total project cost of $372,727.

Big Bend Acres Storage Tank (Mohave)

The Company completed a comprehensive planning study of the Mohave Water District in 2008. The study identified an urgent need to replace the aging 125,000 gallon bolted steel tank, the Big Bend Acres Storage Tank, which had severe deterioration and leaking in its lower section. There was also an existing storage deficit in that water zone of approximately 1.71 million gallons. This deficit will be partially addressed by the new 250,000 gallon tank, which was placed into service on November 26, 2008 at a total project cost of $643,834.

Lake Mohave Highlands Storage Tank (Mohave)

The Lake Mohave Highlands Storage Tank resulted from the Company's comprehensive planning study of the Mohave Water District. The existing welded steel tank is approximately forty years old and is seriously corroded, with a capacity of 110,000 gallons. The total storage requirement for this zone is 143,381 gallons. The tank cannot be taken off-line for further examination and possible repairs, since there is no other storage available. A 150,000 gallon welded steel tank is expected to be completed in March 2011 at an approximate total project cost of $660,171.

I INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND TELEPHONE NUMBER.

A. My name is Joseph E. Gross. My business address is 2355 West Pinnacle Peak Road, Suite 300, Phoenix, Arizona 85027, and my telephone number is 623-445-2401.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by American Water Works Service Company as Director of Engineering for Arizona, New Mexico, and Hawaii.

Q. PLEASE BRIEFLY OUTLINE YOUR RESPONSIBILITIES IN ARIZONA AS THE DIRECTOR OF ENGINEERING.

A. I am responsible for the planning, programming, and project delivery of Arizona-American's capital program; first providing input to the budgeting process, then providing oversight of the design and construction contracts to ensure compliance with assigned budget and schedule.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND.

A. I received a Bachelor of Science degree from the United States Military Academy in civil engineering and a Master of Science degree from the Ohio State University in Geodetic Science.

Q. PLEASE DESCRIBE YOUR PROFESSIONAL EXPERIENCE.

A. I joined Arizona-American in October 2004. I was previously employed by the City of Scottsdale for fourteen years in the positions of Capital Project Management Director, Water Campus Project Director, and Water Resources Engineering Director. Before that, I had extensive field-level and executive-level experience in the US Army Corps of

Engineers, including large projects located in the United States, Iran, and Saudi Arabia. Among other responsibilities, I supervised the Corps' extensive flood-control projects in the Phoenix metropolitan area from 1979 to 1982.

Q. ARE YOU A REGISTERED PROFESSIONAL ENGINEER?

A. Yes, I am a registered Professional Engineer in the states of Arizona and Pennsylvania.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THIS COMMISSION?

A. Yes. I submitted testimony in Arizona-American's White Tanks hook-up fee case (Docket No. W-1303A-05-0718), its arsenic-cost-recovery mechanism ("ACRM") case for its Agua Fria, Sun City West, and Havasu Water Districts (Docket No. W-01303A-05-0280, *et. al*), its Paradise Valley Water District rate case (Docket No. W-01303A-05-0405), its Sun City Water District rate case (Docket No. W-01303A-07-0209), its multi-district rate case (Dockets No. W/SW-01303A-08-0227) and in its pending rate case involving two water and three wastewater districts (Docket No. W-01303A-09-0343).

II <u>PURPOSE OF TESTIMONY</u>

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS CASE?

A. Please refer to the Executive Summary, which precedes my testimony.

III <u>MAJOR CAPITAL PROJECTS</u>

Q. PLEASE DESCRIBE ARIZONA-AMERICAN'S MAJOR CAPITAL PROJECTS.

A. The following major capital projects were completed well before the end of the test year and are included in the requested rate base:

- White Tanks Regional Water Treatment Plant (Agua Fria)
- Sierra Montana Storage Tank (Agua Fria)
- Route 303 Waterline Relocation (Agua Fria)

- Big Bend Acres Storage Tank (Mohave)

I will next discuss each project in greater detail.

IV WHITE TANKS REGIONAL WATER TREATMENT PLANT (AGUA FRIA)

Q. WHAT IS THE NEED FOR A REGIONAL SURFACE WATER TREATMENT FACILITY IN THE COMPANY'S AGUA FRIA DISTRICT?

A. At a total project cost of $63.9 million, the White Tanks Regional Water Treatment Plant ("White Tanks Plant") was placed in service November 30, 2009. This was the culmination of a regional planning process dating back to the mid 1990s. Annual ground water savings in the first year of the White Tanks Plant's operation are estimated to be three billion gallons. Even though the Commission is very familiar with this project, I would like to present a brief history of this project, which led to Arizona-American's initiative to address serious concerns about regional groundwater depletion.

HISTORICAL CONCERNS

Over the last 50 years, the West Valley has developed largely based upon groundwater resources. As a result, groundwater overdraft and depletion in the area has been severe. An October 1996 study by the Arizona Department of Water Resources (ADWR) reported past groundwater declines of more than 300 feet and land surface subsidence of more than 18 feet in portions of the West Salt River Valley Basin, which comprises the Company's Agua Fria Water District.

Arizona-American and other entities serving the West Valley have access to Colorado River water delivered through canals and other facilities owned by the Central Arizona Project (CAP). However, treatment is required for this water to meet drinking-water standards.

In 1997, a number of western Maricopa County municipalities and private water companies holding CAP water contracts formed WESTCAPS to develop cooperative regional solutions for use of the region's CAP water allocations and other renewable water supplies. This effort was driven by the concerns of ADWR and West Valley water providers about the long-term consequences of continuing to use only groundwater to support current needs and future growth. Continuing to rely solely on groundwater would be imprudent because of accelerated groundwater level declines, land subsidence, declining well-production rates, and the increasing number of wells that could not meet Safe Drinking Water Act water quality standards.

WESTCAPS determined that regional planning was needed to develop the most cost-effective strategy to supply the water needed to support current and future demand in the West Valley. To facilitate the WESTCAPS plan development and the curtailment of groundwater use in the West Valley, ADWR contributed a total of $200,000 toward the study. The U.S. Bureau of Reclamation (BOR) also contributed over $1,000,000 of in-kind services.

In April 2001, WESTCAPS released its Regional Water Supply Plan. The Plan warned that continued reliance on groundwater to support current and future demands would result in long-term groundwater declines that approach or exceed the ADWR Assured Water Supply limit of 1000 feet below land surface. This would also accelerate land-subsidence problems. The Regional Water Supply Plan concluded that the area's water suppliers should maximize their use of CAP water and other surface water resources. To treat that water, WESTCAPS recommended the construction of regional treatment facilities.

One of those treatment facilities has become the White Tanks Regional Water Treatment Plant. The WESTCAPS study recommended the site of the proposed Plant (Cactus and

Perryville Road, on the Beardsley canal) because of its location on the canal and its proximity to multiple water provider service areas. The 45-acre plant site is large enough to support a facility that can ultimately treat up to 80 million gallons per day (MGD).

ALTERNATIVES CONSIDERED

The alternative to the White Tanks Plant would have been business as usual—continued reliance on groundwater supplies. WESTCAPS and Arizona-American did not believe that this option would be wise for several reasons.

In the Agua Fria Water District, Arizona-American and developers have found it increasingly difficult to locate and obtain suitable well sites. ADWR well-spacing regulations have made the permitting of high capacity wells extremely difficult. Flow rates in many new wells south of Greenway Road have been disappointing, and several wells drilled or tested for potable water supply in this area have proven completely unusable. Further, most new wells in this area have required costly arsenic treatment facilities to meet potable water standards. Levels of fluorides and nitrates are also troubling and generally require additional high-cost treatment.

Even if high-quality, high-yield wells could be found, continuing to drill wells would be contrary to public policy. Groundwater modeling studies conducted by ADWR and BOR warn that continued reliance on groundwater would cause unacceptable groundwater level declines and accelerate land-subsidence problem. Also, the WESTCAPS study concluded that the area's water suppliers should maximize their use of CAP and other surface water resources. Finally, the Commission has strongly encouraged utilities under its jurisdiction to make full use of surface-water resources, which cannot be delivered to customers without treatment.

PROJECT BACKGROUND

In 2002, Arizona-American took the initiative on the regional surface water treatment plant concept by purchasing a 45-acre parcel of land at the site identified in the WESTCAPS Regional Water Supply Plan. In 2003, Arizona-American signed a contract for design and construction of the initial phase of the Plant with the Joint Venture of Black and Veatch (design and engineering) and Western Summit Constructors, Inc. (construction). The White Tanks Plant was programmed for construction in phases. The permitted reliable capacity of the initial phase of the plant is 13.4 MGD and that now provides the base load for Arizona-American's current customers in the Agua Fria Water District. Reliable capacity is defined in the Arizona Department of Environmental Quality (ADEQ) Bulletin 10, Guidelines for the Construction of Water Systems, as follows: "With one unit or item out of service, the remaining units or items shall meet the design capacity of the plant." Additional phases can eventually be added, depending on the rate of development in the region, for a total treatment capacity of approximately 80 MGD.

Upon finalization of design, Arizona-American issued an invitation for bids to contractors in early 2007. The low bidder was Garney Construction, which began construction in the fall of 2007. The initial phase of the White Tanks Plant cost $63,897,069.37, was placed in service on November 30, 2009, and has been serving Arizona-American's existing customers since that time. Annual groundwater savings in the first year of the Plant's operations are estimated to be three billion gallons. The source of surface water is Arizona-American's CAP-water subcontract for 11,093 acre-feet per year, which requires treatment prior to delivery to current Agua Fria Water District customers.

This major project was placed into service six months earlier than estimated in previous testimony; at a cost within one per cent of the estimated project cost. Additionally, the

Company's change of water supply from groundwater to surface water was accomplished with no customer complaints concerning perceived changes in taste and odor; a circumstance which has plagued other water providers when changing water source.

Q. PLEASE DESCRIBE THE EXISTING WHITE TANKS REGIONAL WATER TREATMENT PLANT.

A. The White Tanks Plant consists of the following major components:

- A surface water intake structure on the Beardsley Canal, with associated fixed screening, automated gate structure, flow meter, piping and controls. As is standard practice, design and construction of this facility was accomplished by the Maricopa County Municipal Water Conservation District Number One (MWD), with reimbursement from the White Tanks project.
- Mechanical bar screen, which provides fine screens to remove additional debris from the intake structure.
- Pretreatment chemical feed facility, which controls algae and addresses possible taste and odor issues.
- Two 10 million gallon raw water reservoirs, with associated pumping station. These facilities assure a continuous flow of surface water to the plant during short-term outages of water, or water quality variations, from the Beardsley Canal.
- Water treatment facilities, including mixing, flocculation, dissolved air floatation clarification, and filtration. These facilities provide a reliable plant treatment capacity of 13.4 MGD. As stated earlier, reliable capacity is defined by ADEQ as the plant capacity with one unit or item, such as a clarifier, pump, tank, or filter, out of service.
- Finished water and disinfection facilities, including ultraviolet light disinfection, chlorination, storage basins and pumping station.

- Residual processing facilities, including dissolved air flotation solids removal, filter backwash, filter-to-waste system, wastewater clarifiers, return flow pumping, and sludge drying beds.
- Chemical feed and storage facilities.
- Administrative and control facility, which includes staff offices, process laboratory, and maintenance area.
- 1.1 mile of 48" diameter concrete cylinder transmission main, which provides treated water from the plant to the existing transmission system in Agua Fria Water District.
- Emergency generator to allow the White Tanks Plant to continue to treat 13.4 MGD of surface water in the event of a power outage.

Please see Exhibit JEG-1 for an overall plant site plan, to include locations for future expansion. Plant operations and maintenance activities during the past year have validated the design criteria for this plant, and will be addressed in the testimony of Mr. Ian Crook.

Q. HAS THE OPERATION OF THE WHITE TANKS PLANT ALLOWED THE COMPANY TO REDUCE THE NUMBER OF REQUIRED WELLS PROVIDED BY DEVELOPERS?

A. Yes. The Company has aggressively pursued the reduction of future wells in the Agua Fria Water District by amending its master agreements with developers in the area. For example:

(1) In the Liberty Vistas 303 Business Park, the Company eliminated the requirement for a well producing a minimum of 337 gallons per minute (gpm).

(2) The Company's agreement with Prasada Commercial includes the deletion of one well in exchange for the developer constructing one mile of transmission main for future surface water delivery.

(3) The Company's agreement with Citrus & Northern, LLC was amended to require an additional well site only, rather than a functioning well, for the White Tanks Foothills Development. The Company currently foresees no need to develop the well site.

(4) The Company's agreement with Meritage Homes for residential development at Sedella is being negotiated to require additional surface water rights in lieu of a functioning groundwater well.

Future agreements with developers will be negotiated to require additional surface water rights in lieu of additional wells. Arizona-American is coordinating with MWD to provide portions of its Agua Fria River water allocation to developers for treatment and delivery to Arizona-American's future customers residing within the Agua Fria Water District. Arizona-American estimates that this agreement would result in up to 21,000 acre-feet per year of additional surface water being available for direct treatment and delivery at build-out of the Agua Fria Water District. This initiative will also eliminate the need for associated groundwater treatment facilities required to address the contaminants prevalent in the Agua Fria Water District, such as arsenic, nitrates, and fluorides. Significant future O&M costs for treatment plants will also be avoided.

Q. IS WHITE TANKS PRESENTLY THE ONLY SURFACE WATER TREATMENT PLANT IN THE WESTCAPS STUDY AREA? IF SO, WHY?

A. Yes. The current site of the White Tanks Plant was preferable to other sites mentioned in the WESTCAPS study, due to its elevation within the service area and its proximity to the Beardsley Canal. Since the plant can be expanded sequentially in the future to a total capacity of 80 MGD, it is envisioned that other regional water providers would be able to purchase capacity in an expanded plant to meet their future needs.

V SIERRA MONTANA STORAGE TANK (AGUA FRIA)

Q. WHAT IS THE SIERRA MONTANA STORAGE TANK?

A. This 2.2 million gallon storage tank was placed in service on December 8, 2008 to increase storage capacity at Arizona-American's Water Plant 8. The added capacity was needed to address an existing storage capacity deficit in the service area and accommodate additional water supplies from Waddell Haciendas Well and from Water Plant 4. This additional storage capacity also allowed Water Plant 8 to meet projected summer peaking demands of 3.5 MGD, in addition to fire-flow requirements. The total project cost for this storage tank was $1,796,175.

VI ROUTE 303 WATERLINE RELOCATION (AGUA FRIA)

Q. PLEASE DESCRIBE THE ROUTE 303 WATERLINE RELOCATION PROJECT.

A. The Arizona Department on Transportation (ADOT) embarked on a major upgrade of Route 303 in the fall of 2008. A number of the Company's waterlines existed within the ADOT right of way and were in conflict with new road underpasses, drainage structures, sound walls, etc. ADOT required relocation at the Company's expense in locations where the ADOT right of way pre-dated the installation of the Company's waterline. The waterlines affected were in the vicinity of the intersections of Route 303 with Bell and Waddell Roads. To minimize customer costs, the Company contracted with the firms retained by ADOT to design and construct the intersection crossings. The relocation project design began in September 2008, and was placed into service on March 31, 2010, at a total project cost of $372,727.

VII BIG BEND ACRES STORAGE TANK (MOHAVE)

Q. WHY DID THE COMPANY REPLACE THE BIG BEND ACRES STORAGE TANK?

A. The Company completed a comprehensive planning study of the Mohave Water District in 2008. The study identified an urgent need to replace an aging 125,000 gallon bolted steel tank which had severe deterioration and leaking in its lower section, to the point of being non-repairable. Upon examination of the tank, it was evident that sand accumulation on the floor of the tank over a 30-year period had stressed the connections between the tank's floor and siding. Wells in Mohave County tend to generate relatively high quantities of sand, which gradually accumulates on the base of associated storage tanks. When only one tank exists within a system, there is no way to take it off line for sand removal without disrupting service to customers. There was also an existing storage deficit in that water zone of approximately 1.71 million gallons. This deficit will be partially addressed by the new 250,000 gallon tank, which was placed into service on November 26, 2008 at a total project cost of $643,834. The Company's comprehensive planning study also identified the need for additional storage in this zone. Remediation of this deficit is currently programmed in the Company's business plan as a future year project.

VIII POST-TEST YEAR CAPITAL PROJECTS (MOHAVE)

Q. ARE THERE ANY CAPITAL PROJECTS THAT ARIZONA-AMERICAN EXPECTS TO COMPLETE BEFORE COMMISSION STAFF COMPLETES ITS ENGINEERING AUDIT IN THIS CASE?

A. Yes. The Lake Mohave Highlands Storage Tank (Mohave Water) should be completed in time for the Commission Staff engineering report in this case. This project also resulted from the Company's comprehensive planning study of the Mohave Water

District. The existing welded steel tank is approximately forty years old and is seriously corroded, with a capacity of 110,000 gallons. The total storage requirement for this zone is 143,381 gallons. The tank cannot be taken off-line for further examination and possible repairs, since there is no other storage available. Customers would be out of service for the entire time required for tank upgrade. The condition of the existing tank has resulted in a Notice of Opportunity to Correct being received from ADEQ, requesting immediate action to improve the storage situation in this zone. A 150,000 gallon welded steel tank is expected to be completed in March 2011 at an approximate total project cost of $660,171.

Q. DOES THIS PROJECT MEET THE CRITERIA FOR WARRANTING RATE BASE RECOGNITION OF POST – TEST YEAR PLANT?

A. Absolutely. The Lake Mohave Storage Tank project meets each of the conditions reflected in Commission Decision No. 71410:

a. The estimated project cost of $660,171 is significant and substantial.

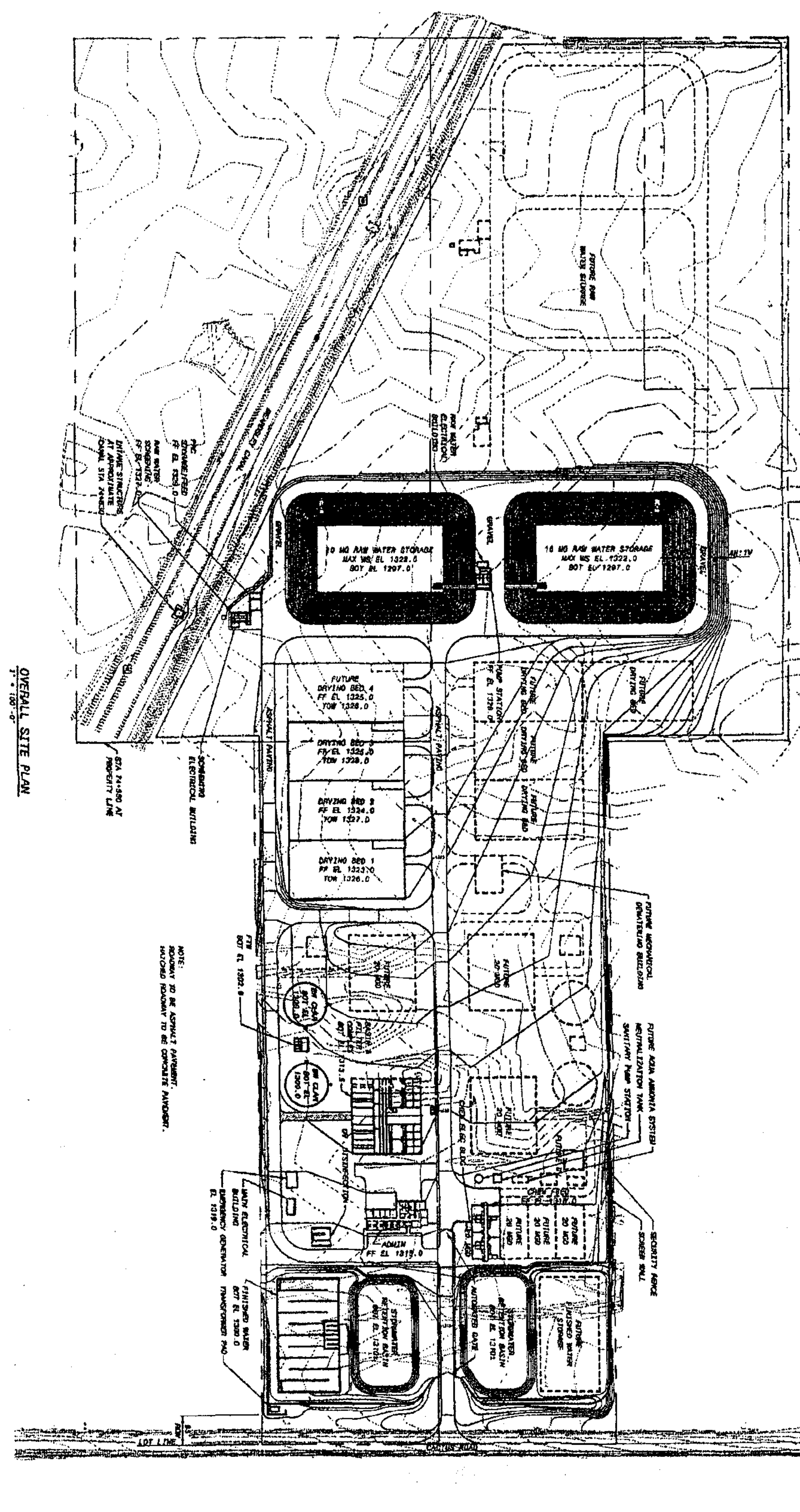
b. This project is revenue neutral.

c. This project is prudent and necessary to provide adequate storage to our customers in the Lake Mohave Highlands system; and reflects appropriate, efficient, effective, and timely decision-making.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes.

EXHIBIT JEG-1 WHITE TANKS SCHEMATIC



WHITE TANKS WTP ARIZONA-AMERICAN WATER COMPANY MARICOPA COUNTY, ARIZONA CIVIL OVERALL SITE PLAN	BLACK & VEATCH Black & Veatch Corporation Phoenix, Arizona		

DESIGNED: ICS
DETAILED: RSM/RDE
CHECKED:
APPROVED:
DATE: 01/30/04
PROJECT NO. 136589
AM SHEET NO.
SHEET NO. C1000

DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP
03/04/04	GENERAL REVISIONS	B	RDE		
01/30/04	DESIGN MEMO	A	RDE		

EXHIBIT

A-26

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

GARY PIERCE, Chairman
BOB STUMP
PAUL NEWMAN
SANDRA D. KENNEDY
BRENDA. BURNS

IN THE MATTER OF THE APPLICATION OF ARIZONA-AMERICAN WATER COMPANY, AN ARIZONA CORPORATION, FOR A DETERMINATION OF THE CURRENT FAIR VALUE OF ITS UTILITY PLANT AND PROPERTY AND FOR INCREASES IN ITS RATES AND CHARGES BASED THEREON FOR UTILITY SERVICE BY ITS AGUA FRIAWATER, HAVASU WATER AND MOHAVE WATER DISTRICTS	DOCKET NO. W-01303A-10-0448

REBUTTAL TESTIMONY
OF
JOSEPH E. GROSS
ON BEHALF OF
ARIZONA-AMERICAN WATER COMPANY
JULY 15, 2011

REBUTTAL TESTIMONY
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EXECUTIVE SUMMARY

Joseph E. Gross rebuts the direct testimony of Ms. Hains relating to the disallowance of four plant components at the White Tanks Plant.

Mr. Gross also rebuts Ms. Hains testimony relating to the fluoride injection system and sodium fluoride injection.

Mr. Gross explains why the use of the CAP allocation by Dr. Fish to calculate a daily production figure is not meaningful. He also explains in detail why the 2.45 MG of on-site finished water storage does not restrict plant production as Dr. Fish claims. Next, Mr. Gross rebuts Dr. Fish's reliance on the MWD proposal for the White Tanks Plant and the claim that the Plant is not a regional facility.

Mr. Gross rebuts the testimony of Mr. Duffett relating to the capacity of the White Tanks Plant and explains why the Company's CAP allocation does not support a determination of how much of the White Tanks Plant is used and useful.

Mr. Gross rebuts RUCO's recommendation that the Commission disallow inclusion in rate base of the Sierra Montana Reservoir, the Big Bend Acres Storage Tank and the Lake Mohave Highlands Storage Tank.

I INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND TELEPHONE NUMBER.

A. My name is Joseph E. Gross. My business address is 2355 West Pinnacle Peak Road, Suite 300, Phoenix, Arizona 85027; and my telephone number is 623-445-2401.

Q. ARE YOU THE SAME JOSEPH E. GROSS WHO PREVIOUSLY SUBMITTED TESTIMONY IN THIS CASE?

A. Yes.

I PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS CASE?

A. I will respond to certain portions of the direct testimony submitted by Staff witness Dorothy Hains and RUCO witnesses Thomas Fish and Royce Duffett.

II WHITE TANKS PLANT

A RESPONSE TO DOROTHY HAINS

Q. MS. HAINS RECOMMENDS DISALLOWANCE OF EXPENSES ASSOCIATED WITH FOUR PLANT COMPONENTS, CLAIMING THAT THEY ARE EXCESS CAPACITY. DO YOU AGREE?

A. No. I agree that four of the Plant's components were sized to handle a capacity of 40 million gallons per day (MGD), which does exceed the Plant's current firm capacity of 13.4 MGD and total capacity of 20 MGD. However, these were prudent engineering decisions that will ultimately save customers money. I will address the rationale for these engineering decisions for each type of component.

Intake Structure (Canal Turnout): Design and construction of the Plant's intake structure was accomplished by Maricopa County Municipal Water Conservation District #1 (MWD), based upon its current standards and its significant experience with expansion issues involving similar facilities. MWD retains ownership of this structure and responsibility for design and construction, although the design and construction costs were assigned to this project. Because the construction of the Canal Turnout requires the prolonged shutdown of the Beardsley Canal, which supplies water to many other users besides the White Tanks Plant, MWD was very clear in its intention to not permit incremental Canal Turnout upsizing as the White Tanks Plant was expanded up to 40 MGD. MWD's letter, attached as exhibit JEG-1, clearly states its rationale for a 40 MGD intake structure.

40 MGD Capacity Raw Water Storage Supply Pipe, Raw Water Pump Suction Pipe and Raw Water Bypass Pipe. The layout of the White Tanks Plant makes it impractical and very costly to incrementally upsize the raw water storage supply pipe, the raw water pump suction pipe, and the raw water bypass pipe as the plant total capacity is increased from its current size to 40 MGD. An additional raw water storage supply pipe would require disrupting the operation of the intake screening structure; effectively taking the raw water storage facilities off line for an extended period of time. Additional raw water suction piping would require excavating down 35 feet and taking the raw water storage reservoirs and the raw water pump station off line for an extended period of time. Additional raw water bypass piping would require the intake screening structure and the raw water pump station to be taken out of service for an extended period of time. The minor cost savings ($138,624) of initially installing slightly smaller diameter pipes capable of transmitting only 20 MGD would be totally outweighed during future plant expansion by the costs of constructing additional future pipes at significant depths,

demolishing and rebuilding impacted adjoining structures, and disrupting plant operations as described above. Piecemeal construction of these pipes clearly violates good engineering practice and common sense. It makes no sense to disallow this small incremental cost and the Commission should reject this recommendation.

Q. MS. HAINS ALSO RECOMMENDS DISALLOWANCE OF EXPENSES ASSOCIATED WITH FLUORIDE INJECTION EQUIPMENT AND THE INJECTION OF SODIUM FLUORIDE AT THE WHITE TANKS PLANT. DO YOU AGREE?

A. No. At the time of Ms. Hains' inspection, the fluoride system had been completed, but was not currently in use. I disagree with her statement that the "addition of sodium fluoride to the treated water is not necessary". The decision to incorporate a fluoride injection system into the White Tanks design was both prudent and in accord with Federal agencies' guidance on recommended fluoride levels for enhanced dental health. For maximum health benefits of water fluoridation, an important tool in the prevention of tooth decay, the US Health and Human Services Department recommends fluoride content in drinking water in the range of 0.7 to 1.1 milligrams per liter (mgl). Our Agua Fria District customers had previously been provided groundwater with naturally occurring fluoride ranging from 0.6 to 1.7 mgl. The EPA maximum contaminant level for fluoride is 4 mgl. Prior to design, the fluoride level in CAP water was tested at approximately .30 mgl. Therefore, we made the prudent engineering judgment that a fluoride system would be incorporated into the plant to add fluoride if customers requested it. Recent feedback from a small sample of customers has been not to add fluoride to the drinking water.

B RESPONSE TO THOMAS FISH

Q. DR. FISH USES ARIZONA-AMERICAN'S ANNUAL CAP ALLOCATION TO CALCULATE A DAILY PRODUCTION FIGURE FOR THE WHITE TANKS PLANT. DOES THIS HAVE ANY MEANING?

A. No. Although it is mathematically simple to convert an Acre-Feet-per-Year allocation to Million-Gallons-per-Day production, there is no direct relationship between the two as far as relating to the needed capacity of the White Tanks Plant. The Plant's production varies on both a seasonal basis and a daily basis, depending upon customer demands. Varying surface water deliveries are requested by Arizona-American on a monthly basis to CAP, depending upon forecasted system demand and available remaining annual CAP allocation. The only restriction that cannot be exceeded is Arizona-American's annual CAP allocation for the Agua Fria District of 11,093 Acre-Feet (unless we are able to obtain other surface water supplies). From a practical perspective, Arizona-American has more CAP water delivered to the White Tanks Plant in the summer months when it is needed, and less CAP water delivered in the winter months. You simply cannot assume, as Dr. Fish apparently has, that the White Tanks Plant will treat exactly the same amount of water every day, week, and month. No treatment plant is designed or operated that way, nor are power plants, roadways, or other infrastructure serving the public.

Q. DOES THE 2.45 MG OF ON-SITE FINISHED WATER STORAGE RESTRICT PLANT PRODUCTION?

A. No. The on-site storage is required for a number of reasons, but does not restrict White Tanks Plant production levels. The vast majority of the Plant's production is stored in four reservoirs located throughout the Agua Fria District distribution system. It is these reservoirs that provide daily peak-demand response, not the on-site reservoir at the White Tanks Plant. The 2.45 MG on-site finished water reservoir is required primarily to provide filter backwash water, contact time for disinfection requirements, and balancing for minor fluctuations in pumping rates from the variable speed pumps.

Q. DR. FISH REFERS TO MWD'S CLAIMS IN DOCKET NO. W-01303A-05-0718 THAT IT COULD BUILD A LESS COSTLY PLANT THAN ARIZONA-AMERICAN. CAN YOU COMMENT ON DR FISH'S Q&A ON THE VALIDITY OF THAT PROPOSAL?

A. My testimony in Docket W-01303A-05-0718 clearly demonstrated the inappropriateness of the MWD cost estimate. I will not go into the detail here that I did there, but I will summarize some of my points from that Docket.

Arizona-American's cost estimate was based upon:

- Actual land acquisition costs.
- A final design approved by County permitting authorities.
- A firm construction price based on the final design, submitted by the selected contractor after a bidding process.
- A contractually specified project completion date.

Unlike the Arizona-American cost estimate, the MWD cost estimate was made without the benefit of an actual site selection or a detailed plant design. At best, all MWD had was a conceptual design formulated by a consultant hoping to obtain a multi-million-dollar design contract from MWD for an MWD owned plant. The consultant's estimate on time required to complete the plant was also off base, since it failed to consider submission and approval of design by appropriate permitting agencies. These processes routinely require six months to one year for analysis and approval. Finally, MWD's consultant's preliminary cost estimates were in "2008 dollars" and were not indexed up for anticipated cost increases, even though in my professional judgment the MWD plant could not have been completed before 2011.

Q. DR. FISH ARGUES THAT THE WHITE TANKS PLANT IS NOT A REGIONAL FACILITY. IS HE CORRECT?

A. No, he is not. The existing White Tanks Plant has always been referred to as "Phase 1A of a White Tanks Regional Treatment Plant", master planned to be expandable up to 80 MGD capacity. "Phase 1B" of the White Tanks Plant would consist of adding a fourth treatment train which would increase the plant's total capacity to 26.4 MGD and firm capacity to 20 MGD. Future plant expansion depends upon additional water providers contributing to the plant expansion costs, and/or Arizona-American acquiring supplemental water allocations for treatment in the White Tanks Plant. Although the recent slowdown in growth in the Phoenix metro area has delayed participation by other water providers, there is universal agreement that there is inadequate groundwater available to support the long term needs in surrounding water districts and municipalities. As I discussed in my Direct Testimony and Mr. Townsley testifies in his Rebuttal Testimony, to address the critical issue of West Valley's over-reliance on groundwater, WESTCAPS recommended in 2001 that area water providers maximize their use of renewable CAP water and that regional CAP-water treatment plants be constructed. The White Tanks Plant is the first of the regional CAP-water treatment plants recommended by WESTCAPS. I fully expect that some of these water providers that have CAP allocations will be treating their allocations in an expanded White Tanks Plant.

Q. DID ARIZONA-AMERICAN KNOW AT THE BEGINNING OF PLANT CONSTRUCTION THAT HOOK-UP FEES WOULD DROP AS MUCH AS THEY HAVE?

A. No, of course not. While the matter was being processed at the Commission, I doubt that any main-stream economist or Phoenix real-estate professional would have made such a claim. We did not foresee this, nor did RUCO, Commission Staff, or the other parties to Docket W-01303A-05-0718. As we all know, hindsight is always perfect, but no one had the benefit of that hindsight during the time the case was being adjudicated. Still, the White Tanks Plant was needed to allow Arizona-American to utilize its CAP allowance and begin saving three billion gallons of groundwater each year.

By the time it did become more evident that growth would be substantially less than previously projected, much the plant was already constructed at a cost of over $40 million, with additional commitments made for millions of dollars' worth of equipment under fabrication by vendors for delivery to the construction site. Construction contract specifications concerning termination costs would add significantly to the cost of stopping the project in midstream. The most cost-effective option was to complete plant construction, avoid termination costs, and allow Arizona-American to fully utilize its surface water allocation, thus saving billions of gallons of groundwater annually. These groundwater savings have already benefited our existing customers for almost two years and will continue to do so.

C RESPONSE TO ROYCE DUFFETT

Q. MR. DUFFET STATES THAT THE WHITE TANKS PLANT'S CAPACITY IS 20 MGD. IS HE CORRECT?

A. Mr. Duffett's response demonstrates a lack of understanding of the difference between firm plant capacity and total plant capacity. The difference in these two capacities is crucial. No utility constructs critical facilities without redundancy engineered into the design. This redundancy allows for equipment to be taken out of service for maintenance or testing. It also enables a utility to provide reliable "firm" delivery of service even if certain equipment fails. To do less would not be prudent, and I don't believe that the Commission or our customers would find it acceptable if Arizona-American was unable to meet water demands on a hot summer day because it did not design and construct sufficient redundancy into the White Tanks Plant. So, the White Tanks Plant has a total capacity of 20 MGD, but only a firm capacity of 13.4 MGD. In accordance with state and county regulation, this project involves a "permitted firm capacity" (with one treatment train out of service) of 13.4 MGD, based on a "total capacity" (with all three treatment trains in service) of 20 MGD.

Q. MR. DUFFETT TRIES TO ARGUE THAT ARIZONA-AMERICAN'S CAP ALLOCATION SOMEHOW MEANS THAT THE WHITE TANKS PLANT IS NOT USED AND USEFUL. IS THERE ANY VALIDITY TO HIS ARGUMENT?

A. No, absolutely not. The only relationship between million-gallon-per day production rates and Arizona-American's annual CAP allocation is that the annual sum of daily production rates cannot exceed Arizona-American's annual 11,093 Acre-Feet CAP allocation (plus any other surface water that may be available during the year). As I stated earlier in my testimony, Arizona-American has more CAP water delivered to the White Tanks Plant in the summer months when it is needed, and less CAP water delivered in the winter months. The Plant has produced at its "total production capacity" of 20 MGD on a number of days during high-demand summer periods. This allows Arizona-American to make best use of its CAP allocation. No utility water plant produces at its total capacity of water on a flat-line basis 24x7 throughout the year. It is simply not practical.

To further buttress my positions, I note that Commission Staff is very familiar with the history of the White Tanks Plant and participated extensively in Docket No. W-01303A-

05-0718. After further investigation and numerous data requests to clarify facts, Commission Staff Engineer, Ms. Dorothy Hains, has determined, with some minor exceptions previously discussed, that the White Tanks Plant is used and useful for a permitted firm capacity of 13.4 MGD and a total capacity of 20 MGD.

III SIERRA MONTANA RESERVOIR

Q. DR. FISH CHALLENGES RATE-BASE RECOGNITION FOR THE SIERRA MONTANA RESERVOIR. IS THERE ANY BASIS FOR HIS OPPOSITION?

A. No. In the 2005 time frame, the Company became concerned about inadequate storage in the Agua Fria District and contracted with the well regarded professional engineering firm of Brown and Caldwell to produce a Comprehensive Master Plan, which was completed in April 2006. Upon detailed analyses of current demands, Brown and Caldwell made the following recommendation for the Sierra Montana Water Plant on page 7-3:

> Add second 2.2 MG steel storage tank by 2008. Examine the possibility of increasing the volume of this tank up to 2.6 MG.

Arizona-American analyzed this recommendation further and decided to design and construct this project to accommodate recent increases in demands and to provide adequate fire-flow storage. The project was completed in December 2008 and has been used and useful for almost three years.

Q. DR. FISH ALLEGES THAT CONSTRUCTION OF THE WHITE TANKS TREATMENT PLANT NEGATED THE NEED FOR THE SIERRA MONTANA RESERVOIR. DOES THE SOURCE OF WATER HAVE ANYTHING TO DO WITH PROVIDING ADEQUATE STORAGE?

A. Absolutely not. Storage requirements are determined by demand, not by the source of the water to be stored. There is no relationship between storage requirements and a plant's treatment capacity. Commission Staff Witness Ms. Dorothy Hains thoroughly examined this project on site and determined that construction was prudent and that the reservoir is used and useful.

IV <u>BIG BEND ACRES STORAGE TANK</u>

Q. DR. FISH ARGUES THAT THE BIG BEND ACRES STORAGE TANK PROJECT SHOULD NOT BE INCLUDED IN RATE BASE. DO YOU AGREE?

A. No. The existing water storage tank on site had reached the end of its useful life and was leaking badly. It was beyond repair and had to be replaced on site.

Q. DR. FISH CLAIMS THAT A PURPOSE OF THE BIG BEND TANK WAS TO ELIMINATE A STORAGE DEFICIT IN THE WATER ZONE. DO YOU AGREE?

A. No. The new Big Bend Acres storage tank was constructed to replace an existing storage tank that had reached the end of its useful life. The size and capacity of the new tank was limited by the small size of the existing parcel (approximately 150'by 100'), which was further restricted by the fact that the existing storage tank had to remain in service during construction of the new tank. Arizona-American's Comprehensive Planning Study for its Mohave Water District identifies the need for additional storage projects in this service area as appropriate parcels can be identified and acquired. Again, Staff engineer Ms. Hains inspected this project for Staff and verified that it was prudent and used and useful.

V LAKE MOHAVE HIGHLANDS STORAGE TANK

Q. DR. FISH ARGUES THAT THE LAKE MOHAVE HIGHLANDS STORAGE TANK WAS PLACED INTO SERVICE AFTER THE TEST YEAR. IS THIS RELEVANT?

A. No, it is not relevant. This project was placed into service on March 16, 2011, subsequently inspected by Ms. Hains for Commission Staff, and determined to be prudent and used and useful. Staff therefore included the project in its rate base as a post-test-year project, and I urge the Commission to do so.

Q. SHOULD POST TEST YEAR PROJECTS BE ARBITRARILY EXCLUDED FROM RATE CASES?

A. No. Dr. Fish is apparently not familiar with established Commission practice, which allows a project to be included in rate base if it is placed into service prior to Commission Staff's scheduled inspection, is revenue neutral, and is determined by Staff to be prudent and necessary for provision of services. The Lake Mohave Highlands Storage Tank reflects appropriate, effective, and timely decision making and satisfies the Commission's requirements to be included in rate base as a post-test-year plant.

Q. DOES THAT CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes.

Exhibit JEG-1

MWD

April 14, 2011

Mr. Joseph E. Gross, P.E.
Arizona-American Water Company
2355 W. Pinnacle Peak Road, Suite 300
Phoenix, AZ 85027

RE: MARICOPA COUNTY MUNICIPAL WATER CONSERVATION DISTRICT #1 (MWD) INTAKE DESIGN STANDARDS FOR WHITE TANKS REGIONAL WATER TREATMENT PLANT

Dear Mr. Gross:

This letter documents MWD's rationale for the design of the MWD's 40 MGD intake structure for Arizona American Water Company's (AAWC) White Tanks Regional Water Treatment Plant (Plant). It is MWD policy not to construct major modifications to the Beardsley Canal in an inefficient and ultimately more costly incremental manner. Every modification risks possible disruption of water delivery, which could have a major negative impact to MWD's numerous agricultural and M&I customers.

This regional water plant was programmed to be expanded in 20 MGD increments to a maximum capacity of 80 MGD. At the time of the design of the intake structure, it was envisioned that the Plant expansion would progress in the near term based upon AAWC growth projections at that time. Initial expansion of the intake structure was to take place at the same location as the initial structure. This meant that the initial 20 MGD intake would have to be closed during the construction period of 3-4 months. This was unacceptable to MWD and AAWC since the Plant could not treat surface water during that period and presented a potential extended dry up period to accommodate the construction that would jeopardize MWD's ability to deliver to its other customers.

MWD and AAWC, therefore, agreed upon a cost effective design which would allow the intake structure to meet the 40 MGD capacity at minimum additional cost, but AAWC's design would only provide bar screens for 20 MGD which has met the Plant's current peak output during 2010. Additional bar screens can be added later without disrupting water deliveries to the Plant or MWD's other customers. Plant expansions beyond 40 MGD will require a new intake structure further upstream on the Beardsley Canal.

MARICOPA WATER DISTRICT
P.O. Box 900, Waddell, AZ 85355-0900 ◆ (623) 546-8266 ◆ FAX (623) 584-2536

Constructing an intake to only meet the Plant's immediate needs is impractical and not cost effective. MWD has never constructed a turnout or intake to meet only the short term minimum flow requirement. It is too costly to build these intake structures in an incremental manner; and in AAWC's case would totally disrupt operations of the Plant and MWD's deliveries to other customers.

Sincerely,

Don Breeding, P.E.
District Engineer
Maricopa Water District

C: James R. Sweeney, MWD
Glen Vortherms, MWD

EXHIBIT

A-27

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

GARY PIERCE, Chairman
BOB STUMP
PAUL NEWMAN
SANDRA D. KENNEDY
BRENDA. BURNS

IN THE MATTER OF THE APPLICATION OF ARIZONA-AMERICAN WATER COMPANY, AN ARIZONA CORPORATION, FOR A DETERMINATION OF THE CURRENT FAIR VALUE OF ITS UTILITY PLANT AND PROPERTY AND FOR INCREASES IN ITS RATES AND CHARGES BASED THEREON FOR UTILITY SERVICE BY ITS AGUA FRIA WATER, HAVASU WATER AND MOHAVE WATER DISTRICTS	DOCKET NO. W-01303A-10-0448

REJOINDER TESTIMONY
OF
JOSEPH E. GROSS
ON BEHALF OF
ARIZONA-AMERICAN WATER COMPANY
AUGUST 9, 2011

REJOINDER TESTIMONY
OF
JOSEPH E. GROSS
ON BEHALF OF
ARIZONA-AMERICAN WATER COMPANY
AUGUST 9, 2011

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EXECUTIVE SUMMARY

Joseph E. Gross addresses comments made by Staff member Ms. Hains in her surrebuttal testimony and comments made by RUCO witness Dr. Fish concerning the Lake Mohave Highlands Tank project.

I INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND TELEPHONE NUMBER.

A. My name is Joseph E. Gross. My business address is 2355 West Pinnacle Peak Road, Suite 300, Phoenix, Arizona 85027; and my telephone number is 623-445-2401.

Q. ARE YOU THE SAME JOSEPH E. GROSS WHO PREVIOUSLY SUBMITTED TESTIMONY IN THIS CASE?

A. Yes.

II PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS CASE?

A. I would like to address certain comments made by Ms. Hains and Dr. Fish in their surrebuttal testimonies.

III RESPONSE TO STAFF

Q. DO YOU AGREE WITH MS. HAINS' RECOMMENDATION TO DISALLOW THE COST OF THE INTAKE STRUCTURE AT THE WHITE TANKS PLANT?

A. No, I do not. I do agree with Ms. Hains that the intake structure is sized to accommodate 40 million gallons per day (mgd) of surface water from the Beardsley Canal, while the total treatment capacity of this initial phase of the White Tanks Plant is 20 mgd. However, as I attempted to clarify in my rebuttal testimony, MWD, the owner of the intake structure, designed this component at 40 mgd and required that it be that size in order to avoid an extended canal closure during future plant expansions and to avoid the significant costs involved with a future piecemeal expansion of the intake structure. The Company concurred with this engineering judgment, which is just one example of the many project management decisions made throughout the design and construction phases of large projects such as the White Tanks Regional Water Treatment Plant.

Q. DO YOU AGREE WITH MS. HAINS' STATEMENT THAT THERE ARE ADDITIONAL ANNUAL OPERATIONS AND MAINTENANCE COSTS ASSOCIATED WITH THIS 40 MGD INTAKE STRUCTURE?

A. No, I do not. Only the major structural items for the additional intake capacity were constructed at this time in order to avoid future disruptions to canal and plant operations. Operating aspects of the enlarged intake structure; such as the mechanical bar screen, automated intake gate, flow meter, motors, and controls were not installed. Therefore, her statement that "[t]here is also additional annual Operations and Maintenance ("O&M") costs for the larger intake structure" is incorrect.

Q. DO YOU AGREE WITH STAFF'S RECOMMENDED ADJUSTMENT OF $298,399 FOR EXCESS CAPACITY OF THE INTAKE STRUCTURE?

A. No, I do not. However, should the Commission not accept my arguments concerning prudent project management costs and choose to disallow a portion of those costs, Ms. Hains' direct testimony Exhibit DMH-1, page 14, recommends an adjustment of $159,775 for excess capacity of the intake structure. That figure should be used, rather than the $298,399 referenced in Ms. Hains' surrebuttal testimony.

Q. CONCERNING THE FLUORIDE INJECTION SYSTEM, DO YOU AGREE WITH MS. HAINS' COMMENTS REGARDING US ENVIRONMENTAL PROTECTION AGENCY (USEPA) LEVELS FOR FLUORIDE IN DRINKING WATER?

A. No, I do not. Ms. Hains missed the point of my rebuttal testimony on this subject. She is correct that the maximum contaminant level for fluoride in drinking water is specified by USEPA at 4 milligrams per liter (mgl). That standard has nothing to do with the much lower fluoride level recommended by the US Department of Health and Human Services (USHHS) for dental health, which is between 0.7 and 1.1 mgl. Since our customers had previously been receiving groundwater with naturally occurring fluoride levels within that range, a prudent engineering decision was made to provide the capability to increase the fluoride level found in CAP water (currently 0.3 mgl) during treatment to the range recommended by USHHS for improved dental health.

IV RESPONSE TO RUCO

Q. DO YOU HAVE A RESPONSE TO DR. FISH'S RECOMMENDATION TO EXCLUDE THE LAKE MOHAVE HIGHLANDS TANK AS A POST-TEST YEAR PROJECT?

A. Yes. Utilizing the criteria normally used by the Commission for post test-year additions to rate base, I will illustrate why inclusion of this tank in rate base as a post test-year project is appropriate.

1. The $575,000 project represents a significant portion of the Company's total capital investment program of $3.3 million.
2. This project was initiated on an urgent basis in response to a Notice of Opportunity to Correct Deficiencies from the Arizona Department of Environmental Quality, dated August 20, 2009.

3. This project was completed ahead of schedule in order to provide safe and reliable service; not delayed beyond the test year.
4. Replacement of water storage tanks, at significant cost, is not a normal, on-going activity for water utilities.
5. This project is revenue neutral.
6. This project was inspected by Commission Staff and determined to be prudent, used and useful, and necessary for provision of services.
7. This project reflects appropriate, effective, and timely decision making on the part of the Company.

Therefore, I recommend that the Commission include the Mohave Highlands storage tank in rate base in this proceeding.

Q. DOES YOUR SILENCE ON ANY ISSUE RAISED BY ANY PARTY IN SURREBUTTAL TESTIMONY INDICATE YOUR ACCEPTANCE OF THEIR POSITION?

A. No.

Q. DOES THAT CONCLUDE YOUR REJOINDER TESTIMONY?

A. Yes.

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

GARY PIERCE, Chairman
BOB STUMP
PAUL NEWMAN
SANDRA D. KENNEDY
BRENDA. BURNS

IN THE MATTER OF THE APPLICATION OF ARIZONA-AMERICAN WATER COMPANY, AN ARIZONA CORPORATION, FOR A DETERMINATION OF THE CURRENT FAIR VALUE OF ITS UTILITY PLANT AND PROPERTY AND FOR INCREASES IN ITS RATES AND CHARGES BASED THEREON FOR UTILITY SERVICE BY ITS AGUA FRIA WATER, HAVASU WATER AND MOHAVE WATER DISTRICTS	DOCKET NO. W-01303A-10-0448

REJOINDER TESTIMONY
OF
IAN C. CROOKS
ON BEHALF OF
ARIZONA-AMERICAN WATER COMPANY
AUGUST 9, 2011

REJOINDER TESTIMONY
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IAN C. CROOKS
ON BEHALF OF
ARIZONA-AMERICAN WATER COMPANY
AUGUST 9, 2011

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EXECUTIVE SUMMARY

Ian C. Crooks testifies that:

RUCO witnesses Dr. Fish and Mr. Duffett continue to use misleading calculations to support their disallowance of fifty percent of the White Tanks Plant.

A tank maintenance program for the Agua Fria, Mohave and Havasu districts will permit the Company to conduct the same annual tank maintenance program in its Agua Fria Water District, its Mohave Water District, and its Havasu Water District that it has begun in its Sun City Water District.

White Tanks Plant water is only delivered through transmission mains to Agua Fria water plants 4, 5, 8, and 9, and only well water is delivered to Agua Fria water plants 1, 2, and 3.

I INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND TELEPHONE NUMBER.

A. My name is Ian C. Crooks. My business address is 15626 N. Del Webb Blvd., Sun City, AZ 85351; and my telephone number is 623-445-2404.

Q. ARE YOU THE SAME IAN C. CROOKS WHO PREVIOUSLY SUBMITTED TESTIMONY IN THIS CASE?

A. Yes.

II PURPOSE OF REJOINDER TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR REJOINDER TESTIMONY IN THIS CASE?

A. The purpose of my testimony is to respond to portions of the surrebuttal testimonies of RUCO witnesses Thomas H. Fish and Royce A. Duffet, Sun City Grand witness Michael L. Arndt, and intervener Kenneth Hewitt.

III RESPONSE TO RUCO WITNESSES THOMAS A. FISH AND ROYCE A. DUFFETT

A WHITE TANKS REGIONAL SURFACE WATER TREATMENT PLANT

Q. DR. FISH AND MR. DUFFETT REFERENCE 22,418 ACRE FEET PER YEAR (AFY) AS THE PROCESS CAPACITY OF WHITE TANKS AND USE THIS FIGURE IN AN ATTEMPT TO DETERMINE A PERCENTAGE OF THE WHITE TANK PLANT THAT IS USED AND USEFUL. HOW IS THIS NUMBER DERIVED AND IS THIS ACCURATE?

A. Their number is not accurate as it is comparing apples to oranges. In their surrebuttal testimony, Dr. Fish and Mr. Duffett again state, incorrectly, that the White Tanks Plant has the capacity to process 22,418 AFY of surface water. This 22,418 AFY figure is obtained by dividing 365 days per year and converting to this to MGD which would yield 20 MGD process capacity. In this way, they reach an annual CAP water allocation based on the plant producing 20 MGD on a continuous 24/7/365 basis. This 22,418 AFY figure is simply misleading.

Let me use an automotive highway analogy here to explain why this approach is inappropriate. If you were to tally up the total number of cars in a year that drive on a particular Phoenix freeway (I-17 for example) and then divide that number by the number of hours in a year (8,760) you would arrive at a average cars-per-hour loading of the freeway. If you were then to design and construct this freeway based on the average cars-per-hour you would undoubtedly have many fewer traffic lanes installed, automotive gridlock during work-hours, and still relatively light traffic in the middle of the night. It is not the right way to design a freeway and it is not the right way to design a water treatment plant.

As I stated in my rebuttal testimony:

> …it is critical to understand the difference between the permitted firm capacity of 13.4 MGD and total capacity of 20 MGD at the White Tanks Plant. The plant has peaked at 20 MGD to meet high system demands during the summer months but cannot operate constantly and reliably at 20 MGD. This can be seen on the chart provided earlier in my testimony, and is why water treatment plants such as the White Tanks Plant have a permitted firm capacity rating. This is the reliable and continuous rating for the plant. The White Tanks Plant is designed to operate reliably at its firm capacity of 13.4 MGD, not 20 MGD.

As other Company witnesses have also stated in testimony, the White Tanks Plant total capacity is 20 MGD and its firm capacity is 13.4 MGD. The White Tanks Plant can operate at its total capacity of 20 MGD for <u>short periods of time</u> but not on a continuous 24/7/365 basis due to maintenance, equipment failure, and operational activities (backwashing, cleaning, etc.). The White Tanks Plant is designed and permitted to operate reliably at its firm capacity of 13.4 MGD on a continuous 24/7/365 basis. The difference between total capacity and firm capacity is fundamental to the design and operation of utility plants. Utility plants are not designed or intended to operate at total capacity on a continuous 24/7/365 basis, any more than a passenger car's engine is designed to operate at a total output of 7,000 RPM for a continuous basis. Neither will be able to operate reliably for very long at that output. Dr. Fish's and Mr. Duffett's comparison of 22,481 AFY to 20 MGD capacity and 11,093 AFY to 9.9 MGD capacity is misleading and not applicable in determining the White Tanks Plant used and useful capacity.

Q. DR. FISH (PAGE 21) STATES THAT I AM "ATTEMPTING TO DISENGAGE THE AGUA FRIA CAP ALLOCATION AND THE WHITE TANKS PROCESSING CAPACITY." IS THIS STATEMENT CORRECT?

A. No. My intent is the exact opposite. I am attempting to "disengage" the misleading numbers presented in Dr. Fish's and Mr. Duffett's testimony. In their testimonies, they mathematically convert annual CAP allocations and White Tank Plant capacities to different units but do not consider the applicability of such conversion. They are not comparing apples to apples. Dr. Fish and Mr. Duffett continue to use White Tanks Plant total capacity of 20 MGD and 365 days a year to convert and compare plant capacity to Agua Fria's CAP allocation. This comparison is not correct or applicable. As I stated in my rebuttal testimony, the White Tanks Plant reliable firm capacity of 13.4 MGD should be used and less than 365 days should be used because surface water delivery is stopped during the winter months for canal maintenance for 60-90 days. Canal shutdown over the past two winter seasons was 75 and 72 days, respectively. Using 75 days of shutdown or 290 days of operation, the accurate conversion of plant capacity to an annualized CAP allocation is calculated as 13.4 MGD / 0.326 MG/AF * 290 days/year = 11,920 AFY, slightly more than our Agua Fria CAP allocation of 11,093. This is far more appropriate representation of White Tank Plant Capacity than the misleading and overinflated value of 22,418 AFY used by Dr. Fish and Mr. Duffett. The White Tanks Plant capacity is a perfect match for the current Agua Fria annual CAP water allocation.

Q. IN RESPONSE (PAGE 6) TO COMPANY WITNESS MR. TOWNSLEY, DR. FISH STATES THAT HE DID NOT MAKE INCORRECT ASSUMPTIONS IN REGARDS TO PLANT CAPACITY. IS THIS ACCURATE?

A. No. Dr. Fish's assumptions were incorrect and he continues to make the same incorrect assumptions throughout his testimony, as I described above. Dr. Fish comments on page 6, lines 6-9 that:

> "..its [White Tanks] daily output exceeded 20 MGD on several occasions so the 13.4 MGD value does not seem to be a limit on the surface water the plant can process. These values were provided the Company, not assumed by me. "

Dr. Fish is correct that he did not assume the numbers, but he incorrectly uses those values to calculate misleading numbers. Again, Dr Fish simply assumes the White Tanks Plant can run at its total capacity of 20 MGD on a continuous 24/7/365 basis because it "exceed 20 MGD on several occasions" and proceeds to derive the White Tanks Plant annual surface processing capacity at 22,418 AFY (20 MGD converted to AFY). As I stated previously, this assumption is preposterous and without merit. The White Tanks Plant can peak at total capacity of 20 MGD, but cannot run at that rate over extended periods for various operational and mechanical reasons. It can run reliability at its firm capacity of 13.4 MGD.

Q. MR. DUFFETT STATES (PAGE 6) THAT THE INTERNAL REDUNDANCY AT WHITE TANKS IS NEGATED BECAUSE OF STAGNANT GROWTH AND THE CAPACITY OF THE EXISTING WELL FIELDS. IS THIS ASSUMPTION CORRECT?

A. No. Mr. Duffett quotes an excerpt from MCESD that provides guidance on the timing of when to begin the planning for a plant expansion. This excerpt from MCESD has nothing whatsoever to do with building a new plant at a specific permitted firm capacity. The quote that he relies upon relates to plant expansion. Without the internal redundancy as proposed by Mr. Duffett, MCESD would only permit the White Tanks Plant for a firm capacity of 6.7 MGD, not 13.4 MGD as rated today, and at 6.7 MGD firm capacity, the Agua Fria CAP allocation could not be fully utilized on annual basis the White Tanks Plant.

IV <u>RESPONSE TO SUN CITY GRAND WITNESS MICHAEL L. ARNDT</u>

A <u>TANK MAINTENANCE EXPENSES</u>

Q. MR. ARNDT ARGUES AGAINST THE EXPENSE ADJUSTMENTS FOR THE COMPANY'S PROPOSED TANK MAINTENANCE PROGRAM BECAUSE THE COMPANY DID NOT SPEND ANY MONEY ON TANK MAINTENANCE IN THE RECENT PAST. DO YOU AGREE WITH MR. ARNDT'S CONCLUSION?

A. No. The Company has not spent money on a regular tank maintenance program in the Company's Districts because there is no regulatory mechanism to recover the cost associated with an annual tank maintenance program. The Commission recently approved effective January 1, 2011, the Company's Sun City Water District tank maintenance program with an annual expense adjustment of $362,000. Prior to this approval, the Company's Sun City Water District did not spend money on annual tank maintenance either. Today, the Company's Sun City District has a vendor under contract to complete the first year of tank maintenance in the Fall 2011 at an expense equal to the $362,000 authorized. The approval of the tank maintenance program in this rate case will permit the Company to conduct the same annual tank maintenance program in its Agua Fria Water District, its Mohave Water District, and its Havasu Water District.

V RESPONSE TO INTERVENER KENNETH HEWITT

A WATER SOURCE AT WATER PLANTS 1, 2, AND 3

Q. MR. HEWITT STATES (PAGE 10) THAT BASED ON COMMENT MADE BY YOU THAT WHITE TANKS WATER REPLACED WELL WATER IN AREAS SERVED BY WATER PLANTS 1, 2, AND 3. WHAT COMMENTS IS MR. HEWITT REFERRING TO AND IS IT CORRECT?

A. I am not sure of the comments referred to by the Mr. Hewitt, as no reference is given. Regardless, the statement is incorrect. White Tanks Plant water is only delivered through transmission mains to Agua Fria water plants 4, 5, 8, and 9, and only well water is delivered to Agua Fria water plants 1, 2, and 3.

Q. DOES YOUR SILENCE ON ANY ISSUE RAISED BY ANY PARTY IN SURREBUTTAL TESTIMONY INDICATE YOUR ACCEPTANCE OF THEIR POSITION?

A. No.

Q. DOES THAT CONCLUDE YOUR REJOINDER TESTIMONY?

A. Yes.

EXHIBIT A-28

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

GARY PIERCE, Chairman
BOB STUMP
PAUL NEWMAN
SANDRA D. KENNEDY
BRENDA. BURNS

IN THE MATTER OF THE APPLICATION OF ARIZONA-AMERICAN WATER COMPANY, AN ARIZONA CORPORATION, FOR A DETERMINATION OF THE CURRENT FAIR VALUE OF ITS UTILITY PLANT AND PROPERTY AND FOR INCREASES IN ITS RATES AND CHARGES BASED THEREON FOR UTILITY SERVICE BY ITS AGUA FRIA WATER, HAVASU WATER AND MOHAVE WATER DISTRICTS

DOCKET NO. W-01303A-10-0448

SECOND REBUTTAL TESTIMONY
OF
JOSEPH E. GROSS
ON BEHALF OF
ARIZONA-AMERICAN WATER COMPANY
NOVEMBER 17, 2011

**SECOND REBUTTAL TESTIMONY
OF
JOSEPH E. GROSS
ON BEHALF OF
ARIZONA-AMERICAN WATER COMPANY
NOVEMBER 17, 2011**

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I EXECUTIVE SUMMARY

Joseph E. Gross rebuts the direct testimony of Glenn A. Watkins relating to the White Tanks Regional Water Treatment Plant (WTRWTP) being used and useful.

Mr. Gross also rebuts Mr. Watkins' testimony relating to the permitted capacity of the WTRWTP.

Mr. Gross further rebuts Mr. Watkins' testimony referring to the WTRWTP as a stand alone facility.

Mr. Gross rebuts the direct testimony of John Shaw, P.E. regarding the cost of surface water treatment in Agua Fria Water District compared to the cost of recharge and recovery.

Mr. Gross also rebuts Mr. Shaw's testimony alleging that the WTRWTP can only treat 9.9 million gallons per day (mgd) of CAP surface water.

I INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND TELEPHONE NUMBER.

A. My name is Joseph E. Gross. My business address is 2355 West Pinnacle Peak Road, Suite 300, Phoenix, Arizona 85027; and my telephone number is 623-445-2401.

Q. ARE YOU THE SAME JOSEPH E. GROSS WHO PREVIOUSLY SUBMITTED TESTIMONY IN THIS CASE?

A. Yes.

II PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. Please see the Executive Summary of my testimony.

III WHITE TANKS PLANT

A RESPONSE TO GLENN A. WATKINS

Q. IS THE WHITE TANKS PLANT USED AND USEFUL?

A. Absolutely. After construction was complete, the White Tanks Plant received its Permit to Operate from the Maricopa County Division of Environmental Services (MCESD) and it has been providing treated surface water to customers for two years. The Commission Staff, which has been involved with this project for almost six years, has determined this project to be used and useful, with minor exceptions noted in its direct testimony. Mr. Watkins has developed his own interpretation of a used and useful status; however, the plant has met all the criteria utilized by Staff in its determination.

Q. WHAT IS THE PERMITTED FIRM CAPACITY OF THE WHITE TANKS PLANT?

A. In his testimony, Mr. Watkins attempts to confuse the issue of firm capacity of the White Tanks Plant. At times he identifies it as 20 mgd. At other times he concludes that it is 0 mgd. Actually, neither of these conflicting figures is correct. As has been stated in previous testimony, MCESD has issued an Operating Permit for this plant for a firm capacity of 13.4 million gallons per day (mgd); a future expansion to 40 mgd; and a site master plan for an ultimate 80 mgd build-out. In a clarifying e-mail (attached as Exhibit JEG-1) to Commission Staff on April 14, 2011, MCESD also stated that:

> MCESD agrees that the WTRWTP has a total capacity of 20 mgd and has operated up to this capacity. MCESD rates the firm capacity of the plant at 13.4 mgd because there are three identical components of certain process equipment and we must consider that one of them may be out of service.

It is clear that the Maricopa County Agency which is responsible for permitting water treatment facilities considered this project to be rated at 13.4 mgd as the initial phase of a regional water treatment plant, which could be expanded in 20 mgd phases to an ultimate capacity of 80 mgd.

Q. MR. WATKINS CLAIMS THAT AN EXCEPTION TO THE ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY (ADEQ) RULE ON RELIABILITY EXISTS FOR THE WHITE TANKS PLANT SINCE IT IS OUT OF SERVICE DURING DRY-UP OF THE BEARDSLEY CANAL. DO YOU AGREE?

A. I totally disagree with his claim. If a plant emergency in a processing train occurs during the plant's current ten months of annual operation, there is no way to immediately switch over to well water to meet demands. Many wells are shut down during plant operation, as are the arsenic treatment facilities. It would take days to bring the groundwater system up to peak capacity, and the Company would not be able to meet customer demands during that period. A sentence in the ADEQ rule, omitted by Mr. Watkins, states:

> When deciding whether or not to install more than one unit, the consequences of failure of that unit should be considered.

The Company, as a public water provider, has definitely considered those consequences in the design of this plant.

Q. WAS THE CURRENT PROJECT EVER CONSIDERED BY THE COMPANY TO BE A STAND ALONE FACILITY?

A. Absolutely not. The MCESD permit clearly indicates that the White Tanks Plant was the first phase of a regional facility. In fact, the current plant comprises less than the planned first phase of 20 mgd of firm capacity. As construction was ongoing, and as late as early 2009, the Maricopa Water District, as a potential partner with Arizona-American in the facility, was still attempting to negotiate with the City of Goodyear to have the White Tanks Plant provide Goodyear with water treatment services. The agreement between the Maricopa Water District and Goodyear would have expanded the White Tanks Plant to a firm capacity of 20 mgd by adding the fourth processing train to the existing phase 1a plant structure. Thus, while the White Tanks Plant only treats Arizona-American's CAP water allocation today, the facility is a regional facility in that it will ultimately be able to treat CAP water from other West Valley water providers in addition to Arizona-American.

B <u>RESPONSE TO JOHN SHAW, P.E.</u>

Q MR. SHAW'S STATES IN HIS TESTIMONY THAT, "TREATMENT OF THE COMPANY'S CAP ALLOCATION (AS A SURFACE WATER) IS TYPICALLY,

IN THE INDUSTRY, MUCH MORE EXPENSIVE THAN INJECTING IT INTO THE GROUNDWATER AND LATER REMOVING IT". DO YOU AGREE?

A. No, I do not. Mr. Shaw's statement obscures an important issue which is that in the Agua Fria Water District, Arizona-American was facing a constrained ability to continue to drill wells and pump groundwater. This constraint was due to three factors, (1) difficulty in permitting new groundwater wells in an area that already had many existing wells in place, (2) difficulty in drilling and developing wells that had good production capacity, and (3) difficulty in finding sources of groundwater that were free of contaminants and thus would not need costly treatment.

Let me expand on these constraints one at a time. In regards to the difficulty of permitting new groundwater wells, the Company has found it increasingly difficult to locate a well site where it will not negatively impact other neighboring wells and would be allowed to be permitted by the Arizona Department of Water Resources (ADWR). Rules were created by ADWR to protect existing groundwater well owners from unreasonably increasing damage to their well due to de-watering. This problem is further exacerbated by the high concentration of wells in the West Valley. Finding a location for a new well that does not impact existing wells is now extremely difficult in the Agua Fria Water District.

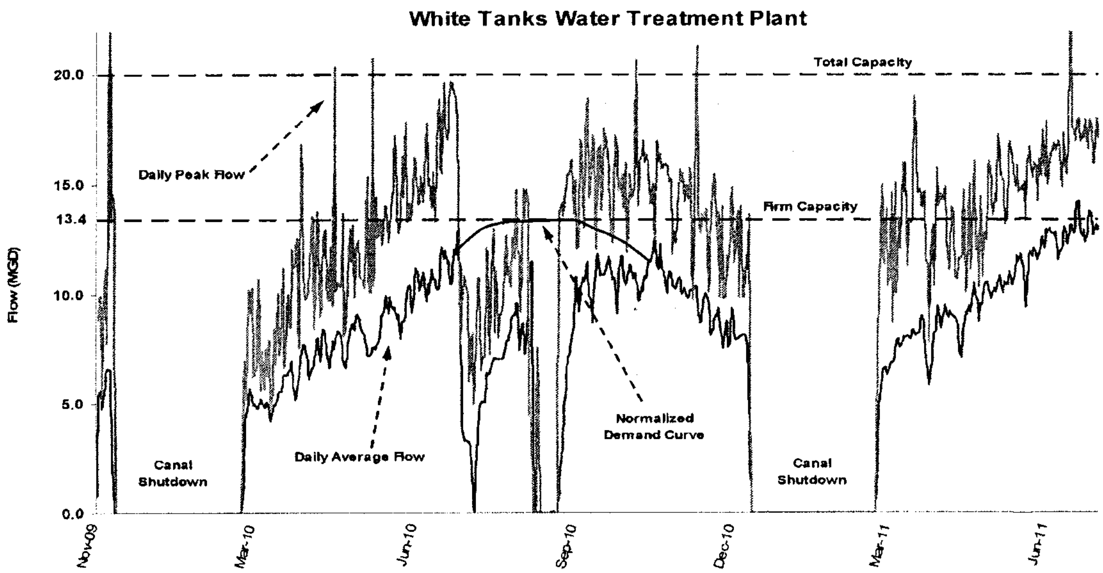
In regards to the difficulty in drilling and developing wells with good production capacity, the current concentration of existing wells limits the production of a new well, since the new well may not impact the existing well's production. This means that a new well must be pumped at a much lower rate than its potential capacity. In addition, the groundwater table is not as productive in the southwestern portion of the Agua Fria service area. Arizona-American and other well owners have found it more and more difficult to be able to drill and equip wells that have adequate production in recent years in these areas.

In regards to the difficulty in finding sources of groundwater which are free of contaminants, thereby not requiring costly treatment, neither Mr. Shaw nor Mr. Watkins even contemplated the water quality constraints affecting the cost of groundwater extraction and treatment to potable standards. In the Agua Fria Water District, EPA-regulated contaminants in groundwater are the rule, not the exception. A majority of wells drilled in the recent past in this District contain nitrates, arsenic and/or fluorides, often in the same well. Arizona-American has built and now operates four treatment facilities in the Agua Fria District to remove the contaminant arsenic from groundwater. These facilities cost between $2.5 million and $3.6 million per site to construct, which was not included in Mr. Shaw's representation. In addition these facilities have an annual operating cost for chemicals, power, labor, and waste disposal which also was not included in Mr. Shaw's assertion. Furthermore, a number of other wells have been abandoned after drilling, due to the cost of required treatment. Disregard of the required capital and operating costs for groundwater treatment results in an erroneous and, therefore, misleading cost comparison.

Q. DO YOU AGREE WITH MR. SHAW'S STATEMENT THAT "AT BEST, THE COMPANY CAN TREAT 9.9 MGD, BASED UPON ITS ANNUAL CAP ALLOCATION."?

A. No. This is an erroneous statement picked up from erroneous testimony by a RUCO witness. As Company witness Ian Crooks indicated in his Rebuttal Testimony, while 9.9 mgd could theoretically mathematically convert 11,093 acre feet per year ("AF/Y") to a daily average mgd, there is no dependent relationship between an annual CAP water allocation and the capacity of the White Tanks Plant.

The White Tanks Plant's production actually varies on both a seasonal basis and a daily basis, depending upon system water demands. Below is a chart which indicates the daily mgd treatment of CAP surface water by the White Tanks Plant from November 2009 until June 2011:



This chart shows that there is significant variation from day to day and from month to month while still allowing the White Tanks Plant to treat our annual AF/Y allocation of CAP water deliveries. Arizona-American has more CAP water delivered to the White Tanks Plant in the summer months—when demands are high and groundwater pumping would otherwise be at a peak—and less CAP water delivered in the winter months. This allows Arizona-American to make best use of its CAP allocation and is why the White Tanks Plant was designed and permitted for 13.4 mgd of firm capacity.

Furthermore, the Beardsley Canal that delivers CAP water to the White Tanks Plant is shut-down for maintenance every year during the winter months. Over the last two winter seasons, the canal shutdown resulted in 75 days and 72 days, respectively, of no surface water being available for treatment at the White Tanks Plant. Simply using Mr. Shaw's mathematical calculation to attempt to convert AF/Y to mgd, based on a 75 day canal shutdown, the 11,093 AF/Y increases from his 9.9 mgd to 12.4 mgd (even assuming surface water deliveries to the plant are in an equal amount every hour and every day throughout the remainder of the year, which was pointed out is not accurate). This 12.4 mgd is far higher than the misleading 9.9 mgd suggested by Mr. Shaw.

Q. DOES THAT CONCLUDE YOUR TESTIMONY?

A. Yes.

From:	Ken James - ENVX
To:	Dorothy Hains (DHains@azcc.gov)
Bcc:	Ken James - ENVX
Subject:	White Tanks Regional Water Treatment Plant [WTRWTP], #07-695
Date:	Thursday, April 14, 2011 7:40:00 AM
Attachments:	image001.png

Dorothy,

Arizona-American Water has asked MCESD to clarify the capacity of the WTRWTP. Per the 6/2/08 design memorandum prepared by Black & Veatch, consultant for the project, "the current design capacity is 20 mgd with a future expansion to 40 mgd and ultimate expansion to 80 mgd" (Ref. page 1-3). MCESD agrees that the WTRWTP has a total capacity of 20 mgd and has operated up to this capacity. MCESD rates the firm capacity of the plant at 13.4 mgd because there are three identical components of certain process equipment and we must consider that one of them may be out-of-service.

Ken James, P.E.
Maricopa County Environmental Services Department
Water and Wastewater Treatment Plant Program
Office: (602) 506-6414
Fax: (602) 506-6925
E-mail: kjames@mail.maricopa.gov | Website: http://www.maricopa.gov/envsvc/

Working with our community to ensure a safe and healthy environment

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

KRISTIN K. MAYES, Chairman
GARY PIERCE
BOB STUMP
PAUL NEWMAN
SANDRA D. KENNEDY

IN THE MATTER OF THE APPLICATION OF ARIZONA-AMERICAN WATER COMPANY, AN ARIZONA CORPORATION, FOR A DETERMINATION OF THE CURRENT FAIR VALUE OF ITS UTILITY PLANT AND PROPERTY AND FOR INCREASES IN ITS RATES AND CHARGES BASED THEREON FOR UTILITY SERVICE BY ITS AGUA FRIA, HAVASU AND MOHAVE WATER DISTRICTS	DOCKET NO. W-01303A-10-

DIRECT TESTIMONY
OF
IAN C. CROOKS, P.E.
ON BEHALF OF
ARIZONA-AMERICAN WATER COMPANY
NOVEMBER 3, 2010

**DIRECT TESTIMONY
OF
IAN C. CROOKS, P.E.
ON BEHALF OF
ARIZONA-AMERICAN WATER COMPANY
NOVEMBER 3, 2010**

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EXECUTIVE SUMMARY

Mr. Crooks testifies as follows:

The gross amount of actual White Tanks Plant O&M expense deferred before subtraction of cost savings resulting from the production shifts from wells to White Tanks Plant was $671,765 through June 30, 2010. The gross amount of actual cost savings resulting from operating the White Tanks Plant was $121,248 as of June 30, 2010. The net deferral, therefore, as of June 30, 2010 is $550,842. This is not the total amount of the White Tanks O&M net deferral being requested for recovery in rates in this case because O&M expense continues to be incurred and deferred until new rates are effective and the deferral's recovery commences.

The Company has included the net deferral amounts through the period November 30, 2011, the date estimated for when new rates in this case will be implemented. Total gross White Tanks Plant O&M expense from in-service through November 30, 2011, is currently estimated to be $3,057,025, the gross realized production savings to be $639,890, and the authorized cost of accrued interest at the prevailing short-term interest rate to be $24,672, for a net total deferral of $2,441,807.

The Company is proposing two changes to irrigation class customers. First, the Company seeks to modify the format of the existing tariff to provide clarity to the customers and Company regarding irrigation use. The proposed tariff will clearly explain to the customers and Company the availability, applicability, special conditions, rates, and terms and conditions for irrigation service. Second, the Company proposes through rate design to expand the irrigation class from a single tier rate with no minimum monthly charge to a single tier rate but with a minimum monthly service charge based on meter size.

The tank maintenance plan for Agua Fria is based on a 15-year schedule for recommended repairs and painting. The estimated yearly maintenance expense annualized over the 15-year cycle is estimated to be $376,478. It is anticipated that this estimated expense would be available for review and adjustment when necessary in subsequent Agua Fria Water District rate cases.

I INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND TELEPHONE NUMBER.

A. My name is Ian C. Crooks. My business address is 15626 North Del Webb Boulevard, Sun City, Arizona. 85351. My business phone is 623-445-2404.

Q. IN WHAT CAPACITY AND BY WHOM ARE YOU EMPLOYED?

A. I am employed by Arizona-American Water Company ("Arizona-American Water" or the "Company") as the Director of Central Division Operations, which includes the Sun City Water and Wastewater Districts, Sun City West Water and Wastewater Districts, and Agua Fria Water and Wastewater Districts.

Q. PLEASE DESCRIBE YOUR PRIMARY RESPONSIBILITIES FOR THE COMPANY.

A. I am responsible for the operation of the water production, water distribution, wastewater treatment, and wastewater collection facilities.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND.

A. I received a Bachelor of Science degree in Environmental Engineering from Pennsylvania State University in 1994. I have also completed various water-related technical courses that include water production and distribution, wastewater treatment, water distribution, water quality protection, cross-connection control, and water and wastewater management.

Q. ARE YOU A REGISTERED PROFESSIONAL ENGINEER OR CERTIFIED OPERATOR?

A. Yes. I am a registered Professional Engineer in the states of Arizona and Pennsylvania and certified as an ADEQ Grade 2 Water Distribution System Operator.

Q. PLEASE DESCRIBE YOUR PROFESSIONAL EXPERIENCE.

A. I joined Arizona-American Water in 2006. My role since January 2010 is Director of Operations for Central Division where I am responsible for the operation and business performance of the Company's water and wastewater services in the Sun City, Sun City West, and Agua Fria Districts. Prior to becoming the Director of Operations, I held the position of Engineering Manager of Developer Services for the Company. I was responsible for the agreements, design, planning, construction, budgeting, and compliance related to development activity for all state districts. Prior to this role, I held the position of Sr. Operations Engineer of Developer Services.

Prior to joining the Arizona-American, I was employed from 2005 to 2006 by NVR, Inc., a national homebuilder, as the Land Development Manager. Before that, from about 1996 forward I was employed by Pennsylvania-American Water Company in Coatesville, Pennsylvania district as Sr. Engineer and for some duration as IT Manager. Prior to that, from 1994 to 1996, I was Engineering Supervisor for Erie City Water Authority. Lastly, my career in the water industry began in 1994 as a water treatment plant operator for the City of Harrisburg Authority.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THIS COMMISSION?

A. Yes, in Arizona-American's two most recent rate cases (Docket No. W-01303A-08-0227 and Docket No. W-01303A-09-0343).

II <u>WHITE TANKS PLANT O&M DEFERRAL (AGUA FRIA)</u>

Q. DECISION NO. 71410 AUTHORIZED THE COMPANY TO DEFER ACTUAL NET WHITE TANKS PLANT O&M EXPENSE FROM ITS IN-SERVICE DATE UNTIL NEW RATES ARE EFFECTIVE. HOW MUCH IS THE DEFERRAL AS OF THE END OF THE TEST YEAR JUNE 30, 2010?

A. The gross amount of actual White Tanks Plant O&M expense deferred before subtraction of cost savings resulting from the production shifts from wells to White Tanks Plant was $671,765 through June 30, 2010. The gross amount of actual cost savings resulting from operating the White Tanks Plant was $121,248 as of June 30, 2010. The net deferral, therefore, as of June 30, 2010 is $550,842 (*i.e.*, $671,765 in White Tanks Plant O&M minus $121,248 in production savings elsewhere plus accrued interest costs of $325).[1] However, this is not the total amount of the White Tanks O&M net deferral being requested for recovery in rates in this case because O&M expense continues to be incurred and deferred until new rates are effective and the deferral's recovery commences.

Q. WHAT IS THE ESTIMATED DEFERRAL AT NOVEMBER 30, 2011?

A. Since Decision No. 71410 indicates that the net deferral - through the date when the next rate order authorizes recovery of these expenses as on-going expenses - shall be recoverable, the Company has included the net deferral amounts through the period November 30, 2011. This is the date estimated for when new rates in this case will be implemented. Total gross White Tanks Plant O&M expense from in-service through November 30, 2011, is currently estimated to be $3,057,025, the gross realized production savings to be $639,890, and the authorized cost of accrued interest at the prevailing short-term interest rate to be $24,672, for a net total deferral of $2,441,807. This total deferral is being requested for recovery in rates over a three-year amortization period without any carrying costs beyond November 30, 2011, by Company witness Mr. Sandra L. Murrey in Adjustment SLM-1 of Schedule C-2.[1] In the event this case's decision occurs after November 30, 2011, the supporting work papers for this adjustment

[1] The detail of the White Tanks Plant deferral amortization is displayed on Page 24, Line 5, of the adjustment summary supporting Adjustment SLM-1. There is further monthly documentation in work papers in a file titled "Amtzn of White Tanks O&M Deferral.xls" and "AF 2009 and 2010 Power and Chemical Costs 10.13.2010.xls."

contain all of the necessary information to extend the quantification of the deferral out to June 30, 2012.

Q. HOW DID YOU DETERMINE THE OFFSETTING PRODUCTION SAVINGS DUE TO THE WHITE TANKS PLANT OF $639,890?

A. The savings is attributable only to the reduction in power and chemical expenses in the Agua Fria Water District (excluding the White Tanks Plant) resulting from the reduced well production because these costs are variable costs which fluctuate directly with production elsewhere in the District. White Tanks production displaces what otherwise would be well production. White Tanks production is delivered to the Aqua Fria District approximately 300 days each year, depending on shutdown of the canal for maintenance. Therefore, I examined Agua Fria district power and chemical expense for the twelve-month period immediately before in-service of the White Tanks Plant and concluded that power and chemicals expenses from December 1, 2008 thru November 30, 2009 would be a reasonable baseline for comparison for periods subsequent to White Tanks Plant being in-service. Again, for periods that actual savings are available, I used actual data in comparison to the baseline, but for beyond and through November 30, 2011, I used the annualized production cost savings as discussed in that section of my testimony. The historical baseline used for this purpose is displayed by month in the work paper file "AF 2009 and 2010 Power and Chemical Costs 10.13.2010.xls".

Q. CAN THE COMPANY PROVIDE PERIODIC UPDATES OF THE ACTUAL NET O&M DEFERRAL?

A. Yes, as additional actual information becomes available due to the passage of time on White Tanks Plant O&M and the offsetting production savings, the Company will provide additional updates in subsequent rounds of testimony, at hearings, in final schedules and at any other time as requested.

Q. HOW DID THE COMPANY DETERMINE WHAT GROSS WHITE TANKS O&M EXPENSES WERE APPROPRIATE AS AUTHORIZED TO DEFER?

A. For capturing actual expenses, the Company established a new business unit #236150 for capturing only direct White Tanks O&M expenses. There were no corporate business unit or service company costs charged or allocated to the deferred expenses except those related to employee benefits for the six employees at White Tanks. From in-service date through June 30, 2010, actual data was used. But for periods beyond and through to November 30, 2011, the annualized White Tanks O&M expenses as discussed in that section of my testimony were used. The gross deferred White Tanks O&M expenses through November 30, 2011 – which rely upon the annualized figures – are derived in work papers cited above.

Q. HOW MUCH HAS WHITE TANKS PRODUCED SINCE ITS IN-SERVICE DATE OF NOVEMBER 30, 2009?

A. From in-service until the end of the test year June 30, 2010, White Tanks produced 1,050,740,000 gallons. White Tanks production on a monthly basis from in-service through September 30, 2010 is as follows:

Month	Volume (kgals)	
11-2009	3,380	(1 day of operation)
12-2009	49,370	(canal shutdown on December 9th)
01-2010	0	(canal shutdown)
02-2010	11,200	(canal in-service February 23)
03-2010	171,967	(normal production volume)
04-2010	224,950	(reduced production, see Q&A in section III below)
05-2010	273,611	(normal production volume)
06-2010	316,262	(normal production volume)
07-2010	187,343	(reduced production, see Q&A in section III below)
08-2010	113,358	(reduced production, see Q&A in section III below)
09-2010	309,848	(normal production)
	1,661,289 kgals	

III WHITE TANKS ANNUALIZED O&M (AGUA FRIA):

Q. SINCE ALL WHITE TANKS ACTUAL NET O&M WAS DEFERRED IN THE TEST YEAR, IT IS NECESSARY TO INCLUDE AN ON-GOING ANNUALIZED AMOUNT OF WHITE TANKS O&M IN THE AGUA FRIA DISTRICT COST OF SERVICE. HOW MUCH HAS THE COMPANY INCLUDED IN RATES REQUESTED IN THIS CASE?

A. The Company included $1,549,627 for a twelve-month normal operating period as included by Company witness Ms. Linda J. Gutowski in various adjustments including Adjustment LJG-20 on Schedule C-2.

Q. DID THE COMPANY DETERMINE THE ANNUALIZED WHITE TANKS O&M SIMPLY BY ANNUALIZING THE ACTUAL EXPENSE TO-DATE FOR ADDITIONAL MONTHS?

A. Yes and no. Yes, as it was appropriate for some categories of O&M expenses such as labor and labor related, but no for some other categories, especially those expenses sensitive to production volumes. Maintenance expenses during the test year at White Tanks were below normal as discussed below.

Q. WHY WERE WHITE TANKS PRODUCTION VOLUMES AND EXPENSE LEVELS BELOW NORMAL FROM NOVEMBER 30, 2009 THROUGH JUNE 30, 2010?

A. Both actual production volumes and (deferred) expense levels were below normal for a number of reasons listed below:

1. Alamo Lake Release - March 28, 2010 thru April 20, 2010 - Due to heavy rains in Arizona during the spring of 2010, Alamo Lake water was required to be released for flood control. This release caused turbidity levels in the CAP canal to increase significantly. As a result, the raw water turbidity at the plant climbed above the initial design parameters of the plant and chemicals on-hand, making treatment difficult. This required a reduction in plant production to maintain quality parameters. During

this event, some Agua Fria Water District wells were brought back on-line to augment White Tank production to meet system demand.

2. Lake Pleasant CAP Construction - June 28, 2010 thru July 31, 2010 – A CAP canal construction project commenced which required switching the canal source water from Colorado River to Lake Pleasant. The Lake Pleasant water supply came from the lake bottom, which again produced high raw water turbidity levels. The decision was made for White Tanks to run at a reduced flow rate to maintain quality parameters over the course of the construction schedule. During this event, some Agua Fria Water District wells were brought back on-line to augment White Tank production to meet system demand.

3. Mechanical Failure of the DAF Compressors – August 12, 2010 through August 23, 2010 - The DAF (dissolved air flotation) compressors failed, leaving the plant incapable of treating the water. The DAF failure was the result of contractor error during White Tanks construction. This shutdown continued until a backup compressor was supplied and installed. Once installed the plant started production again but at reduced flows while the temporary compressors were tested with incrementally increased daily production rates. The plant returned to full production on August 31. During this event, some Agua Fria Water District wells were brought back on-line to augment White Tank production to meet system demand.

4. Lastly, maintenance expenses were below normal because most repair items were replaced or repaired under the one-year construction warranty period. As operating today, the White Tanks operations can be characterized as normal with the exception of the maintenance items still under warranty until November 2010. Thus, the process of continuing to update the deferral with actual data through the conduct of this case will also be helpful to informing whether or not any changes to the annualized White Tanks O&M expenses are appropriate.

In summary, these atypical events caused less White Tank production resulting in lower power and chemical expenses than projected by the Company for a typical year of production and demonstrate the importance of maintaining the operational availability of all of the district's existing wells. For instance, from in-service to June 30, 2010 (test year) total actual production was 1,050,740 thousand gallons (kgals) versus a projected 1,257,593 kgals, a difference of 206,853 kgals, and from in-service to September 30, 2010 total actual production was 1,661,289 kgals versus a projected 2,234,567 kgals, a difference of 573,278 kgals.

Q. GIVEN THAT PRODUCTION WAS BELOW NORMAL THROUGH JUNE 2010, WHAT WAS YOUR SOURCE OF DATA FOR THE NON-LABOR NORMALIZED WHITE TANKS PLANT O&M?

A. I used the 2011 budget for the Aqua Fria District. In developing the budget, I accounted for the reduced production in 2010 and adjusted the production variable non-labor O&M expenses (power and chemical) to a normalized annual production based on historical system demands with White Tanks running approximately 300 days a year without interruption from the atypical events experienced in 2010. Additionally, I estimated annualized maintenance repair expenses (pumps, mechanical, electrical, and other) based on the repair expenses incurred under warranty to date by the contractor and other anticipated future repairs.

IV NEW IRRIGATION CLASS (ALL DISTRICTS)

Q. IS THE COMPANY REQUESTING THE FORMATION OF A NEW CLASS OF IRRIGATION CUSTOMERS WHICH RECEIVE POTABLE WATER?

A. Yes. The Company is proposing two changes to irrigation class customers. First, the Company seeks to modify the format of the existing tariff to provide clarity to the customers and Company regarding irrigation use. In the current Agua Fria tariff, for example, the irrigation rate is simply a line item on the general rates table with no regard to what defines an irrigation customer or the terms and conditions of service. In contrast, the Company's Anthem tariff has separate pages for irrigation service that clearly explain the applicable rates and terms of service. So, the Company is proposing to modify all tariffs in this case in format and content to mirror the Company's Anthem Water District tariff for irrigation service. The proposed tariff will clearly explain to the customers and Company the availability, applicability, special conditions, rates, and terms and conditions for irrigation service. Second, the Company proposes through rate design to expand the irrigation class from a single tier rate with no minimum monthly charge to a single tier rate but with a minimum monthly service charge based on meter size. Although the tariffs for the districts in this rate case have existing irrigation rates, there are very few customers on those schedules due to the lack of clear applicability under existing tariffs. Therefore, the Company proposes to define a new irrigation customer class and, upon implementation of new rates in this case, reclassify existing customers into that class as applicable.

Q. AS A RESULT OF THIS RE-CLASSIFICATION, HOW MANY CUSTOMERS BY DISTRICT WILL BECOME IRRIGATION CUSTOMERS AS COMPARED TO EXISTING IRRIGATION CUSTOMERS?

A. Irrigation customers by district before and after are:

	Existing	After
Agua Fria	6	708
Havasu	0	4
Mohave	0	52

Q. WHY IS THE COMPANY RECOMMENDING THIS CHANGE?

A. Given the emphasis today on water conservation, the Company believes it is appropriate to define and group all of its customers using potable water for irrigation for future benefits such as targeting water conservation programs or specific rate designs. After the change is implemented, the Company will have identified all of its customers using both potable and non-potable water for irrigation purposes.

Q. DO THE RATES REQUESTED IN THIS CASE NOW REFLECT THE VALUE OF POTABLE VERSUS NON-POTABLE WATER FOR IRRIGATION CUSTOMERS?

A. Yes. In Agua Fria district in particular, rates proposed in this case are lowest for treated effluent (e.g., Verrado), raw surface water (e.g., Verrado), raw untreated non-potable groundwater (e.g., Corte Bella) and lastly, highest for potable water.

V TANK MAINTENANCE PROGRAM (AGUA FRIA)

Q. PLEASE EXPLAIN THE PROPOSED TANK MAINTENANCE PROGRAM FOR THE AGUA FRIA WATER DISTRICT.

A. In 2010, the Agua Fria Water District procured the services of Tank Industry Consultants ("TIC") to perform inspection on the oldest tank in the Agua Fria Water District, WP 2 Tank 1, as age is typically the best indicator of maintenance needs. The Agua Fria Water District has sixteen water storage tanks with construction dates ranging from 1996 to 2009. TIC is a professional engineering firm specializing in the design, specification, and evaluation of storage tanks. TIC has offices located throughout the United States and is a national leader in this type of activity.

The scope of services performed by TIC included the performance of a careful study of the tank's interior, exterior, foundation(s) and accessories with a NACE-certified inspector. The resulting report provided to Arizona-American by TIC - which is available in discovery - included a detailed analysis of the tank's condition, recommended maintenance activities, suggested schedule of repairs, and an engineer's estimate of the cost to perform those repairs. The report also included the signature and seal of a Certified Professional Engineer registered in the State of Arizona.

The following activities were noted in the TIC inspection reports:

1. Observations of site conditions, including observations of site access, general site security, site maintenance and foundation deficiencies.
2. Observations of tank exterior conditions, including observations of dimensions of all manholes, vents, condition of exterior coating thickness, coating adhesion and metal corrosion, and baseline dimensions for comparison.

3. Observation of tank interior conditions, including observations of condition of coating thickness, coating adhesion, metal corrosion, and observation of any debris, and baseline conditions for comparison.

4. Recommendations based on all observations, including recommendations on site maintenance procedures and security, life of the interior and exterior coatings and metals, coating rehabilitation methods and rehabilitation schedules and tank rigging equipment repair and replacement.

Q. WHAT IS THE PLAN FOR TANK MAINTENANCE IN THE AGUA FRIA WATER DISTRICT?

A. The tank maintenance plan for Agua Fria is based on a 15-year schedule for recommended repairs and painting. The industry-standard for tank maintenance ranges from 10-15 years depending on tank material and exposure to environmental conditions (water, weather, soil). We chose 15 years for several reasons: 1) the oldest tank in Agua Fria, WP 2 Tank 1, will be 15 years old in 2011 and each year after the next scheduled tank approaches the 15 +/- years old, 2) Agua Fria has sixteen tanks which allows the Company to perform maintenance on one tank per year, with the expectation of one year which includes two tanks because one tank is small at 100,000 gallons, 3) the TIC report on WP2 Tank 1 concludes the tank's interior is in fair to poor condition with widespread corrosion and blistering that should be repaired within the next three years, which supports that 15 years is the appropriate maintenance cycle for the tanks in the Aqua Fria District under the given environmental conditions, and 4) the subsequent tanks are expected to be in similar condition in 15 years because the environmental conditions are relatively similar among all Aqua Fria District tanks,, and 4) the schedule will lessen the impact to both the customer and the Company by keeping maintenance expenses to one tank a year. Please refer to Exhibit **ICC-1** for detailed schedule and estimated costs.

The estimated yearly maintenance expense annualized over the 15-year cycle is estimated to be $376,478, as recommended as an annual revenue stream in the testimony of

Company witness Ms. Linda J. Gutowski. It is anticipated that this estimated expense would be available for review and adjustment when necessary in subsequent Agua Fria Water District rate cases.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes.

Exhibit ICC-1

AQUA FRIA DISTRICT					TANK MAINTENANCE SCHEDULE														
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
SITE NAME	MATERIAL	TANK CAPACITY	APPROX. DIMENSIONS	YR BUILT	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
A.F. WP 1 TANK 1	CONCRETE	1,325,000	75' WIDE, 20' HIGH	2000												X			
A.F. WP 1 TANK 2	CONCRETE	1,325,000	75' WIDE, 20' HIGH	2000													X		
A.F. WP 2 TANK 1	STEEL	1,000,000	108' WIDE, 16' HIGH	1996	X														
A.F. WP 2 TANK 2	STEEL	1,000,000	108' WIDE, 16' HIGH	1996		X													
A.F. WP 3 TANK 1	STEEL	1,000,000	108' WIDE, 16' HIGH	1999				X											
A.F. WP 3 TANK 2	STEEL	1,000,000	108' WIDE, 16' HIGH	1999					X										
A.F. WP 4 TANK 1	STEEL	1,500,000	135' WIDE, 16' HIGH	1998			X												
A.F. WP 4 TANK 2	STEEL	2,000,000	156' WIDE, 16' 3" HIGH	2003						X									
A.F. WP 5	CONCRETE	1,250,000	127' WIDE, 19.6' HIGH, 71' DEEP	2004											X				
A.F. WP 8	STEEL	1,500,000	135' WIDE, 16' HIGH	2004								X							
A.F. WP 8	STEEL	2,200,000	168' Wide, 16' High	2008									X						
A.F. WP 9	STEEL	100,000	135' WIDE, 16' HIGH	2004							X								
A.F. WP 10 TANK 1	CONCRETE	1,735,000	124' WIDE, 20' HIGH	2005														X	
A.F. WP 10 TANK 2	CONCRETE	1,735,000	124' WIDE, 20' HIGH	2007															X
A.F. WP 14	STEEL	2,250,000	155'Wide, 16' High	2009										X					
A.F. WP 100	STEEL	1,250,000	125' WIDE, 18' HIGH	2003							X								
				COST BASIS per TCI REPORT $	305,500										Estimate 50% of the price per gallon for concrete tanks				
				PRICE PER GALLON $	0.305	0.306	0.306	0.306	0.306	0.306	0.306	0.306	0.306	0.306	0.153	0.153	0.153	0.153	0.153
				ESTIMATED COST		305,500	458,250	305,500	305,500	611,000	412,425	458,250	672,100	687,375	190,938	202,394	202,394	265,021	265,021
				TOTAL ESTIMATE PROGRAM COST $	5,647,168														
				AVERAGE 15-YEAR ANNUALIZED COST $	376,478														

EXHIBIT

A-30

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

GARY PIERCE, Chairman
BOB STUMP
PAUL NEWMAN
SANDRA D. KENNEDY
BRENDA. BURNS

IN THE MATTER OF THE APPLICATION OF ARIZONA-AMERICAN WATER COMPANY, AN ARIZONA CORPORATION, FOR A DETERMINATION OF THE CURRENT FAIR VALUE OF ITS UTILITY PLANT AND PROPERTY AND FOR INCREASES IN ITS RATES AND CHARGES BASED THEREON FOR UTILITY SERVICE BY ITS AGUA FRIA WATER, HAVASU WATER AND MOHAVE WATER DISTRICTS	DOCKET NO. W-01303A-10-0448

REBUTTAL TESTIMONY
OF
IAN C. CROOKS
ON BEHALF OF
ARIZONA-AMERICAN WATER COMPANY
JULY 15, 2011

**REBUTTAL TESTIMONY
OF
IAN C. CROOKS
ON BEHALF OF
ARIZONA-AMERICAN WATER COMPANY
JULY 15, 2011**

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EXECUTIVE SUMMARY

Ian C. Crooks testifies that:

The White Tanks Plant has been operational since November 2009 and that it is operating effectively on a firm capacity basis of 13.4 MGD and a total capacity basis of 20 MGD. He shows the actual operating history of the White Tanks Plant to support his position.

He also rebuts certain portions of the direct testimony submitted by RUCO witnesses Thomas Fish and Royce Duffett regarding the White Tanks Plant.

The tank maintenance program funding mechanism proposed by Arizona-American is appropriate and consistent with a recent Commission decision on this topic and rebuts Sun City Grand witness Michael Arndt.

The proposed changes to the water irrigation tariff are appropriate and Mr. Crooks explains why the Company is proposing these changes.

I INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND TELEPHONE NUMBER.

A. My name is Ian C. Crooks. My business address is 15626 N. Del Webb Blvd. Sun City, AZ 85351; and my telephone number is 623-445-2404.

Q. ARE YOU THE SAME IAN C. CROOKS WHO PREVIOUSLY SUBMITTED TESTIMONY IN THIS CASE?

A. Yes I am.

II PURPOSE OF REBUTTAL TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY IN THIS CASE?

A. Please see my Executive Summary.

III WHITE TANKS REGIONAL SURFACE WATER TREATMENT PLANT

A RESPONSE TO THOMAS A. FISH

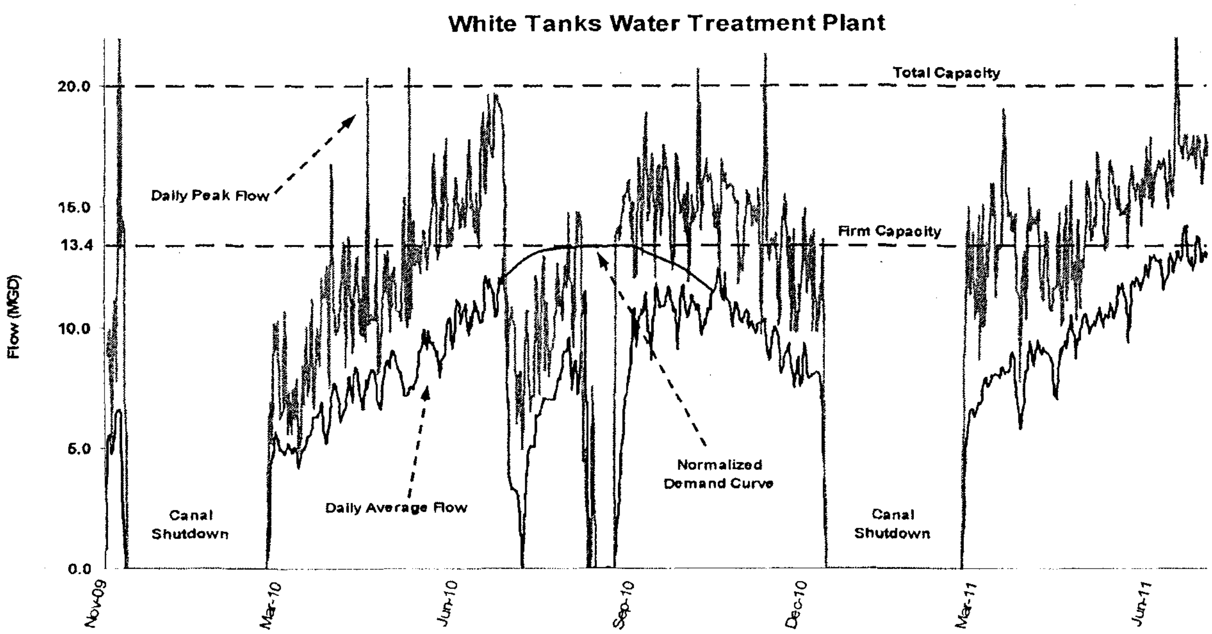
Q. DR. FISH (PAGE 7) STATES THAT "THE TREATED SURFACE WATER DOES NOT REPLACE WELL WATER, BUT SUPPORTS IT WITH THE RESULT THAT WELL WATER USAGE IS REDUCED." IS THIS CORRECT?

A. No. From start-up of the White Tanks Plant in November 2009 until June 2011, the facility has treated 3.7 billion gallons of CAP surface water. This treated surface water has indisputably replaced the pumping of 3.7 billion gallons of groundwater from wells.

Q. DR. FISH (PAGE 16) ATTEMPTS TO SOMEHOW RELATE ARIZONA-AMERICAN'S AGUA FRIA WATER DISTRICT'S ANNUAL CAP ALLOCATION TO THE CAPACITY OF THE WHITE TANKS PLANT. IS HIS CAPACITY CALCULATION ACCURATE OR RELEVANT TO THE AGUA FRIA DISTRICT CAP ALLOCATION?

A. No. For many reasons, it is neither accurate nor relevant. First, on lines 2-4, Dr. Fish states that the White Tanks Plant has a "maximum average" treatment capacity of 20 million gallons of water per day ("MGD"). This is incorrect. The White Tanks Plant has a permitted firm capacity of 13.4 MGD and a total capacity of 20 MGD. Total capacity may also be referred to as the peak capacity of a facility that it can operate during short periods of time. Dr. Fish's continuous use of 20 MGD in his testimony as the maximum average capacity of the White Tanks Plant is wrong. Company witness Mr. Gross explains further why this is wrong in his rebuttal testimony. Second, on lines 5-7, Dr. Fish converts 11,093 acre feet per year ("AF/Y") to a daily average of 9.9 MGD. Although he may have been trying mathematically to convert an AF/Y allocation to MGD production, there is no dependent relationship between an annual CAP water allocation and the capacity of the White Tanks Plant.

The White Tanks Plant's production actually varies on both a seasonal basis and a daily basis, depending upon system water demands. Below is a chart which indicates the daily MGD treatment of CAP surface water by the White Tanks Plant from November 2009 until June 2011:



This chart shows that there is significant variation from day to day and from month to month while still allowing the White Tanks Plant to treat our annual AF/Y allocation of CAP water deliveries.

Third, on lines 5-7, his calculation is based on 365 days of surface water delivery. *This is wrong.* As I stated in my Direct Testimony and explained to Dr. Fish during his brief visit of the White Tanks Plant, untreated surface water is not delivered to the plant in an equal amount every hour and every day throughout the year. Instead, Arizona-American has more CAP water delivered to the White Tanks Plant in the summer months—when demands are high and groundwater pumping would otherwise be at a peak—and less CAP water delivered in the winter months. This allows Arizona-American to make best use of its CAP allocation and is why the White Tanks Plant was designed and permitted for 13.4 MGD of firm capacity.

Furthermore, the Beardsley Canal that delivers CAP water to the White Tanks Plant is shut-down for maintenance every year during the winter months. Over the last two winter seasons, the canal shutdown resulted in 75 days and 72 days, respectively, of no surface water being available for treatment at the White Tanks Plant. Simply using Dr. Fish's mathematical calculation to attempt to convert AF/Y to MGD, based on a 75 day canal shutdown, the 11,093 AF/Y increases from his 9.9 MGD to 12.4 MGD (even assuming surface water deliveries to the plant are in an equal amount every hour and every day throughout the remainder of the year, which as I pointed out is not accurate). This 12.4 MGD is far higher than the misleading 9.9 MGD suggested by Dr. Fish, and demonstrates why his capacity arguments are not credible.

Finally, in lines 17-19, Dr. Fish again incorrectly uses 20 MGD as the White Tanks Plant capacity and attempts to calculate an associated CAP allocation requirement based on the plant production being 20 MGD on a 24/7/365 basis. This is wrong. First, as previously stated, the White Tanks Plant is permitted for a firm capacity of 13.4 MGD and a total capacity of 20 MGD. Second, as I have shown on chart included in this testimony, actual system demand and White Tanks Plant production varies from day to day and season to season, with higher demands in the summer months. Dr. Fish's attempt to directly calculate a levelized plant capacity based on an annual CAP allocation is simply without merit.

B RESPONSE TO ROYCE A. DUFFETT

Q. IN HIS TESTIMONY, MR. DUFFETT'S (PAGE 6-7) ATTEMPTS TO LINK CAP ALLOCATION AND PLANT CAPACITY. IS HIS METHOD APPLICABLE TO THE WHITE TANKS PLANT CAPACITY?

A. No. For the same reasons as I stated above in regards to Dr. Fish's testimony, and as Mr. Gross further explains in his rebuttal testimony, Mr. Duffett's representation of treatment plant capacity and CAP allocation is at best a simple generalization with no applicably to actual water utility operating conditions. Mr. Duffett's table of numbers on page 6, line 7, of his testimony assumes levelized operation for 365 days per year as the basis for the conversion of AF/Y units to MGD units. As an example, Mr. Duffett's table shows the total 2010 White Tanks Plant production as 2,329,480,088 gallons or 6.378 MGD, but Mr. Duffett assumes 365 days of production. This is incorrect. Because of the Beardsley Canal annual shutdown during the winter, and the air compressor failure in August, the total available number of production days was 281 in 2010, not 365. Furthermore, the White Tanks Plant production in 2010 was lower because of the unusual water quality events that year. My direct testimony and responses to RUCO data requests 4.03 and 12.02 clearly provided the number of production days and reduced production volume at the White Tanks Plant in 2010. Mr. Duffett either failed to review or simply ignored my information and therefore his testimony is misleading and inaccurate.

Overall, just as with Dr. Fish, Mr. Duffett's approach to try and back into the White Tanks MDG capacity based on an annual CAP delivery quota is seriously flawed and should be ignored. This same incorrect assumptions and resulting misrepresentations underlie all the numbers presented in Mr. Duffett's testimony.

Q. MR. DUFFETT (PAGE 9, LINES 6-16) STATES THAT THE WHITE TANKS PLANT CAN "OPERATE CONSTANTLY" AT 20 MGD AND THE "TRUE CAPACITY" OF THE PLANT IS 20 MGD. IS THIS STATEMENT ACCURATE?

A. No. As I stated above, and Mr. Gross testifies, it is critical to understand the difference between the permitted firm capacity of 13.4 MGD and total capacity of 20 MGD at the White Tanks Plant. The plant has peaked at 20 MGD to meet high system demands during the summer months but cannot operate constantly and reliably at 20 MGD. This can be seen on the chart provided earlier in my testimony, and is why water treatment plants such as the White Tanks Plant have a permitted firm capacity rating. This is the reliable and continuous rating for the plant. The White Tanks Plant is designed to operate reliably at its firm capacity of 13.4 MGD, not 20 MGD. Mr. Duffett simply ignores this reality.

Q. MR. DUFFETT AND DR. FISH BOTH STATE THAT ALL MUNICIPAL AND INDUSTRIAL ("M&I") CAP WATER IS FULLY ALLOCATED AND THAT ARIZONA-AMERICAN CAN ONLY INCREASE ITS CAP ALLOCATION IF ANOTHER CAP CONTRACTOR TRANSFERS ITS ALLOCATION TO THE COMPANY. IS THIS TRUE?

A. Yes, the M&I CAP water is fully allocated, although this is hardly relevant to whether the White Tanks Plant is used and useful. As I and other witnesses testify, the White Tanks Plant's capacity matches Arizona-American's CAP water allocation for our Agua Fria Water District. Nevertheless, as the need develops there other surface water supplies will likely become available to Arizona-American.

Q. WHAT OTHER SURFACE WATER SUPPLIES MAY BECOME AVAILABLE FOR THE AGUA FRIA WATER DISTRICT?

A. There is a planned reallocation of Non Indian Agriculture ("NIA") water occurring soon. The Arizona Department of Water Resources will be reallocating up to 96,295 AF/Y of this renewable surface water supply in the near future.

Another water supply project has been underway for two years by the Central Arizona Water Conservation District which is responsible for the CAP. This surface water supply project is known as the Acquire, Develop, and Deliver ("ADD") Water project and is looking to acquire up to 300,000 AF/Y of additional renewable surface water and bring that water through the CAP canal to central Arizona. At this time a stakeholder process has been completed and the Central Arizona Water Conservation District Board of Directors will likely be taking action in the coming months.

The Central Arizona Water Conservation District also has another class of surface water currently available to all in its service area. This water class is known as Excess Water and can be ordered by CAP sub-contractors each year, depending on availability.

Finally, Arizona-American is in on-going discussions with Maricopa Water District regarding availability of the District's Agua Fria river surface water rights that could also be treated at the White Tank Plant in the future.

Q. DOES ARIZONA-AMERICAN ANTICIPATE BEING ABLE TO OBTAIN SOME OF THESE ADDITIONAL WATER SUPPLIES IN THE FUTURE?

A. Yes, we anticipate that we will be able to purchase Excess Water on a year to year basis for many years into the future. In addition, Arizona-American could obtain several thousand AF/Y of water in the NIA water reallocation process. Finally, the ADD water process will allow Arizona-American to acquire additional renewable CAP surface water supplies every few years as the ADD Water is allocated to CAP subcontractors

Q. IS ARIZONA-AMERICAN CURRENTLY SEEKING TO ACQUIRE ADDITIONAL SURFACE WATER FOR THE WHITE TANKS PLANT BASED ON THE CURRENT CAPACITY OF THE PLANT?

A. No, AAW is planning for these future surface water supplies based on future expansions of the White Tanks Plant. At the current time the existing CAP allocation of 11,093 AF/Y is a perfect match for the White Tanks Treatment Plant firm capacity of 13.4 MGD. This is why the plant was designed for this treatment capacity.

IV <u>TANK MAINTENANCE IN AGUA FRIA, MOHAVE & HAVASU DISTRICTS</u>

A <u>RESPONSE TO MICHAEL L. ARNDT</u>

Q. MR. ARNDT (PAGE 11 AND PAGE 37) ARGUES THAT THE COMPANY'S TANK MAINTENANCE PROPOSAL IN THIS CASE DOES NOT CONFORM TO THE COMMISSION'S APPROVED METHOD. DOES YOUR COST MODEL FOLLOW THE METHOD APPROVED IN DECISION 72047 FOR THE MOST RECENT SUN CITY WATER RATE CASE?

A. Yes. Commission Decision No. 72047 authorized tank maintenance expenses for the Sun City using a normalized annual future cost of tank maintenance. In support of the approved tank maintenance program in the Company's Sun City Water District, Commission Staff wrote on page 6 of its Brief:

> The Company is requesting a tank maintenance reserve for its Sun City Water District. Staff agrees that well maintained tanks provide some long-term benefits for ratepayers. Staff recommends that the Company be authorized to include the costs associated with tank maintenance as a normalized expense rather than a "Tank Maintenance Reserve". Staff recommends $362,000 of normalized expenses be included.

The Commission approved this approach in Decision No. 72047, stating on page 58 of the Decision:

> We agree with RUCO and Staff that establishment of a tank maintenance expense reserve fund for the Sun City Water district is not appropriate at this time and will not authorize such an account. However the Company has demonstrated that it will begin, in the Sun City Water District, a program with demonstrated known and measurable ongoing expense amounts that are reasonable and will provide long term system benefits. Staff's recommendation for normalized tank maintenance expense is based on these known and measurable ongoing expense amounts. The normalized expense amount recommended by Staff is reasonable and will be adopted for purposes of this proceeding.

This approved tank maintenance program was effective in Arizona-American's Sun City Water District on January 1, 2011. We have received contractor bids to complete the work and we will be entering into contract to complete tank maintenance in the fall of 2011. The approval of the tank maintenance program in this rate case will permit the Company continue to conduct the similar tank maintenance program in its Agua Fria Water District, its Mohave Water District, and its Havasu Water District.

V IRRIGATION RATES (AGUA FRIA, MOHAVE, AND HAVASU DISTRICTS)

A RESPONSE TO MICHAEL L. ARNDT

Q. MR. ARNDT (PAGE 11 AND PAGES 35-36) ALLEGES THAT THE NEW IRRIGATION CLASS INCREASES THE COMPANY'S REVENUE DEFICIENCY BY $363,107. IS THIS CORRECT?

A. No. The Company's revenue deficiency, and hence its requested increase in its revenue requirement, is established for the whole of a district and is independent of customer classes. However, Mr. Arndt points out that the new irrigation class does shift – via the proposed rate design – revenue from those irrigation customers to other customers in the district.

Q. DOES A POTABLE IRRIGATION CLASS EXIST IN THE CURRENT AGUA FRIA WATER DISTRICT TARIFF?

A. Yes. The current Agua Fria water tariff contains a potable water irrigation rate with no monthly basic service charge and a single tier rate for unlimited usage.

Q. WHAT IS THE PURPOSE FOR THE PROPOSED IRRIGATION CLASS?

A. First, Arizona-American seeks to modify the format of the existing Agua Fria water tariff to provide clarity to customers regarding the potable irrigation rate class and its use. In the current Agua Fria water tariff, for example, the potable irrigation rate is simply one line item in the general rates table with no definition as to what are the requirements for being in the irrigation customer class or what the terms and conditions of service are for this rate. The proposed tariff will clearly explain to the customers the availability, applicability, special conditions, rates, terms and conditions for potable irrigation service.

Second, the Company proposes through rate design to modify the potable irrigation rate from a single tier with no monthly basic service charge to one with a monthly basic service charge based on meter size.

Third, although the tariffs for the districts in this rate case have existing irrigation rates, there are few customers on those rates due to the lack of clear applicability under the existing tariffs. Therefore, the Company proposes to define a new irrigation customer class and, upon implementation of new rates in this case, reclassify some existing customers into that class as applicable.

Given the emphasis today on water conservation, Arizona-American believes it is appropriate to define and group all of its customers using potable water for irrigation together so that we can better target water conservation programs appropriate for this class, and over time make specific rate design changes to further encourage smart water use. After this proposed tariff change is implemented, the Company will have identified all of its customers using either potable or non-potable water for irrigation into four categories. The four proposed irrigation rates are priced lowest to highest for customers using (i) recycled water, (ii) raw untreated surface water, (iii) raw untreated non-potable groundwater, and (iv) treated potable water, respectively. Arizona-American believes that these stepped rate types will help send the right price signals and usage behavior to our irrigation customers, based on the relative desirability of using different types of water for irrigation

Q. CORTE BELLA GOLF CLUB REQUESTS A REDUCTION IN ITS NON-POTABLE IRRIGATION RATE. DOES THE COMPANY AGREE WITH THIS PROPOSED REDUCTION?

A. No. The Company continues to support its proposed rate in the Agua Fria Water District for the use of non-potable groundwater to irrigate the Corte Bella Golf Club. As noted above, the Company believes that its proposed rates for each of the non-potable irrigation classes will help send appropriate price signals and usage behavior to each type of customer.

VI <u>OTHER</u>

Q. IN THE AGUA FRIA WATER DISTRICT, RUCO HAS RECOMMENDED AN ADJUSTMENT RELATING TO ONE VEHICLE USED IN THAT DISTRICT. WHAT IS THE COMPANY'S RESPONSE?

A. In his testimony, RUCO witness Mr. Moore refers to the Company's response to RUCO DR 5.03 in which the Company described vehicle use which included use of the vehicle by a Company employee to commute to and from work. In that response, I explained that "[o]ne truck is used by the operator that is on-call at the time to travel from home to work during normal shift and on a 24 hour on-call emergency basis." It might be helpful to point out that the White Tanks Plant is not manned 24 hours-per-day, 7 days-per-week. Instead, the facility is manned 12 hours-per-day Monday through Friday, and 10 hours-per-day on Saturday and Sunday. During times when the facility is not manned, an operator is assigned to be "on-call" and to respond to alarms or other problems at the White Tanks Plant after hours. This on-call operator assignment rotates among the White Tanks Plant staff and the on-call operator is issued use of a Company vehicle during the times he or she is on-call. This position is very important to the reliable operation of the White Tanks Plant, and this operator provides an important service to customers, especially in the case of an emergency. In an emergency, it is important that the operator have a reliable vehicle to respond to operational issues at the White Tanks Plant.

Q. DOES THAT CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes.

EXHIBIT

PENGAD 800-631-6989

A-31

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

GARY PIERCE, Chairman
BOB STUMP
PAUL NEWMAN
SANDRA D. KENNEDY
BRENDA. BURNS

IN THE MATTER OF THE APPLICATION OF ARIZONA-AMERICAN WATER COMPANY, AN ARIZONA CORPORATION, FOR A DETERMINATION OF THE CURRENT FAIR VALUE OF ITS UTILITY PLANT AND PROPERTY AND FOR INCREASES IN ITS RATES AND CHARGES BASED THEREON FOR UTILITY SERVICE BY ITS AGUA FRIA WATER, HAVASU WATER AND MOHAVE WATER DISTRICTS	DOCKET NO. W-01303A-10-0448

SECOND REBUTTAL TESTIMONY
OF
IAN C. CROOKS
ON BEHALF OF
ARIZONA-AMERICAN WATER COMPANY
NOVEMBER 17, 2011

SECOND REBUTTAL TESTIMONY
OF
IAN C. CROOKS
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ARIZONA-AMERICAN WATER COMPANY
NOVEMBER 17, 2011

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EXECUTIVE SUMMARY

Ian C. Crooks rebuts certain portions of the direct testimony submitted by Class of Homeowners Associations' witnesses Glenn A. Watkins and John Shaw regarding the Agua Fria District and White Tanks Plant.

I INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND TELEPHONE NUMBER.

A. My name is Ian C. Crooks. My business address is 2355 W. Pinnacle Peak Rd., Suite 300, Phoenix, AZ 85027; and my telephone number is 623-445-2404.

Q. ARE YOU THE SAME IAN C. CROOKS WHO PREVIOUSLY SUBMITTED TESTIMONY IN THIS CASE?

A. Yes I am.

II PURPOSE OF SECOND REBUTTAL TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR SECOND REBUTTAL TESTIMONY IN THIS CASE?

A. Please see my executive summary.

III RESPONSE TO DIRECT TESTIMONY OF GLENN A. WATKINS

A AGUA FRIA DISTRICT SUPPLY CAPACITY

Q. MR. WATKINS DISCUSSES RESERVE MARGINS IN THE AGUA FRIA DISTRICT. DO YOU AGREE WITH MR. WATKINS STATEMENTS AND CONCLUSIONS REGARDING RESERVE MARGINS?

A. No. I disagree on many fronts. First, Mr. Watkins uses the concept of Reserve Margin when evaluating the Agua Fria District source of supply. Neither the Company nor most other water suppliers use this concept. The Company typically uses in its planning and engineering efforts the concepts of total capacity and firm capacity. Firm capacity takes into account the largest well in a system being out-of-service because of failure during operation or one or more wells in a system being out-of-service due to water quality issues. The calculated firm capacity represents the reliable source of supply capacity available to meet demands. After subtracting maximum day demand from firm capacity, the remaining capacity is the supply available to meet future demand, which I call residual capacity.

Second, Mr. Watkins discusses what he calls the "Rated Capacity" and "Effective Capacity" of the Agua Fria supply sources. While Mr. Watkins correctly recognizes the current yield of well supplies as the Effective Capacity in his reserve margin analysis for wells, he conveniently uses 20 MGD as the White Tanks Plant's effective capacity. This is incorrect. As explained many times by the Company in prior filed testimony in this rate case, the White Tank Plant is permitted for a firm capacity of 13.4 MGD. As I stated in my rejoinder (page 8, lines 1-6) to RUCO's testimony:

> As other Company witnesses have also stated in testimony, the White Tanks Plant total capacity is 20 MGD and its firm capacity is 13.4 MGD. The White Tanks Plant can operate at its total capacity of 20 MGD for <u>short periods of time</u> but not on a continuous 24/7/365 basis due to maintenance, equipment failure, and operational activities (backwashing, cleaning, etc.). The White Tanks Plant is designed and permitted to operate reliably at its firm capacity of 13.4 MGD on a continuous 24/7/365 basis.

Mr. Watkins' use of 20 MGD to calculate effective capacity of the White Tanks is simply wrong. The White Tanks Plant can produce 13.4 MGD of reliable capacity. This is the correct value to use for his Effective Capacity. Further, Mr. Watkins fails to take into consideration any wells out-of-service in his reserve margin analysis or consider any operational constraints. These important omissions and the use of 20 MGD for White Tanks lead to a flawed analysis and an incorrect conclusion by Mr. Watkins in his testimony. Below I correct for the omissions and flawed assumptions in Mr. Watkins' analysis to provide a better high-level representation of the Agua Fria source of supply residual capacity over time. As I stated in my SCG DR 9.8 response:

> "Please note that this is a broad representation of the source of supplies in Agua Fria district and does not take into account the particularities of each pressure zone or water plant that reduces source of supply availability because of water quality, groundwater withdrawal permits, and other operational constraints."

Let me provide an illustration why water quality particularities can affect firm capacity (or reserve margin). At some of Arizona-American's water plants in the Agua Fria District, well outputs and their operation are dependent upon another well source for "blending" to meet water quality permit standards. Blending is an accepted process in which water from well(s) with a level of contamination that is above the permitted standards can be mixed with water from well(s) with a level of contamination that is below the permitted standards, such that the "blended water" meets the permitted standards. Therefore, if the well used for "blending" is out-of-service, two or more other production wells are lost. An example of this can be seen at Agua Fria Water Plant 5.

Let me provide an illustration why water rights particularities can affect firm capacity. Certain wells in Arizona-American's Agua Fria Water District are limited in production by their ADWR annual groundwater withdrawal permits. A well could be equipped for 800 gpm but only run for a limited number of hours per day to stay within the permitted annual withdrawal limit, therefore, the well may have an effective annualized capacity of only 400 gpm. In a source of supply analysis, then, the 400 gpm must be used.

Examples of operational constraints include output limitations in well pumps necessary to push enough water into higher pressure zones to meet demand, and system piping constraints that limit the physical operational ability to move water from one end of a system to the other if a well fails. These examples demonstrate that source of supply analysis is not simply a math problem; there are many different operational scenarios and risk factors to consider in order to complete a proper and meaningful analysis for the Agua Fria District. These scenarios and risk factors were not taken into account by Mr. Watkins. As a result, a proper source of supply study indicates much lower reserve margins than shown in Mr. Watkins' testimony.

It is important in this analysis to examine the source of supply constraints facing Arizona-American in the Agua Fria District in 2007 when the decision was made to proceed with construction of the White Tanks Plant. Prior to proceeding with the construction of the White Tanks Plant, the Company regularly analyzed constraints in source of supply versus demand projections. A table of this analysis is attached as Exhibit ICC-1 to this testimony (and provided to the parties in the response to SCG DR 10.4). Inserted below in my testimony, I have included a summary of that analysis from November 2007 showing the expected firm residual supply capacity available in the Agua Fria District. As shown below, the firm residual supply capacity, depending on completion of projected new wells, ranged from -3.1 MGD to 5.2 MGD representing -12% to +19% of total capacity, respectively. This is well below what Mr. Watkins' stated as an acceptable range of 20% - 40% in his testimony.

2007 AGUA FRIA RESIDUAL CAPACITY SUMMARY

MGD (% OF TOTAL CAPACITY)

	2007	2008	2009	2010	2011
Residual Capacity w/o assumed new wells	2.4 (9%)	1.6 (6%)	1.0 (4%)	**-2.2 (-8%)**	**-3.1 (-12%)**
Residual Capacity w/ assumed new wells added	3.3 (12%)	3.5 (13%)	5.2 (19%)	2.0 (7%)	2.0 (7%)

Despite claims to the contrary, simply continuing to add new wells in the Agua Fria Water District was not a viable long-term solution. The challenges were due to three main factors: (1) difficulty in permitting new groundwater wells in areas that did not impact existing wells in place, (2) difficulty in drilling and developing wells that had good production capacity, and (3) difficulty in finding sources of groundwater that were free of contaminants and would not need costly treatment. As can be seen clearly from the source of supply outlook and the constraints of new groundwater wells, and as described in Mr. Townsley's testimony, the continued reliance and use of groundwater was simply unsustainable and supported the decision in 2007 to proceed with construction of the White Tanks Plant. However, the Company still needed to meet the water demands of the Agua Fria District during construction of the White Tanks Plant. Additional wells already under construction and planned for construction in the near-term, were completed to meet existing water demands until White Tanks Plant was operational. All the while, the Company continued to face water quality challenges with the existing and planned groundwater wells in Agua Fria District, which continued to make clear that continued, long-term use of wells was not sustainable. Below are a few of the real life challenges the Company faced with the water quality of wells in the Agua Fria District in 2007:

1. Water Plants 1, 2, 5, and 9 – arsenic treatment was required to meet water quality standards.

2. Sarah Ann Ranch – two wells were abandoned because of fluoride levels above water quality standards.

3. Cortessa/White Tank Foothills – arsenic treatment and blending was required for the wells in order to meet water quality standards.

4. Prasada – well 14.2 was drilled but not equipped because of nitrate levels above water quality standards.

5. Water Plant 5 – arsenic treatment and blending of various wells was required to meet water quality standards.

In November 2009, the White Tanks Plant became operational. Since there is an inherit "lumpiness" associated with adding new capacity as compared with more linear demand growth in any utility business, the White Tanks Plant added a large chunk of supply all at once to the Agua Fria District. Therefore, it is to be expected that the residual capacity in the Agua Fria District would increase by a relatively large amount. However, this residual capacity will decline over time as demand increases. The table below shows the current 2011 high-level supply summary for the Agua Fria District. Again, because of time constraints, this is not the same level of detailed analysis performed for the source of supply study in 2007; a similar in-depth study would find lower residual capacity under different scenarios because of operational constraints than the table below indicates.

2011 SUPPLY SUMMARY[1]

TOTAL FIRM SUPPLY SOURCES (MGD)	43.1
2011 MAX DAY DEMAND (MGD)	24.3
RESIDUAL CAPACITY (MGD)	18.8
RESIDUAL CAPACITY %	43.6%

B <u>AGUA FRIA CUSTOMERS SERVED BY WHITE TANKS PLANT</u>

Q. MR. WATKINS STATES THAT 50% OF THE AGUA FRIA DISTRICT CUSTOMERS CAN BE SERVED BY WHITE TANKS PLANT AND FUTURE GROWTH WILL RELY ON WELLS TO MEET DEMANDS. IS THIS CORRECT?

A. No. As of October 2011, Agua Fria District has 37,344 customers, of which 25,413 or almost 70% are served by the White Tanks Plant. Mr. Watkins 50% statement is based on assumptions and not facts as evidenced by his reference footnote on page 30 where he states: "It is my understanding, that most of the infrastructure is currently in place in order to interconnect and provide neighboring water purveyors with White Tanks produced water." His understanding is wrong. The exact opposite is true. The entire infrastructure installed is to interconnect Arizona-American's facilities in the Agua Fria District and provide White Tanks water to Arizona-American customers. Arizona-American currently does not provide water to neighboring water purveyors on a regular basis. Any interconnects that exist to other neighboring water purveyors are used for short-term or emergencies needs only. The Agua Fria District continues to become more integrated over time through system extensions and optimizations. As an example, just this summer (summer 2011), the Company made distribution system changes that

[1] Data per Company response to Sun City Grand Data Request 8.20, Revised 10/21/2011.

enabled White Tanks Plant water to supply Water Plant 3 in Sun City Grand. Finally, the areas of Agua Fria District that rely on wells for supply are effectively build-out, the exception being the NEAF area. The vast majority of growth in the Agua Fria District will occur in the areas supplied by White Tanks Plant water.

C VARIABLE OPERATING COSTS

Q. MR. WATKINS DISCUSSES THE VARIABLE OPERATING COSTS OF WELLS VERSUS THE WHITE TANKS PLANT. DO YOU AGREE WITH HIS ANALYSIS?

A. No. Mr. Watkins' analysis and conclusion are flawed for a few reasons. First, Mr. Watkins is comparing estimated White Tanks Plant costs with actual wells costs. Then Mr. Watkins prorates the well unit production costs over each individual well output while the White Tanks Plant has been in operation. This is erroneous. With the White Tanks Plant supply available, Arizona-American minimizes operating expenses by maximizing the use of the lower cost wells first and minimizing the use of the more expensive wells that require treatment. Therefore, Mr. Watkins' analysis is biased towards lower well production costs. The proper analysis should be based on the cost of producing water from higher cost wells that were put in standby when the White Tanks Plant went into service, vs. the cost of water from White Tanks Plant. If as Mr. Watkins proposed, we were to continue to drill new wells to meet system demands rather than using the White Tanks Plant, the unit production cost ($/kgal) of any new well supplies in-lieu of White Tanks Plant supply would also be much higher because the new wells almost all require treatment to meet water quality standards. Considering only the wells requiring treatment from the Mr. Watkins Schedule GAW-4, the average unit production costs of wells 5.1, 5.2, 5.3, 9.1, 9.2, 9.3, 9.4, and AFTL 1 is $1.08kgal.

The White Tanks Plant O&M expense (excluding labor) from January 2010 to September 2011 was $1,650,491, attached as Exhibit ICC-2, and the total production was 4,411,091[2] thousand gallons (kgals), for a unit production cost of $0.37/kgal. Therefore, the White Tanks Plant is 66% less expensive to operate per unit of production than what the estimated costs of additional future wells would be in-lieu of the White Tanks Plant supply.

IV SMALL RESIDENTIAL METER PARITY PROPOSAL

Q. WHAT HAS LED THE COMPANY TO PROPOSE THE SMALL METER PARITY PROGRAM IN ITS RATE DESIGN?

A. The Company is receiving an increase in applications from residential customers to downsize their meters from 1-inch to 5/8 x 3/4-inch meters because there is a large difference in the monthly base charge. The difference is a large enough incentive that many customers are willing to incur the cost of the Company switching out their meter for a smaller size as the monthly base charge savings quickly offsets the switching costs. The proposed program will narrow the spread between the monthly base charges for these two sized residential meters to de-incentivize downsizing of meters. If this proposed program is not implemented, residential customers will continue to request meter downsizing, incur the associated costs, and potentially experience a decrease in water pressure and fire flow protection.

Q. DO YOU BELIEVE THIS PROGRAM WILL PREVENT CUSTOMERS FROM SWITCHING METERS?

A. Most certainly, as the difference in the monthly base fee is reduced the incentive to switch meters is minimized, as there is less payback to the customer for downsizing meters.

[2] Data per Company response to Sun City Grand Data Request 8.18.

V SUN CITY GRAND IRRIGATION METERS

Q. PLEASE EXPLAIN HOW THE RECENTLY FOUND SUN CITY GRAND IRRIGATION METERS WHERE DISCOVERED?

A. During routine meter reading, a company employee noticed a meter box in an irrigation common area that was not included in the meter route for reading. Upon investigation, a few more meter boxes were found that were not in meter routes. This prompted Arizona-American to send a team of meter readers to canvas the Sun City Grand community for more. After the search was finished, 30 meters were found that were never registered with the Company. Neither Arizona-American nor Sun City Grand is certain how this occurred, but likely an oversight on submitting paperwork when the meters were originally set by the developer of Sun City Grand.

Q. DOES THAT CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes, however, I reserve the right to revise my testimony based on additional data and evidence.

	A	B	C	D	E	F	G	H
1								
2								
3								
4								
5		**WATER PLANT AREA**	**2007**	**2008**	**2009**	**2010**	**2011**	
6								
7		**Sun Village (A F WP1)**						
8		Well Capacity	5.9	5.9	5.9	5.9	5.9	
9								
10		**Sun City Grand 1 (AF WP2)**						
11		Well Capacity	4.3	4.3	4.3	4.3	4.3	
12								
13		**Sun City Grand 2 (AF WP3)**						
14		Well Capacity	6.5	6.5	6.5	6.5	6.5	
15								
16		**Arizona Traditions (AF WP4)**						
17		Well Capacity	7.7	7.7	7.7	7.7	7.7	
18								
19		**Total Well Capacity In Water Plants 1-4**	24.4	24.4	24.4	24.4	24.4	
20		**Firm capacity (with largest 2 wells out of service)**	**20.7**	**20.7**	**20.7**	**20.7**	**20.7**	
21								
22								
23		**Sun City Grand Demands (Max. Day)**						
24		Sun City Grand, Kingswood Park, Sun Village, Westpoint (excluding AZ Traditions)	10.4	10.5	10.5	10.5	10.5	
25		AZ Traditions	4.7	5.1	5.3	5.4	5.5	
26		City of Surprise O&M	1.4	1.4	1.4	1.4	1.4	
27		**Total Max. Day Demands on WP's 1,2,3 & 4**	**16.5**	**17.0**	**17.2**	**17.3**	**17.4**	
28								
29								
30		**Surplus / (Deficit) from Water Plants 1-4 (row 20-27+91)**	**4.2**	**3.6**	**3.1**	**2.8**	**2.5**	surplus increased from last update
31								on 10/19/2007 a s Greer Ranch area
32								demands decreased.
33		**New Wells for connection to trunk line**						
34		MWD 7.22 (Cactus & Citrus)-Interim use well	*1.0*	*1.0*	*1.0*			
35		Well 4.8			1.2	1.2	1.2	
36		Well 4.9 - planned well from Surprise Farms						
37		AFTL #1-Cortessa #1	*0.7*	*0.7*	*0.7*	*0.7*	*0.7*	
38		AFTL#2-New Sarah Ann Ranch Well		1.0	1.0	1.0	1.0	
39		AFTL #3-Cortessa #2 (drilled)			1.0	1.0	1.0	Supply pushed out
40		AFTL #4-White Tank Foothills #1 (drilled)	0.9	0.9	0.9	0.9	0.9	a year.
41		AFTL #5-White Tank Foothills #2 -Sienna Hills			1.0	1.0	1.0	
42		AFTL #6- Wolf-Crossing/Canyon View well					0.9	
43		**Total New Capacity**	**2.6**	**3.6**	**6.8**	**5.8**	**6.7**	
44		Total capacity available to Trunk Line (row 43+30)	6.8	7.2	9.9	8.6	9.2	
45		Commited Capacity from supply on the Trunkline for Cortessa, Whitetank Foothills	0.9	1.3	1.7	2.1	2.2	
46		**Surplus Available to Trunk Line (row 44-45)**	**5.9**	**5.9**	**8.2**	**6.5**	**7.0**	
47								
48		**Sierra Montana (AF WP 8)**						
49		Well Capacity	1.9	1.9	1.9	1.9	1.9	
50		Waddell Haciendas Well		0.7	0.7	0.7	0.7	Changed from .9 to .7
51		Max. Day Demand (Sierra Montana)	2.2	2.7	3.2	3.9	4.0	
52		**Surplus / (Deficit)**	(0.3)	(0.1)	(0.6)	(1.3)	(1.4)	Deficit reduced in 2011, due
53								to decrease in growth for this area
54								
55		**Clearwater Farms (AF WP 5)**						
56		Well Capacity	2.9	2.9	2.9	2.9	2.9	
57		Max. Day Demand (Clearwater Farms)	1.6	1.9	2.0	2.2	2.5	
58		Max. Day Demand (Perryville Prison)	0.3	0.3	0.3	0.3	0.3	
59		**Surplus / (Deficit)**	**1.0**	**0.7**	**0.6**	**0.4**	**0.1**	There would be a deficit for this BPS if
60								no trunkline supply was available see row 45
61								
62		**Verrado (AF WP9)**						
63		Well Capacity	2.8	2.8	2.8	2.8	2.8	
64		Max.Day Demand	2.0	2.3	2.9	3.7	4.1	Increased demand in 07' according to current
65		**Surplus / (Deficit)**	**0.8**	**0.5**	(0.1)	(0.9)	(1.3)	meter count, reduced projection in out years
66								from most recent absorption schedule
67								
68		**Sedella /Zone 1 (AF WP 12) (not built)/Liberty Bell**						
69		Well Capacity			0.1	0.2	0.4	
70		Max. Day *Demand*			0.1	0.2	0.4	These demands decreased.
71		**Surplus / (Deficit)**			***0.0***	**0.0**	**0.0**	
72								
73		**303 Corridor also known as Wolf Crossing well for now (AF WP 11)(not built)**						
74		Well Capacity				0.1	0.3	Development on hold
75		Max. Day Demand				0.1	0.3	
76		**Surplus / (Deficit)**				**0.0**	**0.0**	
77								
78		**Westcor (also known as Prasada mixed Use) (AF WP 14) (not built)**						
79		Well Capacity			2.1	2.1	2.1	
80		Max. Day Demand			0.8	0.9	2.4	
81		**Surplus / (Deficit)**			**1.3**	**1.2**	(0.3)	
82								
83		**Prasada next to white tanks (AF WP 13) (not built)**						
84		Well Capacity				0.1	0.2	
85		Max. Day Demand				0.1	0.2	
86		**Surplus / (Deficit)**				**0.0**	**0.0**	
87								
88		**Greer Ranch Well**						
89		Well Capacity	1.0	1.0	1.0	1.0	1.0	
90		**Max Day Demands for Greer Ranch, Twelve Oaks and Sycamore Farms**	1.0	1.1	1.4	1.6	1.8	
91		**Groundwater Surplus / (Deficit) (included in row 30)**	**0.0**	(0.1)	(0.4)	(0.6)	(0.8)	
92								
93								
94		Sierra Montana	(0.3)	(0.1)	(0.6)	(1.3)	(1.4)	
95		Clearwater	0.0	0.0	0.0	0.0	0.0	
96		Verrado	0.0	0.0	(0.1)	(0.9)	(1.3)	
97		**Total of Deficits**	(0.3)	(0.1)	(0.7)	(2.2)	(2.7)	
98								
99		**Residual Surplus / (Deficit) after provision from Trunk Line (row 46+ 97)**	**5.6**	**5.8**	**7.5**	**4.3**	**4.3**	Surplus increased in out years
100		**Reliable Capacity (8.2 and 5.3 assumed out of service)**	3.3	3.5	5.2	2.0	2.0	due to slower growth projections
101		**Firm Capacity without new assumed wells**	2.4	1.6	1.0	(2.0)	(3.1)	
102								

AW User:
well capacity in master plans shows that well site north of water plant 3 will be developed to add 1.4 mgd, This is not added here for future years..

fernancc:
Surface water due online in 2010

fernancc:
this demand is currently included into the Sierra Montana plant

O&M Expense

Jan-10	Feb-10	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Total
37,712	22,134	29,377	114,485	82,337	70,301	98,022	82,048	67,787	83,592	62,720	137,645	$ 888,160

Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	
9,991	9,968	49,770	95,149	97,736	136,512	114,598	85,373	163,234	$ 762,331
									$ 1,650,491

EXHIBIT

A-32

PENGAD 800-631-6989

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

KRISTIN K. MAYES, Chairman
GARY PIERCE
BOB STUMP
PAUL NEWMAN
SANDRA D. KENNEDY

IN THE MATTER OF THE APPLICATION OF ARIZONA-AMERICAN WATER COMPANY, AN ARIZONA CORPORATION, FOR A DETERMINATION OF THE CURRENT FAIR VALUE OF ITS UTILITY PLANT AND PROPERTY AND FOR INCREASES IN ITS RATES AND CHARGES BASED THEREON FOR UTILITY SERVICE BY ITS AGUA FRIA, HAVASU AND MOHAVE WATER DISTRICTS	DOCKET NO. W-01303A-10-

DIRECT TESTIMONY OF THOMAS M. BRODERICK ON BEHALF OF ARIZONA-AMERICAN WATER COMPANY

NOVEMBER 3, 2010

DIRECT TESTIMONY
OF
THOMAS M. BRODERICK
ON BEHALF OF
ARIZONA-AMERICAN WATER COMPANY
NOVEMBER 3, 2010

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Thomas M. Broderick testifies that:

The three district total requested revenue increase is $20.8 million and the test year is the period ending June 30, 2010.

This case includes the water districts of Agua Fria, Havasu and Mohave.

The Company has continued to make necessary capital investments to adequately provide water and wastewater service to its customers, and it has experienced increases in its operations and maintenance expenses since the (previous) 2007 test year for these districts. The Company is also eligible – due to the passage of time – to include capital investments in rate base occurring more than ten years ago pursuant to an earlier agreement with the Commission regarding imputed regulatory contributions.

The primary increased investment and expenses in the two and one-half years since the previous test years for these districts include:

1) Additional original cost utility plant in service totaling $74 million (3 district total), including the White Tanks Regional Treatment Plant in the Agua Fria district;

2) Additional amortization of imputed regulatory contributions totaling $2.067 million (3 district total);

3) Additional depreciation expense associated with additional original cost utility plant in service);

4) Increased labor and labor related expenses associated with increased activities across many functions.

Arizona-American's cost of capital is not less than 8.3%. The average cost of long-term debt is 5.66% and the cost of equity is 11.50%. A hypothetical equity ratio of 45.34% and a debt ratio of 54.66% are proposed as a necessary component of financial recovery.

Arizona-American's proposed rate case expense is $529,210.

I INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND TELEPHONE NUMBER.

A. My name is Thomas M. Broderick. My business address is 2355 West Pinnacle Peak Road, Suite 300, Phoenix, Arizona 85027, and my business phone is 623-445-2420.

Q. IN WHAT CAPACITY AND BY WHOM ARE YOU EMPLOYED?

A. I am employed by American Water Service Company as Director, Rates & Regulation for operations in Arizona, New Mexico and Hawaii. Arizona-American Water Company ("Arizona-American" or the "Company") is one of the twenty wholly-owned state utility subsidiaries of American Water.

Q. PLEASE DESCRIBE YOUR PRIMARY RESPONSIBILITIES FOR THE COMPANY.

A. I am responsible for water and wastewater rate cases and other related matters at state utility commissions.

Q. PLEASE DESCRIBE YOUR PROFESSIONAL EXPERIENCE AND EDUCATION.

A. For more than 20 years before joining the Company in 2004, I held various management positions in the electric-utility industry with responsibilities for regulatory and government affairs, corporate economics, planning, load forecasting, finance and budgeting with Arizona Public Service Company, PG&E National Energy Group and Energy Services, and the United States Agency for International Development. I was employed at APS for nearly 14 years as Supervisor, Regulatory Affairs, then Supervisor, Forecasting, and then Manager, Planning. For PG&E National Energy Group, I was

Director, Western Region-External Relations. For USAID, I was Senior Energy Advisor to Ukraine.

I have a Masters Degree in Economics from the University of Wisconsin – Madison and a Bachelors Degree in Economics from Arizona State University.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THIS COMMISSION?

A. Yes, on many occasions.

II <u>PURPOSE OF TESTIMONY</u>

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS CASE?

A. Please see the executive summary of my direct testimony. My testimony requests and supports: a) recovery of Commission authorized White Tanks Plant related deferrals; b) the completion of imputed regulatory CIAC amortizations; c) the cost of debt; d) a hypothetical capital structure; e) rate case expense; f) approval of a declining residential usage adjustment; and g) a new low income program for customers of Agua Fria, Havasu and Mohave Water Districts.

III <u>SUMMARY OF RATE CASE (ALL DISTRICTS)</u>

Q. WHAT IS ARIZONA-AMERICAN'S REQUESTED REVENUE REQUIREMENT INCREASE IN THIS CASE?

A. This case includes the water districts of Agua Fria, Havasu and Mohave using a test year twelve months ended June 30, 2010. Arizona-American's requested revenue increase, rate base and operating expenses are summarized on Exhibit TMB-1 Summary of Schedule A-1s, B-1s and C-1s. The total requested annual revenue increase is $20.8 million or a 69.1% increase. Please note that Decision No. 71410 requires that a new rate case for Mohave Wastewater District not be filed prior to January 1, 2011 and so this new case complies with that requirement by excluding that district.

Q. WHAT ARE THE PRIMARY SPECIFIC REASONS THE COMPANY IS REQUESTING COMMISSION APPROVAL TO INCREASE RATES AT THIS TIME?

A. The Company has continued to make necessary capital investments, primarily in the new White Tanks Regional Water Treatment Plant located in the Agua Fria district, to adequately provide water service to its customers. It has also experienced increases in its operations and maintenance expenses since the (previous) 2007 test year for the districts in this new case. The Company is also eligible – due to the passage of more time – to eliminate imputed regulatory contributions from rate base pursuant to an earlier agreement with the Commission.

The primary increased investment and expenses in the two and one-half years since the previous test years for these districts include:

1) Additional original cost utility plant in service totaling $74 million (all districts), including the White Tanks Regional Water Treatment Plant;

2) Elimination of imputed regulatory contributions which increases rate base $2.067 million and increases annual depreciation expense $0.512 million;

3) Additional depreciation expense associated with additional original cost utility plant in service (all districts); and

4) Increased labor and labor related expenses associated with increased activities across many functions (all districts).

Q. WHAT ARE ARIZONA-AMERICAN'S OTHER SPECIAL REQUESTS IN THIS RATE CASE?

A. Company witness Mr. Paul Townsley requests an Infrastructure System Replacement Surcharge ("ISRS") for the Mohave and Havasu Water Districts.

Q. WHAT OTHER DIRECT TESTIMONY WITNESSES ARE SUPPORTING ARIZONA-AMERICAN'S APPLICATION?

A. The following witnesses are providing direct testimony to support Arizona-American's application. Their primary topic areas are indicated in parentheses:

Mr. Paul G. Townsley (The Company's poor financial condition and cost reduction efforts to improve performance, the Infrastructure System Replacement Surcharge, and Corporate Responsibility);

Mr. Joseph E. Gross (Major utility plant additions since the previous test year for each district, including the White Tanks Regional Treatment Plant and reduced drilling of wells attributable to White Tanks);

Mr. Ian Crooks (White Tanks O&M expenses and O&M deferral, tank maintenance expenses for Agua Fria, and a new irrigation customer class)

Mr. Jeffrey Stuck (Tank maintenance expenses for Havasu and Mohave)

Mr. Miles H. Kiger (Various revenue and expense pro forma adjustments including a declining usage adjustment);

Ms. Linda J. Gutowski (Various expense pro forma adjustments)

Ms. Sandra L. Murrey (Various rate base pro forma adjustments)

Dr. Bente Villadsen (Return on equity)

Mr. John F. Guastella (Depreciation study).

SCHEDULES SPONSORED - BRODERICK (ALL DISTRICTS)

Q. WHAT SCHEDULES ARE YOU SPONSORING?

A. I sponsor the A-1, A-2, A-3, D-1, D-2, D-3, D-4, E-4, E-9, F-4 and G Schedules for all Districts.

Q. WHAT IS SCHEDULE A-1?

A. Schedule A-1 displays the calculation of the increase in gross revenue requested by Arizona-American for the districts in this proceeding. The increase in gross revenue represents the amount necessary for Arizona-American to continue providing safe and reliable service to its customers in these districts, while providing an opportunity for Arizona-American to earn a reasonable rate of return on its investment in plant and equipment eligible for recovery as per the Commission's rules and procedures. The increase in gross revenue requirement for each district based on an adjusted June 30, 2010 ended test-year is shown in the following table:

District	Agua Fria Water	Havasu Water	Mohave Water
Revenue Increase	$17,918,540	$630,633	$2,206,937

Q. WHAT IS SCHEDULE A-2?

A. Schedule A-2 displays a summary of results of operations since 2008.

Q. WHAT IS SCHEDULE A-3?

A. Schedule A-3 summarizes the debt and equity of the Company allocated to the operating districts for 2008, 2009, and 2010 as well as projected year ending June 30, 2011.

Q. WHAT ARE SCHEDULES D-1 THROUGH D-4?

A. These schedules provide the overall cost of capital and its component details – cost of equity, cost of debt and the capital structure for Arizona-American and each district.

Q. WHAT IS SCHEDULE E-4?

A. Schedule E-4 provides the changes in components comprising stockholder's equity since June 30, 2007 to the end of the test year. American Water has not infused additional equity since 2008.

Q. WHAT IS SCHEDULE E-9?

A. Schedule E-9 provides the Notes to Financial Statements.

Q. WHAT IS SCHEDULE F-4?

A. Schedule F-4 briefly describes assumptions used in the filing.

Q. WHY HAS THE COMPANY NOT SUBMITTED G SCHEDULES?

A. The Company has not prepared a new cost of service study for this case. The revenue requirement increases by district have generally been allocated on a pro-rata basis to each customer class / tariff for that district. Since the Company has not submitted a new cost of service study, the cost of service data from the previous rate case (Docket W-01303A-08-0227) is available to compare to rate design proposals other parties may later submit in this case.

Q. IS ARIZONA-AMERICAN WILLING TO USE ITS ORIGINAL COST RATE BASE AS ITS FAIR VALUE RATE BASE IN THIS PROCEEDING?

A. Yes.

IV <u>COST OF CAPITAL (ALL DISTRICTS)</u>

Q. WHAT IS THE REQUESTED COST OF CAPITAL?

A. Arizona-American's cost of capital is not less than 8.3%. This amount is calculated in the D Schedules, which I sponsor.

Q. WHAT IS THE AMOUNT AND COST OF DEBT?

A. Schedule D-2 displays an average cost of long-term debt of 5.66%.

Q. HAVE THERE BEEN ANY RECENT DEBT ISSUANCES?

A. Yes. In Decision No. 71630, the Commission authorized the Company to refinance $10.635 million, which it did earlier in 2010 at an interest rate adjusted for issuance costs of 5.45%.

Q. WHY SHOULD A COMMISSION IMPOSED CEILING OF 6.5% ON ANOTHER $10 MILLION NOTE BE SLIGHTLY INCREASED?

A. It would be fair to do so. In 2007, the Company issued a $10 million note maturing in 2037 with an actual interest rate on this note of 6.593%. This interest rate slightly exceeds the maximum interest rate the Commission approved for this rate of 6.5. The Company requests the Commission allow an increase in the maximum interest rate of 0.093% for this note. Given the Company's poor financial condition, it cannot continue to absorb even this slight difference in interest expense which totals $9,300 annually.

Q. PREVIOUSLY, THE COMMISSION REFLECTED ANY UNPAID AMOUNTS FOR THE PHOENIX INTERCONNECT AS INTEREST FREE DEBT, BUT WILL THERE BY ANY UNPAID AMOUNTS AT THE TIME THIS CASE CONCLUDES?

A. No. A final payment of $1 million is due October 2011 for the Phoenix Interconnect and thus there will not be any interest free debt any longer to reflect in the Company's cost of debt. This is a known and measurable future payment to occur before new rates will be established in this case.

Q. WHAT IS THE REQUESTED CAPITAL STRUCTURE?

A. The Company requests a hypothetical capital structure of 54.66% debt and 45.34% equity based on the Company's test year end actual long-term debt and equity balances. A hypothetical capital structure would support the Company's efforts to reduce the large amount of short-term debt which has built up over the past few years.

Q. ISN'T THIS JUST A NEW WAY TO EXCLUDE SHORT-TERM DEBT FROM THE CAPITAL STRUCTURE (WHICH THE COMMISSION HAS REJECTED IN SEVERAL RECENT CASES)?

A. No. As a result of the recent construction of White Tanks, the Company has accumulated a very large amount of short-term debt ($71.7 million at test year end), fortunately, at a very low current interest rate. However, it would be inappropriate for the Commission to reflect this large amount of short-term debt in new rates because the Company will be refinancing this short-term debt in the near term with much more costly long-term debt. But if the Commission were alternatively to incorporate this short-term debt (at such a low interest rate) into the cost of capital for rate-making purposes, the Company would not likely refinance this debt to long-term because the resultant increase in interest expense of doing so would be prohibitive as compared to what would have been built into rates. For example, if the Company refinanced its $71.7 million of short-term debt into long-term debt at a current rate of 5.45%, the approximate 500 basis point increase would increase annual interest expense by $3.585 million. The Company simply cannot absorb such a large interest expense increase temporarily not recovered in rates so the debt would very likely remain short-term and exposed to future fluctuations in short-term debt interest rates.

Q. WHAT WOULD HAPPEN IF MARKET INTEREST RATES INCREASED BEFORE THE SHORT-TERM DEBT IS REFINANCED?

A. The Company would face the full effect of an increase in interest rates since it would not yet have converted that short-term debt into a long-term facility. And even though this would have a more negative effect than the example given above, it would be a legitimate increase in interest expense for ratemaking purposes. In other words, our customers are also better protected by having the outstanding short-term debt refinanced sooner rather than later.

Q. IS THERE ANY EVIDENCE THAT THE COMPANY INTENDS TO REFINANCE ANY OF THIS SHORT-TERM DEBT SOON?

A. Yes. An application for new long-term debt will shortly be submitted for Commission approval. This application will likely be complete long before this case even comes to hearing.

Q. WHAT IS THE ESTIMATED COST OF EQUITY?

A. The estimated cost of equity of 11.50%. Dr. Bente Villadsen's Direct Testimony on behalf of the Company supports this cost of equity as fair and reasonable.

Q. WHY ARE ARIZONA-AMERICAN'S RETAINED EARNINGS, A COMPONENT OF EQUITY, NEGATIVE?

A. Arizona-American has been **un**profitable for many years and retained earnings were a negative ($30,778,549) at the end of the June 30, 2010 test year. Arizona-American's negative retained earnings reflect the cumulative result of net income losses every year since 2003 following American Water's acquisition of the properties from Citizens.

V RATE CASE EXPENSE (ALL DISTRICTS)

Q. WHAT IS ARIZONA-AMERICAN'S PROPOSED RATE CASE EXPENSE FOR THIS PROCEEDING?

A. Exhibit TMB-2 Rate Case Expense displays by cost component proposed rate case expense of $529,210. This amount is slightly lower than rate case expense in pending Docket No. 09-0343.

Ms. Gutowski sponsors Schedule C-2 income statement adjustment LJG-10, which relies on a four-factor allocation of the proposed rate case expense to each district amortized over three years.[1]

VI DECLINING RESIDENTIAL USAGE ADJUSTMENT (ALL DISTRICTS)

Q. WHY IS THE COMPANY REDUCING THE ADJUSTED TEST YEAR USAGE FOR RESIDENTIAL CUSTOMERS AND THUS REDUCING ADJUSTED TEST YEAR REVENUES?

A. Since the Company has been experiencing a sustained trend of declining residential usage for a number of years, the Company is unable to collect its Commission authorized revenues, and therefore, an adjustment to actual test year usage is necessary and fair. Company witness Miles H. Kiger sponsors the details of such a declining usage adjustment in Adjustment MHK-5. For example, in the Mohave Water District, residential water sales in the current test year ending June 30, 2010 are 14 percent lower than in the prior test year ending December 31, 2007.

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[1] Adjustment LJG-10 displays rate case expense or $646,170 which includes Paradise Valley's allocation, but that district has not been included with this case. Therefore, what remains in this case is the three-district allocation of that total or $529,210.

Q. IS IT NECESSARY TO KNOW PRECISELY WHAT IS CAUSING RESIDENTIAL USAGE TO DECLINE IN ORDER FOR THE COMMISSION TO ACCEPT THIS ADJUSTMENT?

A. No, but we believe that it is associated with the Commission's increasing efforts in support of water conservation. These successful efforts take a number of forms, including the increasing block tariff structure and best management practices ("BMPs"). The last time I verified with my peers (approximately one year ago), only American Water's systems in Arizona and parts of California had increasing rate block structures. In addition, the Commission is causing the establishment of ever more BMPs for companies such as Arizona–American. The analysis of Miles H. Kiger clearly documents a sustained trend of decline in residential usage that is likely to continue.

Q. IS THERE ANOTHER METHOD FOR ADDRESSING DECLINING USAGE?

A. Yes, decoupling revenues from sales is another method. However, it is the Company's sense that the Commission may not be ready yet to consider decoupling of water revenues and sales until it has completed its evaluation of decoupling as applied to the state's electric utilities.

Q. WHAT MIGHT THE COMPANY DO IF THE PARTIES IN THE CASE – ESPECIALLY STAFF - OPPOSE THIS ADJUSTMENT?

A. I certainly do not want to pre-judge or cast this issue in a negative light from the outset, but the Company must begin to address this issue as it is causing a serious on-going under-collection of revenue which is exacerbated by virtue of there being no customer growth to provide any increased revenue at this time. I would expect the Company would examine whether it can continue to support increasing block rate structures and whether it can continue to have such a large amount of revenue assigned for recovery in the commodity portion of tariffs as opposed to the monthly minimum charge. Also, continuing our strong support for some conservation BMPs might also have to be examined. We will be reviewing very carefully the positions of the parties in this case, and, if necessary, the Company may make a mid-case update in its rate design and BMP proposals. I think the basic issue that needs to be addressed is whether the Commission will establish a consistent policy regarding water conservation in light of the fact that significant conservation is now occurring throughout the Company's service territory and our revenue is eroding such that the Company no longer has the opportunity to earn its authorized revenues. The Commission is very familiar with this topic as it applies to electric companies and the Commission is considering decoupling mechanisms for them. However, this issue is also now ripe for extending the Commission's water conservation policy to address it.

VII <u>ELIMINATION OF IMPUTED REGULATORY CONTRIBUTIONS (ALL DISTRICTS)</u>

Q. ARE IMPUTED REGULATORY CONTRIBUTIONS FULLY AMORTIZED BY THE TIME NEW RATES ARE EFFECTIVE IN THIS CASE?

A. Yes, and, therefore, there are no rate base and amortization expense adjustments associated with imputed regulatory contributions in this new case. Commission Staff and the Company agreed to, and the Commission long ago authorized, a ten-year timetable for amortizing imputed regulatory contributions which ends January 14, 2012. The amounts are entirely known and measurable as per the Commission timetable.

Q. DID THE COMMISSION IN AN EARLIER DECISION ELIMINATE IMPUTED REGULATORY ADVANCES FROM RATES BASED ON THEIR EXPIRATION DATE OCCURRING BEFORE THE DATE WHEN NEW RATES WOULD BE EFFECTIVE?

A. Yes. In Decision No. 71410, the Commission approved the elimination of imputed regulatory advances in recognition that the timetable for amortizing the regulatory advances expired before new rates went into effect (Page 32, line 15 thru Page 33, line 10). RUCO supported the Company's requested rate treatment. Staff opposed the requested rate treatment based on the matching principle, but the Company noted that this was the first instance the Commission considered the issue when the timetable expired before new rates went into effect. The Commission sided with the Company and RUCO. In this new case, we face the exact same fact situation as regards imputed regulatory contributions.

Q. IN ORDER TO UNDERSTAND THE MAGNITUDE OF AMORTIZATION FOR THE REMAINING PERIOD AFTER THE END OF THE TEST YEAR, WHAT ARE THE UNAMORTIZED IMPUTED REGULATORY CIAC BALANCES BY DISTRICT AS OF THE END OF THE TEST YEAR?

A. As of June 30, 2010, the minor remaining unamortized imputed regulatory CIAC balances were:

Agua Fria	$303,605
Havasu	$43,210
Mohave	$440,779

VIII <u>WHITE TANKS PLANT DEFERRALS (AGUA FRIA)</u>

Q. COMMISSION DECISION NOS. 71410 AND 69914 AUTHORIZED VARIOUS WHITE TANKS PLANT DEFERRALS AND ASSOCIATED TERMS AND CONDITIONS. IS RECOVERY OF WHITE TANKS PLANT DEFERRALS PROPOSED IN THIS CASE?

A. Yes. Rate Base Adjustment TMB-2 and a component of Operating Expense Adjustment SLM-1 seek the recovery in rates of the authorized post in service AFUDC and depreciation expense deferrals. Company witness Mr. Ian Crooks discusses and sponsors another Operating Expense adjustment which seeks the recovery of the Commission-authorized White Tanks O&M deferral also reflected in Operating Expense Adjustment SLM-1.

Q. WHY IS THE COMPANY REQUESTING RECOVERY OF AUTHORIZED PLANT DEFERRALS THROUGH NOVEMBER 2011 INSTEAD OF THE TEST YEAR ENDED JUNE 2010?

A. Exhibit TMB-3 calculates and displays by month the components of the White Tanks Plant deferrals since the deferrals commenced beginning with the in-service date of the White Tanks Plant on November 30, 2009. As displayed in Exhibit TMB-2 and in Rate Base Adjustment TMB-2, the Company has included \$11,248,728[2] in authorized deferrals (before being offset by one year's accumulated amortization of \$381,332) in rate base and has included \$381,332 in annual amortization expense to recover the authorized deferrals based on their November 30, 2011 balance. The amortization is based on a depreciation rate of 3.39%. The calculated deferrals include accumulated deferred depreciation and accumulated deferred post-in-service AFUDC and have been offset by accumulated hook-up fees. Exhibit TMB-3 also displays the deferrals for periods beyond November 2011, only for informational purposes at this time.

The date of November 30, 2011 is used because that is the date the Company is estimating this rate case will conclude. In other words, new rates are expected to be effective December 1, 2011. Later in the case, the net deferrals can be updated based on subsequent actual data and updated case timelines. If, on the other hand, the deferral balance as of June 30, 2010, was used, then there would be White Tanks Plant deferrals

[2] Equals \$14,480,044 in deferrals reduced by \$3,231,316 in accumulated hook-up fees.

remaining at the conclusion of this case to be addressed in the ***next*** Agua Fria water district rate case, with post in-service AFUDC continuing to be calculated on the deferrals during the interim. For a variety of reasons, the Company believes the preferable path is to address the deferrals in their entirety in this case.

Q. ARE THESE NET DEFERRALS KNOWN AND MEASURABLE AT NOVEMBER 2011?

A. Yes. The calculation of the deferrals depend on the following known and measurable items: 1) White Tanks original cost actual UPIS; 2) depreciation rates approved in Decision No. 71410; 3) cost of capital approved in Decision No. 71410 for post in-service AFUDC rates; and 4) actual White Tanks hook-up fees to-date. Therefore, the only forecasted component is future White Tanks hook-up fees which reduce the deferrals. Although the Company can accept the use of ***actual*** White Tanks hook-up fees as of the end of the test year, it would be appropriate in this instance to likewise reach to November 2011 for White Tanks hook-up fees because this will further reduce the deferrals to the benefit of customers. And by the time that final schedules are submitted in this case, additional actual data reaching into late 2011 will be available regarding actual White Tanks hook-up fees for a last update to the deferrals.

Q. WHAT IS THE ESTIMATED DEFERRAL BALANCE AT JUNE 30, 2012 AND AT DECEMBER 31, 2012?

A. Exhibit TMB-3 displays a balance at June 30, 2012 of $15,033,075 and at December 31, 2012 of $18,351,539, as compared to the amount requested of $11,248,728 at November 30, 2011. It will be important to conclude this case on time in order to avoid having the deferrals grow substantially.

Q. WHAT LANGUAGE IN DECISION NO. 69914 AUTHORIZED POST-IN-SERVICE AFUDC DEFERRAL AND THE RELATED TERMS AND CONDITIONS?

A. Decision No. 69914 (page 28, line 23 thru Page 29, line 1) orders as follows:

> IT IS FURTHER ORDERED that Arizona-American Water Company's request for authorization to record post-in-service allowance for funds used during construction on the excess of the construction cost of the White Tanks Project (including development, site acquisition, design, company labor, overhead and allowance for funds used during construction) over directly related hook-up fees collected through December 31, 2015, or the date that rates become effective subsequent to a rate case that includes 80 percent (based on estimated cost) of the White Tanks Project in rate base, whichever comes first, shall be, and hereby is, approved.

Q. DOES THE COMPANY'S PROPOSAL TO RECOVER WHITE TANKS PLANT POST-IN-SERVICE AFUDC RELATED DEFERRALS CONFORM TO THE ORDERING LANGUAGE?

A. Yes. Under the Company's proposal, there would not be any new post-in-service AFUDC deferrals for White Tanks after new rates are effective in this case. The deferrals existing as of the effective date would be placed in rate base and begin amortizing over the life of the plant. And while, of course, the Company can accept recovery of these deferrals more quickly than over the life of the plant (25.89 years), doing so would result in higher rates in the near term than requested by the Company.

Q. IS THE COMPANY REQUESTING MORE THAN 80 PERCENT OF WHITE TANKS BE INCLUDED IN RATE BASE?

A. Yes, we are requesting that 100% of the test year end balance of White Tanks Plant be placed in rate base upon conclusion of this case.

Q. WHAT LANGUAGE IN DECISION NO. 69914 AUTHORIZED THE DEFERRAL OF WHITE TANKS PLANT DEPRECIATION?

A. Decision No. 69914 (page 29, lines 2-6) orders:

> IT IS FURTHER ORDERED that Arizona-American Water Company's request for authority to defer post in-service depreciation expense in excess of the associated amortization of contributions approved in the previous Ordering Paragraph, and to propose, as part of its 2008 Agua Fria Water District rate case filing, specific accounting entries to meet this objective, shall be, an is hereby, approved.

Q. DID THE MOST RECENT AGUA FRIA WATER DISTRICT RATE CASE DECISION (DECISION NO. 71410) APPROVE THE SPECIFIC ACCOUNTING ENTRIES REFERRED TO IN THE ABOVE ORDERING PARAGRAPH?

A. Yes. Decision No. 71410 (page 17, line 8 thru Page 19, line 16) approved a specific series of sequential accounting entries which address not only offsetting deferred depreciation expense, but also offsetting deferred post-in-service AFUDC, and lastly offsetting White Tanks Plant balance with White Tanks hook-up fees treated as CIAC. The development of Exhibit TMB-3 conforms to the approved accounting procedures.

Q. WHAT WAS THE ACCUMULATED BALANCE OF WHITE TANKS HOOK-UP FEES AS OF THE IN-SERVICE DATE OF WHITE TANKS ON NOVEMBER 30, 2009?

A. As shown in Exhibit TMB-3, the accumulated balance of White Tanks Plant hook-up fees was $2,139,903 at November 30, 2009. In direct testimony I submitted June 20, 2008, the Company estimated the White Tanks Plant would be in-service April 2010 and that accumulated hook-up fees on that date would be $4,382,647 in Docket No. W-01303A-08-0227. Therefore, the White Tanks Plant was placed in-service five months earlier than estimated at that time, and, due to Arizona's poor real estate economy, White Tanks Plant hook-up fees have accumulated at about one-half of the earlier expectation. And while things have not gone entirely as planned, the Company is very appreciative of the Commission's prior support of the White Tanks Plant as evidenced by its prior approval of specific hook-up fees, deferrals and the specific methods of accounting for hook-up fees.

Q. BY HOW MUCH DID ACCUMULATED WHITE TANKS HOOK-UP FEES OFFSET PRE-IN-SERVICE AFUDC?

A. Since the Commission also authorized that the accumulated White Tanks hook-up fees during construction not be treated as CIAC associated with White Tanks Plant CWIP in the most recent Agua Fria Water District rate case, the pre-in-service White Tanks AFUDC was reduced by $93,966 as of November 30, 2009. That reduction has been reflected in the White Tanks Plant original cost UPIS displayed in column (a) of Exhibit TMB-3.

Q. BY HOW MUCH DID AMORTIZATION OF WHITE TANKS HOOK-UP FEES OFFSET (OTHERWISE) DEFERRED POST-IN-SERVICE AFUDC?

A. As of August 2010, a total of $1,401,696 in post-in-service AFUDC debt had been offset by amortization of White Tanks hook-up fees. This can be determined in Exhibit TMB-3 by examining column (c) from December 2009 thru June 2010 and by adding the new hook-up fees for July and August 2010. Please note that post-in-service AFUDC equity was not offset by amortization of hook-up fees on our books as that was not allowed under GAAP.

Q. BY HOW MUCH DID AMORTIZATION OF WHITE TANKS HOOK-UP FEES OFFSET (OTHERWISE) DEFERRED DEPRECIATION?

A. As of August 2010, a total of $1,072,957 in otherwise deferrable White Tanks Plant depreciation was offset by amortization of hook-up fees.

Q. WHAT HAPPENED IN JUNE 2010?

A. In June 2010, the entire balance of White Tanks Plant hook-up fees was fully amortized. This can be seen in Exhibit TMB-3 column (i) for June 2010.

Q. FROM EXHIBIT TMB-3, IT DOES NOT APPEAR THAT ANY HOOK-UP FEES WERE AMORTIZED IN NOVEMBER 2009. IS THAT CORRECT?

A. Yes. Since White Tanks was placed in-service on November 30, no depreciation expense was recognized that month and since AFUDC was based on a mid-month convention, our accountants concluded that November's post-in-service AFUDC was not eligible for offsetting by hook-up fees since it would require reaching to a period technically prior to the in-service date.

Q. WHY HAS THERE NOT BEEN ANY WHITE TANKS PLANT BALANCE OFFEST BY CIAC ASSOCIATED WITH THE HOOK-UP FEES?

A. The reason is that there were no remaining ***incremental*** hook-up fees to apply as CIAC to the plant in any month to-date. The Commission approved accounting treatment (Decision No. 71410, Page 18, lines 1-2) states:

> Third, each month the remaining ***incremental*** WHU-1 funds, if any, will be applied as a contribution to the White Tanks Plant.

And as can be seen in Exhibit TMB-3, there has not been any month to-date where any remaining incremental hook-up fees existed. This can be determined from an examination of column (h) as compared to columns (b) and (c). We anticipate this situation to continue for the foreseeable future.

Q. DECISION NO. 69914 RESERVES "COMPLETE AUTHORITY" TO THE COMMISSION AS REGARDS TREATMENT OF ANY PROCEEDS FROM THE SALE OF WHITE TANKS TO A THIRD PARTY. DID THE COMPANY ENGAGE IN ANY SUCH SALE?

A. No.

Q. DECISION NO. 71410 ALSO AUTHORIZED A DEFERRAL OF WHITE TANKS RELATED O&M. ARE YOU SPONSORING THAT RECOVERY?

A. No. That very important topic is being addressed by Company witness Mr. Ian C. Crooks as he is responsible for the White Tank Plant's O&M expenses.

Q. DECISION NO. 71410 (PAGE 73, LINES 5-6) INDICATES THE COMPANY SHOULD ADDRESS THE NEED TO CONTINUE THE ACCOUNTING PROCEDURES USED TO APPLY WHITE TANKS PLANT HOOK-UP FEES TO VARIOUS DEFERRALS. IS THERE A NECESSITY TO CONTINUE?

A. Since the Company proposes that all deferrals cease accumulating upon the effective date of new rates and that the outstanding balances of all White Tanks Plant deferrals be placed in permanent rates at that time, there would not be a need to continue the special accounting procedures for applying hook-up fee proceeds. Rather, the hook-up fees could resume being applied as CIAC as is their normal treatment. However, if the Commission determines a different treatment than requested by the Company such that there remain White Tanks Plant deferrals not in permanent rates upon conclusion of this case, then it would be necessary to continue the existing special accounting procedures which enable hook-up fees to recover post in service AFUDC debt and deferred depreciation before being applied as CIAC.

IX LOW-INCOME PROGRAM (ALL DISTRICTS)

Q. DOES THE COMPANY PRESENTLY HAVE LOW INCOME PROGRAMS IN EFFECT IN ANY OF THE DISTRICTS IN THIS NEW CASE?

A. No, we only have an existing low income program in the Sun City Water District.

Q. ARE THE NEW LOW INCOME PROGRAMS YOU ARE PROPOSING IN THIS CASE MODELED ON THE EXISTING SUN CITY PROGRAM?

A. Yes. For these districts and based on Sun City, I propose a 50% discount in the monthly minimum charge for residential 5/8 and 3/4 inch meter customers at the following maximum customer thresholds per district: 1,000 customers each for Mohave and Agua Fria and 100 customers for Havasu.[3] As regards eligibility for the many thousands of residential customers residing in multi-housing settings – mostly mobile homes in Mohave and Havasu – we will work to identify a social agency that can provide low income credits to qualifying residents that are not our direct customers. We only recently selected the Sun City Taxpayer Association to provide low income credits to condo dwellers in that community, so we will need to identify a similar entity in these other communities in order to provide low income credits to multi-housing residents.

Q. WHAT WILL BE THE PROCESS TO ENROLL?

A. It will be the same process as Sun City. Residential customers merely need to complete an application and provide it to the Company for processing. That's it. In order to save administrative costs of the program, the Company did not engage an (expensive) administrator. We do not verify income but rather ask for a self-declaration that the applicant's income is lower than the thresholds in the application. As we have noted in the past, in spite of the ease of enrollment, to-date we have only about 400 customers

[3] Sun City has a 1,000 customer maximum participation rate.

enrolled in Sun City out of a ceiling of 1,000 eligible so we have no reason to believe ineligible customers will be signing up for the program.

Q. DID YOU INCLUDE THE LOW INCOME PROGRAM IN THE PROPOSED RATE DESIGN IN THE H SCHEDULES?

A. Not yet, as we wanted to get a reaction from the parties. We have spoken to Staff on a number of occasions this year about this program. I also spoke recently with elected officials in Bullhead City and they are strongly behind a low income program for their community.

At any rate, the cost of the program is only about 5 cents per thousand gallons of water for the last rate block of residential customers in these districts. It will not be difficult to update the H Schedules later in the case to create a low income tariff as well as to increase the last block rate for all other residential customers at the maximum customer eligibility threshold. And just as with Sun City, we propose that a balancing account be established so that any funding excesses or shortfalls remain within the program to rectify.

X COMPLIANCE

Q. AS IN PRIOR CASES, HAS THE COMPANY REMOVED FROM THE CASE THE PREMIUM IT PAID TO ACQUIRE ASSETS FROM CITIZENS?

A. Yes. Schedule B-2 rate base adjustment TMB-1 removes the remaining unamortized amount of this acquisition premium.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY IN THIS CASE?

A. Yes.

Arizona American Water Company
Test Year Ended June 30, 2010
Computation of Increase in Gross Revenue Requirement

Summary of Schedule A-1's

Line No.		**Total Water Districts**	Agua Fria Water	Havasu Water	Mohave Water
1	Original Cost Rate Base	$ 148,915,336	$ 133,986,700	$ 3,615,955	$ 11,312,680
2					
3	Adjusted Operating Income	$ (126,865)	$ 333,583	$ (77,237)	$ (383,211)
4					
5	Current Rate of Return	-0.09%	0.25%	-2.14%	-3.39%
6					
7	Required Operating Income	$ 12,359,973	$ 11,120,896	$ 300,124	$ 938,952
8					
9	Required Rate of Return	8.30%	8.30%	8.30%	8.30%
10					
11	Operating Income Deficiency	$ 12,486,838	$ 10,787,313	$ 377,361	$ 1,322,164
12					
13	Gross Revenue Conversion Factor	1.6622	1.6611	1.6712	1.6692
14					
15	**Increase in Gross Revenue**				
16	**Requirement**	**$ 20,756,111**	**$ 17,918,540**	**$ 630,633**	**$ 2,206,937**
17					
18	Test Year Adjusted Present Rate Revenue	$30,035,935	$23,865,609	$1,266,066	$4,904,260
19					
20	Percent Rate Increase	69.1%	75.1%	49.8%	45.0%
21					
22	**Test Year Adjusted Current ROE**	-2.33%	-2.93%	-0.14%	4.0%
23					
24	Year End Number of Annualized Customers	54,497	36,949	1,615	15,933
25					
27					
28	Required Rate of Return	6.23%	8.30%	8.30%	8.30%

Arizona American Water Company
Test Year Ended June 30, 2010
Summary of Fair Value Rate Base

Line No.	Summary of Schedule B-1's	**Total Water Districts**	Agua Fria Water	Havasu Water	Mohave Water
1					
2	Gross Utility Plant in Service	$ 326,882,313	$ 317,772,399	$ 9,109,914	$ 32,336,956
3	Phoenix Interconnection				
4					
5	Less: Amortization of Phx Interconnect				
6	Less: Accumulated Depreciation	36,882,296	34,879,474	2,002,822	14,935,938
7					
8	Net Utility Plant in Service	$ 290,000,017	$ 282,892,925	$ 7,107,092	$ 17,401,018
9					
10	Less:				
11	Advances in Aid of				
12	Construction	$ 124,269,290	$ 121,793,413	$ 2,475,876	$ 6,165,511
13	Contributions in Aid of				
14	Construction - Net of amortization	44,539,111	43,300,980	1,238,132	531,089
15	Imputed Regulatory Advances	0	0	0	0
16	Imputed Regulatory Contributions	0	0	0	0
17	Customer Meter Deposits	6,507	6,545	(38)	3,932
18	Deferred Income Taxes & Credits	(327,595)	(313,876)	(13,719)	(135,348)
19	Investment tax Credits	0	0	0	0
20	Plus:				
21	Unamortized Finance		0	0	0
22	Charges	0	0	0	0
23	Deferred Debits	14,832,481	14,728,823	103,658	68,991
24	Allowance for Working Capital	1,257,470	1,152,013	105,457	407,855
25	Utility Plant Acquisition Adjustment	0	0	0	0
26					
27	**Total Rate Base**	$ 137,602,656	$ 133,986,700	$ 3,615,955	$ 11,312,680

Arizona American Water Company
Test Year Ended June 30, 2010
Adjusted Test Year Income Statement

Summary of Schedule C-1s

Line No.		Total Water Districts	Agua Fria Water	Havasu Water	Mohave Water
1	**Revenues**				
2	Water Revenues	$ 23,871,042	$ 22,621,147	$ 1,249,895	$ 4,726,464
3	Other Revenues	1,260,634	1,244,463	16,171	177,796
4					
5	**Total Revenue**	$ 25,131,675	$ 23,865,609	$ 1,266,066	$ 4,904,260
6	**Operating Expenses**				
7	Labor	$ 2,792,484	2,508,388	284,096	1,203,791
8	Purchased Water	1,829,431	1,829,431	-	19,361
9	Fuel & Power	2,331,316	2,184,082	147,234	622,963
10	Chemicals	977,082	881,878	95,204	10,377
11	Waste Disposal	9,540	9,540	-	-
12	Management Fees	3,523,487	3,331,409	192,078	904,807
13	Group Insurance	758,610	697,482	61,128	283,462
14	Pensions	602,213	539,270	62,943	194,252
15	Regulatory Expense	140,491	132,832	7,659	39,974
16	Insurance Other Than Group	210,602	199,121	11,481	55,096
17	Customer Accounting	347,518	328,687	18,831	90,002
18	Rents	105,839	98,736	7,103	27,332
19	General Office Expense	219,795	193,302	26,493	123,891
20	Miscellaneous	1,179,511	1,042,011	137,500	455,792
21	Maintenance Expense	746,104	651,522	94,582	354,611
22	Depreciation & Amortization	10,451,307	10,199,583	251,724	1,092,776
23	General Taxes-Property Taxes	929,670	888,673	40,997	175,834
24	General Taxes-Other	232,087	209,044	23,043	93,795
25	Income Taxes	(2,511,758)	(2,392,965)	(118,793)	(460,647)
26					
27	**Total Operating Expenses**	$ 24,875,329	$ 23,532,026	$ 1,343,303	$ 5,287,471
28	**Utility Operating Income**	$ 256,346	$ 333,583	$ (77,237)	$ (383,211)
29	**Other Income & Deductions**				
30	Other Income & Deductions	-	-	-	-
31	Interest Expense	4,251,922	4,140,189	111,733	349,562
32	Other Expense	127,166	120,234	6,932	33,268
33	Gain/Loss Sale of Fixed Assets	-	-	-	-
34	**Total Other Income & Deductions**	$ (4,379,088)	$ (4,260,423)	$ (118,665)	$ (382,830)
35	**Net Profit (Loss)**	$ (4,122,742)	$ (3,926,840)	$ (195,902)	$ (766,041)

ARIZONA AMERICAN WATER COMPANY
Docket No. W-01303A-10-___
Rate Case Expense

Lewis & Roca - Legal Representation	$ 286,648
Cost of Equity Study & Testimony	$ 40,950
Depreciation Study	$ 40,950
Shared Services Labor - Rates Direct Charge for Case Support	$ 61,425
Required Public Notices :	
-Required Initial Public Notice Letter (59,362 customers)	$ 31,601
-Required Newspaper Publish of Initial Public Notice	$ 8,190
-Required Newspaper Publish ACC Public Comment Meetings	$ 8,190
Company Sponsored Community Meetings on the Rate Case	
-Meeting facility rental fees	$ 8,190
-Postcard invitation to meetings	$ 31,601
-Newspaper publish meetings	$ 3,276
Case Production:	
-External duplicating costs, binders, tabs, etc	$ 8,190
	$ 529,210

Arizona American Water
White Tanks Water Treatment Plant

EXHIBIT TMB-3

WHITE TANKS IN-SERVICE November 30, 2009

Date	White Tanks Original Cost (a)	Deferred Depreciation Expense (b)	Deferred Post In-Service AFUDC Debt (c)	Deferred Post In-Service AFUDC Equity (d)	Total Authorized Plant Deferrals **Before** Hook-up Fee Amortization, (b)+(c)+(d) (e)	Monthly Amortization of Hook-up Fees (f)	Balance at month end: Accumulated Plant Deferrals **After** Accumulated Amortization of Hook-up Fees (g)	Current month White Tanks Hook-up Fees (h)	Balance at end of month: Unamortized Remaining Hook-up Fees (I)	Cumulative Post In-Service AFUDC (j)	
Actual											
Nov-09	$ 62,534,962		$ 72,542.64	$ 89,081.56	$ 161,624		$ 161,624	$ 505,875	**2,139,903**	$ 161,624	
Dec-09	$ 63,165,584	$ 176,424	$ 163,016.84	$ 209,210.02	$ 548,650	$ 339,440	$ 370,834	$ (36,210)	1,764,253	$ 533,851	
Jan-10	$ 63,566,465	$ 178,223	$ 166,198.42	$ 213,293.15	$ 557,714	$ 344,421	$ 584,127	$ 4,600	1,424,431	$ 913,343	
Feb-10	$ 63,596,345	$ 179,367	$ 168,622.71	$ 216,404.40	$ 564,394	$ 347,989	$ 800,532	$ 33,015	1,109,457	$ 1,298,370	
Mar-10	$ 63,687,691	$ 179,452	$ 170,677.30	$ 219,041.19	$ 569,170	$ 350,129	$ 1,019,573	$ 25,560	784,888	$ 1,688,088	
Apr-10	$ 63,711,117	$ 179,713	$ 172,465.19	$ 221,335.70	$ 573,513	$ 352,178	$ 1,240,909	$ 128,865	561,575	$ 2,081,889	
May-10	$ 63,897,069	$ 179,779	$ 174,630.52	$ 224,114.60	$ 578,525	$ 354,410	$ 1,465,023		207,165	$ 2,480,634	
Jun-10	$ 63,877,959	$ 180,310	$ 176,817.08	$ 226,920.76	$ 584,048	$ 226,335	$ 1,822,736	$ 19,170	**0**	$ 2,884,372	
Jul-10	$ 63,890,460	$ 180,256	$ 178,553.13	$ 229,148.75	$ 587,957	$ 15,975	$ 2,394,719	$ 15,975	0	$ 3,292,074	
Aug-10	$ 63,893,324	$ 180,291	$ 179,317.25	$ 230,129.38	$ 589,738	$ 143,775	$ 2,840,681	$ 143,775	0	$ 3,701,521	
Known & Measurable											
Sep-10	$ 63,893,324	$ 180,302	$ 180,776.08	$ 232,001.61	$ 593,079	$ 15,000	$ 3,418,761	$ 15,000	0	$ 4,114,298	
Oct-10	$ 63,893,324	$ 180,302	$ 181,880.26	$ 233,418.67	$ 595,601	$ 15,000	$ 3,999,361	$ 15,000	0	$ 4,529,597	
Nov-10	$ 63,893,324	$ 180,302	$ 182,991.19	$ 234,844.39	$ 598,137	$ 15,000	$ 4,582,498	$ 15,000	0	$ 4,947,433	
Dec-10	$ 63,893,324	$ 180,302	$ 184,108.90	$ 236,278.82	$ 600,689	$ 15,000	$ 5,168,188	$ 15,000	0	$ 5,367,821	
Jan-11	$ 63,893,324	$ 180,302	$ 185,104.15	$ 237,556.09	$ 602,962	$ 63,333	$ 5,707,817	$ 63,333	0	$ 5,790,481	
Feb-11	$ 63,893,324	$ 180,302	$ 186,234.76	$ 239,007.08	$ 605,543	$ 63,333	$ 6,250,027	$ 63,333	0	$ 6,215,723	
Mar-11	$ 63,893,324	$ 180,302	$ 187,372.28	$ 240,466.93	$ 608,141	$ 63,333	$ 6,794,835	$ 63,333	0	$ 6,643,562	
Apr-11	$ 63,893,324	$ 180,302	$ 188,516.75	$ 241,935.71	$ 610,754	$ 63,333	$ 7,342,256	$ 63,333	0	$ 7,074,014	
May-11	$ 63,893,324	$ 180,302	$ 189,668.21	$ 243,413.45	$ 613,383	$ 63,333	$ 7,892,306	$ 63,333	0	$ 7,507,096	
Jun-11	$ 63,893,324	$ 180,302	$ 190,826.71	$ 244,900.22	$ 616,029	$ 63,333	$ 8,445,002	$ 63,333	0	$ 7,942,823	
Jul-11	$ 63,893,324	$ 180,302	$ 191,992.28	$ 246,396.07	$ 618,690	$ 63,333	$ 9,000,359	$ 63,333	0	$ 8,381,211	
Aug-11	$ 63,893,324	$ 180,302	$ 193,164.97	$ 247,901.06	$ 621,368	$ 63,333	$ 9,558,394	$ 63,333	0	$ 8,822,277	
Sep-11	$ 63,893,324	$ 180,302	$ 194,344.82	$ 249,415.24	$ 624,062	$ 63,333	$ 10,119,122	$ 63,333	0	$ 9,266,037	
Oct-11	$ 63,893,324	$ 180,302	$ 195,531.88	$ 250,938.67	$ 626,772	$ 63,333	$ 10,682,561	$ 63,333	0	$ 9,712,508	Amortization
Nov-11	$ 63,893,324	$ 180,302	$ 196,726.18	$ 252,471.40	$ 629,499	$ 63,333	**$ 11,248,728**	$ 63,333	0	$ 10,161,705	**$ 381,332**
Dec-11	$ 63,893,324	$ 180,302	$ 197,927.78	$ 254,013.48	$ 632,243	$ 63,337	$ 11,817,634	$ 63,337	0	$ 10,613,647	
Jan-12	$ 63,893,324	$ 180,302	$ 199,023.04	$ 255,419.11	$ 634,744	$ 105,833	$ 12,346,544	$ 105,833	0	$ 11,068,089	
Feb-12	$ 63,893,324	$ 180,302	$ 200,238.68	$ 256,979.21	$ 637,520	$ 105,833	$ 12,878,231	$ 105,833	0	$ 11,525,307	
Mar-12	$ 63,893,324	$ 180,302	$ 201,461.73	$ 258,548.83	$ 640,312	$ 105,833	$ 13,412,710	$ 105,833	0	$ 11,985,317	
Apr-12	$ 63,893,324	$ 180,302	$ 202,692.26	$ 260,128.05	$ 643,122	$ 105,833	$ 13,949,999	$ 105,833	0	$ 12,448,138	
May-12	$ 63,893,324	$ 180,302	$ 203,930.31	$ 261,716.91	$ 645,949	$ 105,833	$ 14,490,115	$ 105,833	0	$ 12,913,785	
Jun-12	$ 63,893,324	$ 180,302	$ 205,175.91	$ 263,315.48	$ 648,793	$ 105,833	$ 15,033,075	$ 105,833	0	$ 13,382,276	
Jul-12	$ 63,893,324	$ 180,302	$ 206,429	$ 264,924	$ 651,655	$ 105,833	$ 15,578,896	$ 105,833	0	$ 13,853,629	

Arizona American Water
White Tanks Water Treatment Plant

EXHIBIT TMB-3

WHITE TANKS IN-SERVICE November 30, 2009

Date	White Tanks Original Cost	Deferred Depreciation Expense	Deferred Post In-Service AFUDC Debt	Deferred Post In-Service AFUDC Equity	Total Authorized Plant Deferrals **Before** Hook-up Fee Amortization, (b)+(c)+(d)	Monthly Amortization of Hook-up Fees	Balance at month end: Accumulated Plant Deferrals **After** Accumulated Amortization of Hook-up Fees	Current month White Tanks Hook-up Fees	Balance at end of month: Unamortized Remaining Hook-up Fees	Cumulative Post In-Service AFUDC
Actual	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(l)	(j)
Aug-12	$ 63,893,324	$ 180,302	$ 207,690	$ 266,542	$ 654,534	$ 105,833	$ 16,127,597	$ 105,833	0	$ 14,327,861
Sep-12	$ 63,893,324	$ 180,302	$ 208,959	$ 268,170	$ 657,430	$ 105,833	$ 16,679,194	$ 105,833	0	$ 14,804,990
Oct-12	$ 63,893,324	$ 180,302	$ 210,235	$ 269,808	$ 660,345	$ 105,833	$ 17,233,706	$ 105,833	0	$ 15,285,033
Nov-12	$ 63,893,324	$ 180,302	$ 211,519	$ 271,456	$ 663,277	$ 105,833	$ 17,791,149	$ 105,833	0	$ 15,768,008
Dec-12	$ 63,893,324	$ 180,302	$ 212,811	$ 273,114	$ 666,227	$ 105,837	$ 18,351,539	$ 105,837	0	$ 16,253,932

EXHIBIT

A-33

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

GARY PIERCE, Chairman
BOB STUMP
PAUL NEWMAN
SANDRA D. KENNEDY
BRENDA BURNS

IN THE MATTER OF THE APPLICATION OF ARIZONA-AMERICAN WATER COMPANY, AN ARIZONA CORPORATION, FOR A DETERMINATION OF THE CURRENT FAIR VALUE OF ITS UTILITY PLANT AND PROPERTY AND FOR INCREASES IN ITS RATES AND CHARGES BASED THEREON FOR UTILITY SERVICE BY ITS AGUA FRIA, HAVASU AND MOHAVE WATER DISTRICTS	DOCKET NO. W-01303A-10-0448

REBUTTAL TESTIMONY
OF
THOMAS M. BRODERICK
ON BEHALF OF
ARIZONA-AMERICAN WATER COMPANY
JULY 15, 2011

REBUTTAL TESTIMONY
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ARIZONA-AMERICAN WATER COMPANY
JULY 15, 2011

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EXECUTIVE SUMMARY

Thomas M. Broderick testifies that:

After reviewing the Company's application, Commission Staff supports a rate increase of $14,494,383 for the Agua Fria, Havasu and Mohave Water districts. RUCO supports a rate increase of $10,910,705. The Company's application requested a rate increase of $20,393,628, and while Staff and RUCO support lower amounts, nevertheless the Company is appreciative of Staff and RUCO's time and effort to review the application and arrive at their recommendations.

The Company continues to recommend a hypothetical capital structure excluding short term debt; nevertheless, herein is provided an updated (over $3 million lower) balance of short term debt as of June 30, 2011 in Rebuttal Exhibit TMB-1, if the Commission is so inclined to include short term debt in the cost of capital for ratemaking purposes. The Company continues to reduce its short term debt and it will continue to provide updated balances of actual outstanding short term debt balance as this case progresses. There are no new significant construction projects underway, so short term debt is declining.

Staff reviewed and concurred with the Company's interpretation of Decision No. 69914 that the deferral of post-in-service AFUDC and depreciation are to be calculated through the date when rates in this case are implemented in order to comply with that decision. Therefore, the Company shall provide updates of actual deferrals as they become available in subsequent testimony (i.e., Rejoinder), in the hearing, and in post hearing briefs, and thereafter in docketed filings. The deferral balance is $8,799,456 as of June 30, 2011.

This rate case was filed timely and did not result in the White Tanks deferrals being greater than they otherwise would have been. The White Tanks post-in-service AFUDC should be calculated at the authorized cost of capital and not at the short term debt rate. The White Tanks O&M deferral was authorized by the Commission and the Company has proposed a good deal for customers by not including the unamortized O&M deferral balance in rate base so long as it is recovered over not more than three years.

The Company is opposed to a phase-in of rates in this case.

The Company is evaluating a means for indicating somewhere on monthly customer bills the name of the district in which the customer is located, especially for Agua Fria customers.

The Company had an error in Agua Fria Schedule A-2 such that 2008 earnings were overstated by two. This is corrected in Agua Fria Schedule A-2 Rebuttal.

I INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Thomas M. Broderick. My business address is 2355 North Pinnacle Peak Road, Ste 300, Phoenix, AZ 85027.

Q. ARE YOU THE SAME THOMAS M. BRODERICK WHO PROVIDED DIRECT TESTIMONY IN THIS CASE?

A. Yes.

II PURPOSE OF TESTIMONY & SUMMARY OF OTHER PARTIES' REVENUE REQUIREMENT RECOMMENDATIONS

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS CASE?

A. Please see the executive summary of my rebuttal direct testimony.

Q. ARE BOTH COMMISSION STAFF AND RUCO RECOMMENDING A RATE INCREASE IN THIS PROCEEDING?

A. Yes. After reviewing the Company's application, Commission Staff supports a rate increase of $14,494,383 for the Agua Fria, Havasu and Mohave Water districts. RUCO supports a rate increase of $10,910,705. The Company's application requested a rate increase of $20,393,628, and while Staff and RUCO support lower amounts, nevertheless the Company is appreciative of Staff and RUCO's time and effort to review the application and arrive at their recommendations. Staff and RUCO are the only parties that submitted overall revenue requirement calculations.

Q. WHY HAVE YOU PRELIMINARILY DECIDED TO OPPOSE STAFF'S PROPOSED RATE DESIGN?

A. The only explanation provided in Mr. Michlik's testimony for Staff's aggressive proposal (Page 3, Lines 1-2) is "…to provide support for the state-wide effort to improve water use efficiency." With only this brief background and without reference to any cost of service data in support of its position, Staff proceeds to entirely disregard without comment the Company's proposal (which RUCO accepted) to apply the same overall percentage increase to all customers (with very few exceptions). Alternately, Staff proposes a rate design which provides low use customers with a percentage increase significantly below the average (as well as the median) and which provides high use customers with a percentage increase significantly above the average (as well as the median). For example for residential customers with a 5/8 x 3/4 inch meter Staff proposes:

	Agua Fria	Havasu	Mohave
Average	43.97%	21.59%	41.97%
Median	44.31%	39.56%	34.30%
3,000 kgals	42.45%	**11.4%**	**16.26%**
35,000 kgals	75.16%	**57.68%**	**59.49%**

Given the very low customer growth and declining usage environment we are experiencing today, the Company preliminarily concludes that Staff's rate design proposal is way too aggressive and creates significant additional and new momentum for further declines in usage. The Company simply cannot afford strong new incentives for declining usage. Mr. Michlik (Page 2, lines 2-3) states, "Staff designed rates to generate Staff's recommended revenue requirement for each water district." But, rate design is much more than the just the arithmetic of multiplying customers and volumes times the components of the tariff.

Simply put, Staff's rate design has little or no chance of actually generating Staff's recommended revenue requirement because of additional incentives to conserve water. I believe Staff knows this. That apparently is a consequence acceptable to Staff in advancing a state-wide effort to improve water use efficiency. However, it's my understanding that in a rate case, the Company's right to have a reasonable opportunity to actually collect its authorized revenue requirement trumps other considerations. I ask Staff to reconsider its rate design and revise it in its surrebuttal testimony. I also ask Staff to consider the issue (or at least expand upon Staff's policy thinking) on the broader and longer term facets of this issue and share this with the Company. For example, is Staff encouraging the water industry towards a path similar to the gas and electric utilities as regards the need to revenue decouple? It's important Staff share what its policy goals are for water use efficiency for the Company and to explain to the Company quantitatively how much further Staff wants water usage reduced and whether they support actually collecting the authorized revenue. While the Company has and continues to support water efficiency, we conclude that Staff's recommended rate design is too aggressive.

III COST OF DEBT

Q. STAFF'S MR. MANRIQUE, RUCO'S MR. RIGSBY AND SUN CITY GRAND'S MR. ARNDT EACH PROVIDE RECOMMENDATIONS FOR THE INTEREST COST OF DEBT AND CAPITAL STRUCTURE FOR RATEMAKING PURPOSES THAT DIFFER FROM THE COMPANY'S INITIAL REQUEST. PLEASE BRIEFLY SUMMARIZE EACH POSITION, THE DIFFERENCE FROM THE COMPANY AND THEN STATE THE COMPANY'S REBUTTAL POSITION REGARDING THE COST OF DEBT.

A. Unlike the Company, each of these witnesses has included the much lower actual cost of short term debt in their recommended cost of debt. Mr. Rigsby and Mr. Arndt based their proposals on the test year end outstanding balance of short term debt; whereas, Mr. Manrique updated to April 30, 2011, which resulted in a somewhat lower balance of short term debt. And although the Company continues to recommend a hypothetical capital structure *ex*cluding short term debt; nevertheless, herein is provided an updated (over $3 million lower) balance of short term debt as of June 30, 2011 in Rebuttal Exhibit TMB-1, if the Commission is so inclined to include short term debt in the cost of capital for ratemaking purposes. The Company continues to reduce its short term debt and it will continue to provide updated balances of actual outstanding short term debt balance as this case progresses. There are no new significant construction projects underway, so short term debt is declining.

The Company has repeatedly indicated in recent rate cases that the balance of short term debt rose significantly during the construction of the White Tanks Plant and, as a result, it should not be included in the cost of capital. We acknowledge losing that argument.

As a result, the Company now faces more impactful recommendations in this case to include short term debt at nearly record ***high*** balances at a time of historic ***lows*** in short term interest rates. At issue in this case is a 5.208% difference in the embedded long term debt interest rate (5.660%) versus the short term debt interest rate (0.452%). Hence, if the Commission accepts the cost of short term debt in rates, the Company would face a significant risk that short term interest rates would increase before the next rate case to the harm of the Company. In other words, the Company must pay the market rate for short term debt without regard to the interest rate built into customers rates. Even if the Company were to address this risk by refinancing its short term debt into long term debt that would merely lock in this under recovery of interest expense in rates for the districts in this case.

In this case, Staff's Mr. Manrique, but not Mr. Rigsby nor Mr. Arndt, was persuaded to make a modest downward rounding to 60% debt, a small concession to the Company's proposed hypothetical capital structure. However, that concession is getting less with the passage of time. Rebuttal Exhibit TMB-1 demonstrates that as of June 30, 2011, the Company's combined long and short term debt represented only 60.55% of the capital structure because the Company has paid off more than $3 million of short term debt in the two months since it provided Mr. Manrique the April 2011 update. We expect to continue to pay off another $6.7 million in short term debt by December 31, 2011 and will continue to provide the Commission updates of Rebuttal Exhibit TMB-1 in an effort to support the Commission's use of the most recent capital structure. At a minimum, this casts in doubt reliance upon Mr. Rigsby's 62.54% combined long and short term debt structure. We hope this information will encourage Staff's Mr. Manrique to further reduce the amount of debt in his hypothetical capital structure. We also ask the parties and the Commission to consider using a more reasonable short term debt interest rate of, say, 3.055% (which is an average of the short term debt rate of 0.45% and the embedded long term debt rate of 5.66%) if it is inclined to include short term debt in the capital structure.

IV RATE CASE EXPENSE

Q. DOES THE COMPANY ACCEPT RUCO MR. MOORE'S ADJUSTMENTS TO RATE CASE EXPENSE?

A. Yes, with one caveat. In Schedule RLM-11, RUCO's Mr. Moore would allow a total of $501,807 out of the Company proposed $529,210 in rate case expenses associated with this proceeding. We generally accept his three adjustments with one caveat regarding the costs of the depreciation study. First, Mr. Moore more accurately re-classes the cost of the White Tanks video to only the Agua Fria district. Second, he more accurately estimates a larger number of customers receiving notices in this case. Thirdly, Mr. Moore recommends allocating the cost of Company witness Mr. Guastella to all the Company's districts, which effectively disallows costs for those districts not in this case. We generally concur that Mr. Guastella's costs to prepare the depreciation study should be shared state-wide; however, his testimony related costs should be allowed entirely in this case. At my request, Mr. Guastella provided the state-wide depreciation study's cost as $32,578, with the balance (already $11,964 with the case still on-going) related to the rate case. Perhaps with this information, Mr. Moore can update his rate case expense recommendation.

V WHITE TANKS

A Deferrals

Q. DO YOU ACCEPT STAFF'S RECOMMENDATION "THAT THE COMPANY UPDATE" ITS WHITE TANKS DEFERRALS "ACCORDINGLY THROUGH THE CONCLUSION OF THIS PROCEEDING?" (BECKER, PAGE 20, LINES 15-16)

A. Yes. Staff reviewed and concurred with the Company's interpretation of Decision No. 69914 that the deferral of post-in-service AFUDC and depreciation are to be calculated through the date when rates in this case are implemented in order to comply with that decision. Therefore, the Company shall provide updates of actual deferrals as they become available in subsequent testimony (i.e., Rejoinder), in the hearing, and in post hearing briefs, and thereafter in docketed filings. However, in order to include the deferrals as of the date when rates are expected to be implemented, will either require an amendment at open meeting for the last update of actual information or require the reliance on a last and best estimate for the remaining period.

Q. WHAT IS THE ACTUAL BALANCE OF THE WHITE TANKS PLANT RELATED DEFERRALS AS OF JUNE 30, 2011, AS COMPARED TO WHAT THE COMPANY ESTIMATED THEY WOULD BE IN ITS INITIAL FILING?

A. The deferral amounts through June 30, 2011 are:

Calculated Post-In-Service AFUDC:	$7,952,127
Less Hook-up Fee Contributions:	$1,524,878
a) Post-In-Service AFUDC:	**$6,427,249**
Depreciation Eligible for Deferral:	$3,494,673
Less Hook-up Fee Contributions:	$1,122,475
b) Deferred Depreciation:	**$2,372,198**
Unamortized Balance: sum of a) plus b)	**$8,799,456**

The initial filing forecasted a total unamortized balance at June 30, 2011 of $8,445,002. The actual amount is only $354,454 greater.

Q. IS IT YOUR OPINION THAT A LAST AND BEST ESTIMATE OF THE DEFERRALS IS RELIABLE AND KNOWN AND MEASURABLE FOR THE REMAINING PERIOD?

A. Yes. My original Exhibit TMB-3 provided by month the deferral estimates through December 2012. The ALJ will know best when a recommended opinion and order will be issued in this case; hence, it is simply a matter of selecting the value for the month when rates will be effective based. Of course, as requested by Staff the Company will continue to provide updates of the actual deferrals.

Q. WHAT WAS RUCO'S POSITION ON THESE DEFERRALS?

A. RUCO made no mention of this topic in its June 27, 2011, testimony nor did it remove any of the Company proposed White Tanks deferrals either as part of its proposal to disallow one-half of the White Tanks Plant or as part of any other adjustment RUCO proposed.

B <u>Rate case filing was timely and did not increase deferrals</u>

Q. MR. ARNDT (PAGE 27, LINES 10-16) SUGGESTS THE COMPANY DELAYED FILING THIS RATE CASE; THEREBY, CAUSING THE WHITE TANKS DEFERRALS TO BECOME LARGER THAN THEY OTHERWISE WOULD HAVE BEEN. DID THE COMPANY DELAY FILING THIS CASE?

A. Not at all. Perhaps Mr. Arndt is not aware of Staff's sufficiency requirements, but Staff requires a **minimum** of six months of effectiveness of a previous rate increase in a test year. And since Decision No. 71410 was issued December 8, 2009, the soonest allowable test year thereafter was the one ending June 30, 2010, which is the test year the Company selected. And given that June's financials are not available until July, it took the Company just under four months to prepare the rate case filed on November 3, 2010. And Staff did not issue sufficiency until December 22, 2010, which was just after the conclusion of a rate case involving yet a different set of districts. As the Rebuttal Testimony of the Company's Mr. Townsley makes clear, in the most recent rate case for the Agua Fria water district (which resulted in Decision No. 71410), the Company did its very best to obtain CWIP in rate base treatment for a large portion of White Tanks. Had it been successful, this would have reduced significantly the associated deferrals.

Q. MR. ARNDT (PAGE 30, LINES 18-25) RECOMMENDS THAT POST-IN-SERVICE AFUDC ON WHITE TANKS BE CALCULATED USING THE SHORT-TERM DEBT RATE. ISN'T THIS INCONSISTENT WITH THE COMMISSION'S AUTHORIZATION AS WELL AS HIS OWN RECOMMENDATION TO CONTINUE INCLUDING SHORT TERM DEBT IN THE COST OF CAPITAL?

A. Yes. If the Commission had intended for post-in-service AFUDC on White Tanks to be calculated at the prevailing short term debt rate, it would have certainly indicated so (as it did with respect to deferred White Tanks O&M). It did not. The allowed AFUDC rate is widely understood as equal to the authorized cost of capital during the time period following the conclusion of one rate case until it is revised in a future decision. Likewise, the concepts of the AFUDC components of debt and equity AFUDC as well as pre-and after-tax AFUDC are well understood and there was no confusion or lack of clarity in the Commission's authorizations. The Commission did **not** intend for post-in-service AFUDC on White Tanks to be calculated using the short-term debt rate. Commission Staff has been receiving the monthly entries for White Tanks deferrals, and its compliance audit uncovered no abnormalities or differences from what was authorized.

Furthermore, elsewhere Mr. Arndt vigorously argues for the Commission to follow its prior precedent and include short term debt in the capital structure. Hence, the existing AFUDC rate applied to White Tanks is already reduced by the proportional weighting of short-term debt in the capital structure and, thus, Mr. Arndt's recommendation herein amounts to a recommendation to double count the benefits of short term debt. Mr. Arndt's recommendation in this regard should be denied. Repeatedly, the Company has tried (and failed) to have short term debt excluded from the capital structure, especially for the period when the White Tanks deferrals have been in effect.

C Was The O&M Deferral Authorized?

Q. SUN CITY GRAND'S MR. ARNDT STATES (PAGE 31, LINE 26 THROUGH PAGE 32, LINE 3) "THE COMMISSION NEVER APPROVED THE DEFERRAL OF WHITE TANKS O&M EXPENSES AND THE COMPANY HAS PROVIDED NO JUSTIFICATION FOR SUCH A DEFERRAL IN ITS DIRECT TESTIMONY." IS MR. ARNDT CORRECT?

A. No. Mr. Arndt is mistaken. As a general matter, the Company is not allowed to defer any expense absent Commission approval. He must have overlooked various statements including my statement (Page 14, lines 1-4), "Company witness Mr. Ian Crooks discusses and sponsors another Operating Expense adjustment which seeks the recovery of the ***Commission-authorized*** White Tanks O&M deferral also reflected in Operating Expense Adjustment SLM-1."

Staff's witness Mr. Becker in supporting the recovery of the Company's proposed White Tanks O&M deferral amount and recovery period, states (Page 20, line 25 through Page 21, line 3), "...Staff has determined that the Company did not include the deferral of incremental Operations and Maintenance ("O&M") expenses in its rate base in this proceeding ***as authorized in Decision No. 71410***. Discussion with Company personnel indicates that this is due to the relatively short amortization period of three years, as requested by the Company."

At any rate, the Commission authorized the White Tanks O&M deferral in Decision No. 71410 on Page 79, line 12 through Page 80, line 19.

Q. MR. ARNDT FURTHER ARGUES THAT, IF ALLOWED, THE WHITE TANKS O&M DEFERRAL SHOULD BE RECOVERED OVER THE LIFE OF THE PLANT INSTEAD OF OVER THREE YEARS AS THE COMPANY HAS PROPOSED AND AS STAFF HAS ACCEPTED. BUT, HASN'T THE COMPANY OFFERED A BETTER PROPOSAL FOR CUSTOMERS ON A PRESENT VALUE BASIS?

A. Yes, Staff's Mr. Becker noted the subtlety in the Company's proposal which is that if recovered over three years or less, the unamortized balance is not requested to be included in rate base. However, for a longer recovery period the Company would insist – as has been authorized by the Commission – that it be included in rate base. Perhaps, Mr. Arndt will revise this position in surrebuttal testimony.

VI <u>PHASE-IN OF RATES</u>

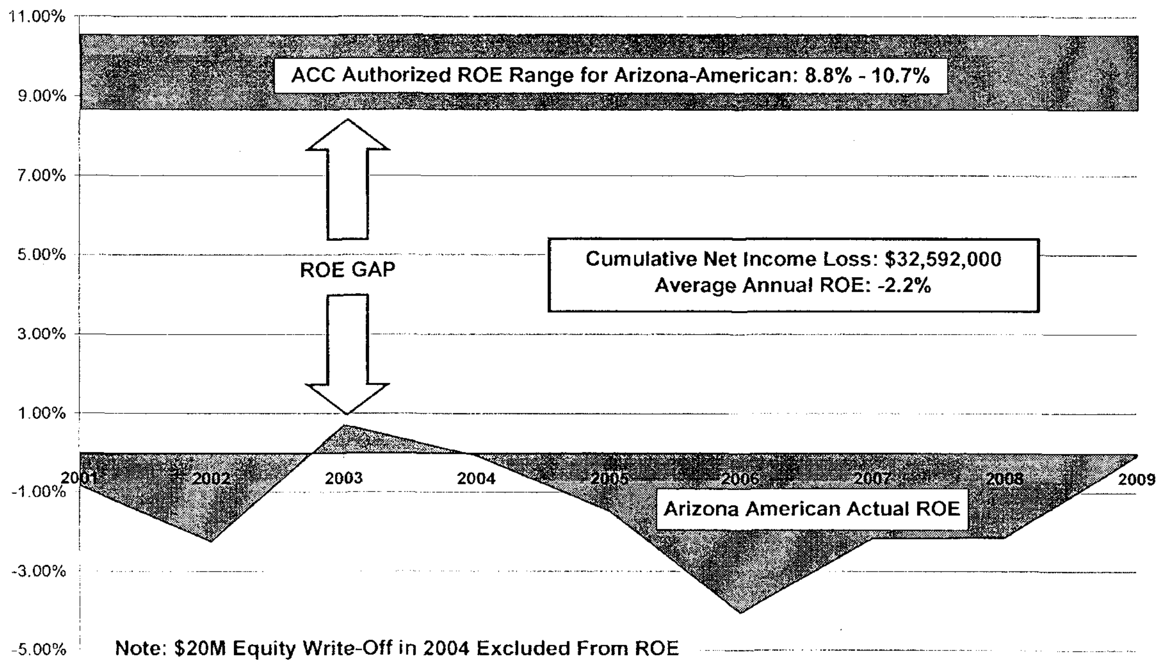
Q. MR. ARNDT (JUNE 27, 2011, PAGE 12, LINES 1-10 AND JULY 5, 2011, PAGE 22, LINE 21 THRU PAGE 23, LINE 22) DISCUSSES A PHASE-IN OF THE AGUA FRIA DISTRICT RATES IN THIS CASE AND HE REFERS TO THE PHASE-IN APPROVED IN DECISION NO. 72047 FOR THE ANTHEM DISTRICT. DMB's MR. SIMER (PAGE 6, LINES 6-8) RECOMMENDS A SEVERAL YEAR PHASE-IN AND HE REFERS TO A PHASE IN APPROVED FOR GLOBAL WATER. DOES THE COMPANY HAVE AN INITIAL RESPONSE REGARDING PHASE-INS AND SPECIFICALLY AS REGARDS THE RECENT ANTHEM RATE CASE?

A. Yes. While Mr. Arndt has not provided details of a specific phase-in he has introduced the topic in his testimony. As regards the Anthem phase-in, Mr. Arndt uses the phrase (June 27, 2011, Page 40, line 3) "...the Company agreed to a three year phase-in..." without providing any of the context of that agreement. In short, the Company agreed to a three year phase-in of Anthem Water district's rates at the December 15, 2010, Commission Open Meeting because the Commission - in its discussion from the bench – put the Company on notice that if it failed to settle with the Anthem Council it could face an even worse outcome. Up until that point, the Company had opposed a phase-in.

Second, as the Company had repeatedly foretold (but perhaps had not been entirely believed), the Anthem phase-in caused Arizona-American to experience an immediate $2.1 million write-off of utility plant in service in the Anthem. This write-off obviously reduced 2010 net income and the issue was closed by the Company's internal and external auditors with the release of the 2010 audited financials. The amount of the write-off was based on a present value calculation of the phased-in foregone revenues which are never recovered. The accountants applied this method because the Anthem phase-in did not allow for recovery of lost revenues nor carrying charges. In this case, Mr. Arndt is similarly arguing (July 5, 2011, Page 23, lines 14-17) against recovery of lost revenues and carrying charges. Hence, if a phase-in is approved in this case with features similar to the Anthem phase-in, the same accounting standards will be applied and a write-off of the Company's equity can be expected.

As Mr. Townsley pointed out in his Direct Testimony in this rate case, Arizona-American's financial standing remains precarious. Though it returned to a small profit in 2010, Arizona-American lost over $32 million between 2001 and 2009, which can be seen in the chart below taken from his testimony.

**Arizona-American Return on Equity
Allowed vs. Actual**



The $2.1 million write-off of equity in 2010 resulting from the Anthem phase-in of rates has only delayed Arizona-American's ability to regain its financial footing, not to mention even coming close to earning its authorized return. Mr. Arndt's proposal for a phase-in of rates for the Company's Agua Fria Water district would make matters again worse financially for our Company and again push down our actual ROE to unacceptable levels.

For these and other reasons, the Company is opposed to any phase-in, especially one that does not keep the Company financially whole on a present value basis. The recovery of foregone revenues and recovery of carrying costs are minimal, reasonable and critical ingredients to keeping the Company whole, but other considerations are important as well for avoiding a write-off.[1]

VII REBUTTAL OF HEWITT

Q. MR. HEWITT RECOMMENDS THAT THE NAME OF THE DISTRICT IN WHICH EACH CUSTOMER'S PREMISE IS LOCATED BE DISPLAYED PROMINENTLY ON EACH MONTHLY BILL. DOES THE COMPANY AGREE?

A. We would like to agree and it is our intention to provide a specific proposal in Rejoinder testimony. While we already know this information cannot be displayed in the bill itself, we are examining whether it could appear as a regular bill text message. I appreciate Mr. Hewitt's suggestion in this regard.

Q. MR. HEWITT RECOMMENDS THE AGUA FRIA WATER DISTRICT BE *DE*CONSOLIDATED FOR RATEMAKING PURPOSES INTO THREE WATER DISTRICTS. DOES THE COMPANY AGREE?

A. No. Arizona-American has previously supported and proposed to consolidate – not to ***de***consolidate - all of its water districts in Arizona into a single district for tariff / ratemaking purposes. The reasons Mr. Hewitt provides in his testimony have not caused the Company to reverse its position. For the same reasons that Arizona Public Service Company, the state's largest electric utility, remains a consolidated state-wide utility for ratemaking purposes in spite of significantly different costs of service across geographic areas, the Company likewise does not seek greater separation of districts, but rather just the opposite. Irrespective of the outcome of this case, Decision No. 72047 requires the

[1] For example, a shorter phase-in is superior to a longer phase-in. Also, having approved tariffs which implement subsequent phase-in related rate increases without further Commission action is critical. In regards to these latter two features, the Anthem phase-in met these criteria in that it was specified as three years in length, and has automatic implementation on the 2nd and 3rd anniversaries and the tariffs were specified in the final order.

Company to file in a future rate case a consolidation proposal which includes all of its systems. The Commission can consider Mr. Hewitt's proposal in a future application if it is so inclined.

Q. MR. HEWITT RECOMMENDS USING THE OUTPUT OF WHITE TANKS TO RECHARGE THE ACQUIFER? (PAGE 9, LINES 19-22) DOES THE COMPANY AGREE?

A. No. Only untreated water sources such as surface water or excess treated effluent are appropriate to be recharged to an acquifer. It would be prohibitively expensive and impractical to treat surface water to potable water standards, as White Tanks does, and then to recharge it to an acquifer.

VIII <u>ERROR IN AGUA FRIA SCHEDULE A-2</u>

Q. MR. ARNDT (PAGE 15, LINES 6-9) CITES AGUA FRIA WATER DISTRICT'S RETURNS ON COMMON EQUITY FOR THE YEARS ENDING JUNE 30, 2008, 2009 AND 2010 AS A COUNTER POINT TO THE NEGATIVE RETURNS CITED FOR ARIZONA-AMERICAN AS A WHOLE. CAN YOU PROVIDE ANY FURTHER RELEVANT INFORMATION?

A. Yes, some of the cited data is in error. The data cited by the Company's Mr. Townsley for Arizona-American was obtained from the Company's annual audited financial statements and is correct. The data cited by Mr. Arndt was obtained from the case's Agua Fria Water Schedule A-2. Of particular interest is the return of 17.43% cited by Mr. Arndt for the period ending June 30, 2008.

While re-checking that figure, the cell formula was found to contain an error in the spreadsheet (=+E22/(**0.5***'[A2 WP.xls]Capital'!E20). The amount of 0.5 is bolded herein because it is an error and caused the denominator to be reduced by half and thus the cited return to be double its correct value. When that incorrect amount is deleted from that formula, the corrected value becomes 8.72%. The Company's rebuttal schedules incorporate this correction. A similar error – now corrected – is also apparent a couple lines above this error in Schedule A-2. Both errors are corrected in Agua Fria Schedule A-2 Rebuttal which I sponsor.

Nevertheless, the corrected returns for the Agua Fria district were closer to authorized levels over this period as compared to the Company as a whole because of the impact, depending on the year, of the arsenic cost recovery surcharge mechanism's revenues, an authorized permanent rate increase and the authorized White Tanks deferrals. For years, the Company has argued that surcharges, timely rate increases, deferrals and other regulatory reforms can help reduce regulatory lag, mitigate earnings erosion and financial harm between rate cases, and levelize rate increases for customers. The Agua Fria district, in particular, benefitted from both surcharges and deferrals. The deferrals are non-cash earnings and, therefore, represent a poor quality of earnings and are future promises of rate increases, such as that requested in the instant pending case.

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY IN THIS CASE?

A. Yes.

ARIZONA AMERICAN WATER CAPITAL STRUCTURE[1]

ACTUAL AS OF JUNE 30, 2011

	Amount Outstanding	% of Capital Structure
Long Term Debt	$186,993,000[2]	46.88%
Short Term Debt	$54,508,000	13.67%
Total Debt	241,501,000	**60.55%**
Total Common Equity	$157,372,000	39.45%
Total Capitalization	$398,873,000	100.00%

PROJECTION AS OF DECEMBER 31, 2011

	Amount Outstanding	% of Capital Structure
Long Term Debt	$186,940,000	47.19%
Short Term Debt	$47,818,000	12.07%
Total Debt	234,758,000	**59.26%**
Total Common Equity	$161,416,000	40.74%
Total Capitalization	$396,174,000	100.00%

[1] As per Staff definition to include short term debt.
[2] As a reminder, Tolleson related debt ($8.56 m) is always removed as per prior Commission precedent which provided the benefit of this low cost debt entirely to Sun City Wastewater district.

EXHIBIT
PENGAD 800-631-6989
A-34

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

GARY PIERCE, Chairman
BOB STUMP
PAUL NEWMAN
SANDRA D. KENNEDY
BRENDA BURNS

IN THE MATTER OF THE APPLICATION OF ARIZONA-AMERICAN WATER COMPANY, AN ARIZONA CORPORATION, FOR A DETERMINATION OF THE CURRENT FAIR VALUE OF ITS UTILITY PLANT AND PROPERTY AND FOR INCREASES IN ITS RATES AND CHARGES BASED THEREON FOR UTILITY SERVICE BY ITS AGUA FRIA, HAVASU AND MOHAVE WATER DISTRICTS	DOCKET NO. W-01303A-10-0448

REJOINDER TESTIMONY
OF
THOMAS M. BRODERICK
ON BEHALF OF
ARIZONA-AMERICAN WATER COMPANY
AUGUST 9, 2011

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EXECUTIVE SUMMARY

Thomas M. Broderick testifies as follows:

The Company is proposing low income tariffs for the Agua Fria, Mohave, and Havasu Water Districts which comply with Decision No. 71410.

The current amount of short term debt as of July 31, 2011 is $50,881,000. As a result, using Commission Staff's definition which includes short term debt, the portion of Company's capital structure represented by debt as of July 31, 2011, is down to 59.55%.

The unamortized balance of White Tanks Plant related deferrals is $ 9,313,992 as of July 31, 2011.

The Company has addressed Mr. Hewitt's suggestion regarding notifying customers that they are in the Agua Fria District. Mr. Hewitt's claims regarding the notification in the prior Agua Fria rate case are inaccurate.

Mr. Arndt's surrebuttal testimony contains numerous errors which undermine the accuracy of Mr. Arndt's testimony. Mr. Broderick then discusses in detail the history of hook-up fees relating to the White Tanks Plant and the Company's notification of the Commission of the changes in the collection of hook-up fees.

Mr. Broderick discusses the forecasts made by Arizona's leading economists during the time before and after the Company was constructing the White Tanks Plant. Those forecasts support the prudency of the Company's decisions.

The Company continues to have concerns about Staff's rate design and requests that Staff be more forthcoming with its specific goals regarding water use efficiency and how that is captured in its rate design proposals.

I INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Thomas M. Broderick. My business address is 2355 North Pinnacle Peak Road, Ste 300, Phoenix, AZ 85027.

Q. ARE YOU THE SAME THOMAS M. BRODERICK WHO PROVIDED DIRECT AND REBUTTAL TESTIMONY IN THIS CASE?

A. Yes.

II PURPOSE OF TESTIMONY

A. Please see my executive summary.

III LOW INCOME PROGRAM

Q. IS THE COMPANY PROPOSING FOR COMMISSION APPROVAL IN THIS CASE A LOW INCOME PROGRAM AND TARIFF FOR THE AGUA FRIA, HAVASU, AND MOHAVE WATER DISTRICTS?

A. Yes, and I apologize for not being able to submit this request earlier as only just recently were we able to reach an agreement with the only vendor we determined is able and willing to provide a low income program in these districts. That vendor is the Arizona Community Action Association ("AZCAA"), which administers existing low income programs for several utilities including APS. If the Commission grants approval of the low income program, the Company and AZCAA will proceed with signing the agreement and shortly thereafter the low income program will commence in Agua Fria, Havasu and Mohave. AZCAA, as the umbrella administrator, will work with specific separate field program administrators that will actually issue the low income credits. AZCAA's fee is 10% of the credits issued and the field program administrators also charge 10%.

Therefore, the administrative program cost is 20% of the actual credits issued. The Company does not plan to account for any of its internal program costs as part of the program costs.

Q. IS THE PROGRAM MODELED ON THE REVISED LOW INCOME PROGRAM NOW IN EFFECT IN THE COMPANY'S SUN CITY WATER DISTRICT?

A. Yes, it is essentially identical. In Sun City, customers of record receive credits on their water bill; whereas, customers residing in multi-housing structures that are not our customer of record periodically (twice a year) receive low income credits in the form of checks.

Q. WHAT ARE THE SPECIFICS OF THE LOW INCOME PROGRAM FOR THE AGUA FRIA DISTRICT?

A. The Company proposes that up to 1,000 Agua Fria residential customers on 5/8 and ¾ inch meters participate in the program if they meet the same low income criteria as established for the Sun City program. The Company proposes a monthly credit of $7.50 for participants for a total annual credit of $90,000. Adding the 20% administrative cost brings the total annual cost to 108,000. As with Sun City, the Company proposes to increase the high block commodity rate for all residential and commercial customers in Agua Fria by $0.0846 per 1,000 gallons in order to fund the program.

Q. WHAT ARE THE SPECIFICS OF THE LOW INCOME PROGRAM FOR THE HAVASU DISTRICT?

A. The Company proposes that up to 100 Havasu residential customers on 5/8 and ¾ inch meters participate in the program if they meet the same criteria. The Company proposes a monthly credit of $10.00 for participants for a total annual credit of $12,000. Adding the 20% administrative cost brings the total annual cost to $14,400. The Company proposes to increase the high block commodity rate for all residential and commercial customers in Agua Fria by $0.1807 per 1,000 gallons to fund the program.

Q. WHAT ARE THE SPECIFICS OF THE LOW INCOME PROGRAM FOR THE MOHAVE DISTRICT?

A. The Company proposes that up to 1,000 Havasu residential customers on 5/8 and ¾ inch meters participate in the program if they meet the same criteria. The Company proposes a monthly credit of $5.00 for participants for a total annual credit of $60,000. Adding the 20% administrative cost brings the total annual cost to $72,000. The Company proposes to increase the high block commodity rate for all residential and commercial customers in Agua Fria by $0.1138 per 1,000 gallons to fund the program.

Q. HAS THE COMPANY CAPTURED THIS INFORMATION IN A TARIFF?

A. Yes. Rejoinder Exhibit TMB-1 presents the proposed low income tariffs.

Q. IS THIS LOW INCOME PROPOSAL IN COMPLIANCE WITH DECISION NO. 71410?

A. Yes, for the districts in this case. For these three districts, it complies with the requirement to submit a low income tariff. The low income program and tariff for each district need to be approved within the context of a rate case in order to establish the high block rate funding mechanism. The program and tariff for the Sun City West and Tubac districts will be submitted in future rate cases for these specific districts. We expect to seek a program waiver for the Paradise Valley district in that district's next rate case.

IV <u>COST OF DEBT</u>

Q. WHAT IS THE AMOUNT OF OUTSTANDING SHORT TERM DEBT AT JULY 31, 2011?

A. Attached is Rejoinder Exhibit TMB-2 which provides the actual amount of short term debt outstanding as of July 31, 2011 of $50,881,000. Therefore, the Company paid off an additional $3.6 million of short term debt in July 2011 and remains on track to reduce short term debt down to at least $47.8 million by December 31, 2011.

Q. WHAT PORTION OF THE CAPITAL STRUCTURE IS DEBT AS OF JULY 31, 2011?

A. Using Commission Staff's definition which includes short term debt, the portion of Company's capital structure represented by debt as of July 31, 2011, is down to 59.55%. This is a full percentage point reduction from 60.55% reported for June 30, 2011. This, by definition, means the Company's equity ratio likewise increased by a full percentage point in one month from 39.45% to 40.45%.

Q. STAFF WITNESS MR. MANRIQUE INCORPORATED A HYPOTHETICAL CAPITAL STRUCTURE SUCH THAT HE "HYPOTHETICALLY" INCREASED THE EQUITY RATIO TO 40% IN HIS RECOMMENDATION. IS THIS HYPOTHETICAL ANY LONGER?

A. No, as of July 31, 2011, Mr. Manrique's increase in the prior historical equity ratio to 40% is moot because the actual ratio is now 40.45% and increasing.

Q. IN THEIR SURREBUTTAL, DID ANY OF THE PARTIES ACCEPT YOUR NOTION OF CONTINUING TO UPDATE THE CAPITAL STRUCTURE FOR ADDITIONAL, ACTUAL INFORMATION?

A. Yes, the Verrado Community Association's Mr. Simer did accept this notion in apparent recognition of our efforts to pay down short term debt. Obviously, he made this recommendation in the context of including short term debt in the capital structure for ratemaking purposes. As he suggests, I will continue filing updates of the Company's actual outstanding short term debt balance. RUCO's Mr. Rigsby tied his position on accepting an updated capital structure to the Commission's decision on whether to approve ISRS, though he did not explain why. Staff's Mr. Manrique did not further update beyond April 2011.

It has been the Commission's recent practice to update the capital structure late in the Company's rate cases, and I hope Staff and RUCO will embrace this concept at hearing as Mr. Simer has done. Of course, while I appreciate Mr. Manrique's hypothetical adjustment, I request he revisit this hypothetical capital structure concept in light of the fact that the Company has already exceeded the hypothetical ratio on an actual basis.

Q. DID ANY OF THE PARTIES ADDRESS UPDATING THE COST OF CAPITAL FURTHER IN THE EVENT THE REMAINING BALANCE OF SHORT TERM DEBT IS TIMELY REFINANCED INTO LONG TERM DEBT?

A Yes, Mr. Simer also indicated the Company should be allowed to update this case with new debt balances if this refinancing occurs in time to be considered in this case. I likewise believe Staff would be amenable to such an update.

V WHITE TANKS DEFERRALS

Q. AS STAFF REQUESTED, PLEASE UPDATE THE ACTUAL BALANCE OF THE WHITE TANKS PLANT RELATED DEFERRALS AS OF JULY 31, 2011?

A. The unamortized balance is $ 9,313,992 as of July 31, 2011 or only $313,633 more than originally estimated in my original Exhibit TMB-3 of $9,000,359. As requested, I will continue to provide updates of the actual deferrals as they become available.

VI REJOINDER TO HEWITT

Q. AS MR. HEWITT RECOMMENED IN HIS DIRECT TESTIMONY, HAS THE COMPANY STARTED TO INFORM CUSTOMERS ON THEIR MONTHLY BILL THE NAME OF THE DISTRICT IN WHICH THEIR PREMISE IS LOCATED?

A. Yes, as of August 1, 2011, the Company began including as a bill text message on monthly bills, the statement displayed in Rejoinder Exhibit TMB-3. Bill text messages are displayed underneath the billing summary in a section labeled "Messages to you from Arizona American." The Company has also recently placed service territory maps on its web site (specifically located at www.amwater.com/azaw/Customer-Service/Rates-&-Regulatory under separate tabs for each district). The current intention is to run this bill message for the balance of 2011 and, of course, to resume it again for those districts in a future rate case around the time of the filing. I am appreciative of Mr. Hewitt's suggestion.

Q. IS IT "TOO LATE FOR THIS CASE" AS MR. HEWITT CONCLUDES (SURREBUTTAL, PAGE 1) FOR ALL AGUA FRIA CUSTOMERS TO HAVE MEANINGFUL NOTICE IN THIS RATE CASE?

A. No, it is not too late, and I hope Mr. Hewitt now agrees. On the same day that Mr. Hewitt's surrebuttal testimony was filed, a procedural conference occurred and the outcome is that Agua Fria customers now have until August 24, 2011 to intervene in this case and they will shortly receive a separately mailed notice to that effect. The Commission has also scheduled a future procedural conference to discuss, among other things, the time needed by new interveners, if there are any, to prepare their case.

Q. MR. HEWITT CONCLUDES (SURREBUTTAL, PAGE 2) THAT BECAUSE SO FEW AGUA FRIA CUSTOMERS COMPLAINED IN DOCKET NO. W-01303A-08-0227 THAT "NOTICE WAS INEFFECTIVE …." IS THAT TRUE?

A. No. Docket No. 08-0227 was the most recent rate case for the Agua Fria Water District. The Commission-required public notice in that case was sent to customers via ***direct mail***. On December 10, 2008, the Company filed an affidavit along with proof of postage that the direct mailer had been sent in October 2008.

The notice problems in on-going Docket No. 10-0448 were confined to those notices sent via ***bill inserts***. The Company's direct mail process is totally separate and distinct from the bill insert process. Mr. Hewitt has no basis for his allegation as regards Docket No. 08-0227.

Q. MR. HEWITT (SURREBUTTAL, PAGE 2) IMPLIES THAT ARIZONA-AMERICAN SELLS "INSURANCE ON THE PIPES." IS THAT TRUE?

A. No, Arizona-American has no such program. I am not sure, but I believe Mr. Hewitt is referring to a program offered in Arizona (and in other states) by a different subsidiary of American Water. Arizona-American does not allow inserts of this program's promotional materials into the billing envelopes of Arizona-American customers nor does Arizona-American provide customer mailing lists to this affiliate.

Q. MR. HEWITT (SURREBUTTAL, PAGE 2) CONTINUES TO STATE THAT THE COMPANY'S CALL CENTER TOLD CALLERS "THEY WERE NOT IN AGUA FRIA." IS THAT TRUE?

A. To the best of my knowledge, that is also not true. This oft repeated, but never specified, allegation of a few Agua Fria customers has been researched internally. Company officials have repeatedly inquired of the alleging customers for any details surrounding such calls to our call center including the name of the phone representative(s), the date(s) of calls or any such information that would help the Company to best conduct an internal investigation. No such supporting information was forthcoming from customers making these allegations. Our own internal inquiries have not uncovered any misinformation in this regard.

Q. DOES THE COMPANY HAVE ANY REACTION TO MR. HEWITT'S PROPOSAL TO INCENTIVIZE DEVELOPERS TO PAY HOOK-UP FEES UP FRONT?

A. As I understand it, Mr. Hewitt's concept is to incentivize developers to pay hook-up fees upfront, or pay a much larger surcharge in the future. However, many developers are no longer in business. Of the remaining few, the small developers do not have funds available to pay upfront for a large number of lots. Small developers only want to pay for one lot at a time.

Mr. Hewitt stated that there is a lot of evidence that developers have already put infrastructure in place well before construction will start. I assume he is inferring that developers are willing to invest now in the cost of infrastructure and fees for future use. That is generally not the case. Developers' intentions are to build and sell homes immediately after having the infrastructure in place. In many cases, the developers' funding had been removed just before they were able to start construction of homes. Their plan was not to put infrastructure in place and let the infrastructure sit there for months or years before they could start constructing homes. It just worked out that way.

Some of the larger developers may be interested in paying a fee now, at a very significant discount, versus paying a larger fee in the future.

Q. MR. HEWITT CLOSES HIS SURREBUTTAL BY MENTIONING IN PASSING A DATA REQUEST HE WANTS ANSWERED. WHAT IS THE STATUS OF THAT DATA REQUEST?

A. It will be answered no later than August 11, 2011, when Mr. Hewitt is scheduled to visit Arizona-American's offices. He expressed interest in learning more about the bill insert work flow process, so the Company has scheduled a meeting to discuss it with him further. Informal teleconference discussions with Company personnel and Mr. Hewitt have already occurred

VII <u>REJOINDER TO ARNDT</u>

Q. IN REVIEWING MR. ARNDT'S SURREBUTTAL TESTIMONY, DID YOU NOTICE ANY INNACURRACIES OR ERRORS?

A. It is difficult to know where to begin correcting the many errors in Mr. Arndt's Surrebuttal Testimony; but, I begin by correcting his assertion that "the Company is not entitled to recover the deferred White Tanks O&M expenses…" (Surrebuttal, Page 36, Lines 8-9) because of the pending sale to EPCOR causing Arizona-American to no longer be the sole owner of White Tanks. That is not the case, as Arizona-American will remain the sole owner of the White Tanks plant as the pending sale merely causes our parent American Water to be replaced by EPCOR. The condition Mr. Arndt references in Decision No. 71410 is widely understood to mean that Arizona-American shall not sell all or a portion of the White Tanks plant without jeopardizing the recovery of its deferred White Tanks O&M expenses. That is a logical condition because if all or part of the White Tanks plant were sold, the additional owner would be paying its share of White Tanks O&M expenses.

Q. COMMISSION DECISION NO. 72047 ACCEPTED AN UPDATE TO THE COMPANY'S CAPITAL STRUCTURE EXTENDING A FULL YEAR BEYOND THE END OF THE TEST YEAR. DID MR. ARNDT CITE THIS OUTCOME?

A. No, he did not. This outcome (Decision No. 72047, page 59) does ***not*** support his position that the Commission should ***not*** reach beyond the end of the test year for an update to the capital structure. However, Decision No. 72047, which decided the Company's most recent rate case, reached a full year beyond the end of the December 31, 2008 test year for an updated capital structure. In that case, the Commission accepted Staff's Mr. Manrique's recommendation to reach out to December 31, 2009 (Direct Testimony, Mr. Manrique, Docket 09-0343, Page 15). In that case, this post test year reach had the unfortunate consequence on the Company of incorporating nearly the maximum amount of short term debt in the Company's history into the capital structure because construction of the White Tanks plant had only just finished. Now, in this case, Mr. Arndt does not want the Commission to reach beyond the end of the test year because it has just the opposite consequence. The Company has been and continues to pay down its short term debt. Fairness would suggest that roughly equivalent and consistent treatment from the Commission would be appropriate in this case.

Q. THE WHITE TANKS HOOK-UP FEES CITED BY MR. ARNDT (SURREBUTTAL, PAGE 23) APPEARED ADEQUATE TO FUND THE WHITE TANKS PLANT TWO TIMES OVER. ARE THOSE THE CORRECT FIGURES?

A. No. Since the White Tanks hook-up fee tariff was not approved until September 27, 2007, the hook-up fee proceeds he cites for 2005, 2006 and 2007 were not accurate and not the latest estimates at that time. The Commission did not approve retroactive applicability of the tariff nor did any party request that outcome. Mr. Arndt is probably also not aware that a Stipulation was reached late in that case and filed March 19, 2007 with home developers (at least eight home developers intervened in that case) such that a significant number of homes then in the development or construction pipeline were excused from paying the increase in the hook-up fee (as only a portion of the current hook-up fee is devoted to White Tanks) which further reduced expectations of White Tanks hook-up fee proceeds. The final Company forecast submitted in that case was provided in the revised application, but even that forecast was acknowledged as out of date in the Company's exceptions to the Recommended Order in Docket No. 05-0718.

Q. DID MR. ARNDT POINT OUT THAT, IN 2008, CUSTOMER GROWTH IN THE AGUA FRIA DISTRICT INCREASED AS COMPARED TO 2007?

A. No, he did not point that out in the customer growth data table he included on page 24 of his Surrebuttal Testimony; namely, that customer growth in Agua Fria was 2,766 in 2008 as compared to 2,127 in 2007. Alternatively, Mr. Arndt stated that the Company did not inform the Commission in a timely manner that the funding of the White Tanks plant by hook-up fees had problems based on 2007 customer growth results. Since Mr. Arndt did not provide any calculations of what customer growth of this magnitude means in terms of White Tank hook-up fees, below I provide calculations and the range of fees are substantial. The White Tanks hook-up fee approved in late 2007 was \$3,195 for a ¾ inch meter and \$5,325 for a 1 inch meter. Hence, the potential range of White Tanks hook-up fees for this range of growth is:

	¾ inch meter	1 inch meter
2,127 customers	\$6,795,765	\$11,326,275
2,766 customers	\$8,837,370	\$14,728,950

Hence, this lower range of customer growth in Agua Fria would have been adequate to funding the White Tanks plant in the manner originally proposed (by hook-up fee) if it had continued beyond the 2007 and 2008 timeframe, albeit at a somewhat slower pace than originally anticipated. (However, as we all now know, in 2009 a US macroeconomic recession commenced which caused a real estate depression in Arizona.)

Q. SO WHY DIDN'T THE COMPANY ACTUALLY COLLECT THIS RANGE OF WHITE TANKS HOOK-UP FEES IN THE 2007-2008 TIMEFRAME?

A. What Mr. Arndt does not point out in his surrebuttal testimony is that the increase in hook-up fee for White Tanks was approved too late in 2007; thus, the Company was not able generate between $6.8 million and $11.3 million in new hook-up fees. And, furthermore, even though growth accelerated in 2008 as compared to 2007, the Company could not actually collect between $8.8 million and $14.7 million in White Tanks hook-up fees that year either for two reasons. First, developers pay hook-up fees well in advance of the customer connection and thus much of the hook-up fees on this growth were paid before the hook-up fee was increased. Second, although the Commission, the Company, and all parties to Docket 05-0718 knew of the aforementioned Stipulation, Mr. Arndt appears not to be aware that many homes initially subject to the higher hook-up fee were grandfathered at the old tariff because they were already in the construction pipeline (absent the Stipulation, developers opposed the hook-up fee increase). Therefore, it was not until 2009 that the Company had a real opportunity to actually collect White Tanks hook-up fees, but by then the real estate slowdown brought the White Tanks hook-up fee proceeds to a level inadequate to entirely fund White Tanks on that basis for any extended period of time.

Q. MR. ARNDT ALLEGES THE COMPANY DID NOT TIMELY INFORM THE COMMISSION THAT WHITE TANKS HOOK-UP FEES WERE BELOW EXPECTED LEVELS (SURREBUTAL, PAGE 25, LINES 18-23). IS THAT ACCURATE?

A. No, the Company repeatedly made the Commission aware of the evolving situation. For the earliest example, Rejoinder Exhibit TMB-4 is an excerpt (Page 1) from the Company's Exceptions to the Recommended Order in the White Tanks hook-up fee case (Docket No. 05-0178) dated September 13, 2007. The Exceptions indicate that the earlier revised hook-up fee projections were outdated and that, due to an emerging real estate slow-down, hook-up fees would not generate funds as quickly as originally projected and that the Company wanted the accounting-related authorizations to extend through 2015 (which the Commission granted). Hence, it was not the real estate slow-down that caused the Company to realize that hook-up fees could not fund White Tanks, but rather, it was the subsequent and unprecedented collapse of real estate in Arizona and the subsequent depression commencing in Arizona in 2009.

Q. WHAT IS ANOTHER EXAMPLE OF THE COMPANY INFORMING THE COMMISSION OF THE EVOLVING SITUATION?

A. Below is an excerpt from my Revised Direct Testimony in the previous Agua Fria district rate case dated June 20, 2008 in Docket 08-0227 (Page 11, Line 23 through Page 16, Line 6). I cannot see how the Company could have been more forthcoming with updated information concerning White Tanks. It is obvious from this excerpt that in June 2008, the Company was still very much committed to the original intent to pay for White Tanks with hook-up fees, that the real estate slow-down was causing a partial correction to that plan, but that the Company yet had no idea how bad Arizona's real estate market was about to become in 2009:

Q. IS ARIZONA-AMERICAN PROPOSING TO CHANGE THE AGUA FRIA WATER DISTRICT HOOK-UP FEE ("WHU-1")?

A. No. To the contrary, Mr. Townsley requests that the recently-approved increase be extended from 2015 until December 31, 2020 in order to allow more time to fund the White Tanks Plant. The WHU-1 fee was increased substantially in 2007 for the purpose of providing additional contributions to offset the White Tanks Plant's costs. As Mr. Townsley testifies, the anticipated additional proceeds from the WHU-1 tariff are falling far short of expectations, due largely to the emerging real estate slowdown. In 2007, only $73,485 in incremental hook-up fees were available to the White Tanks Plant versus $1,064,988 forecasted for 2007 during the White Tanks Plant hearing. However, if we were to request an increase in the WHU-1 fee in response to the real estate slowdown, we expect this would be received negatively by the residential home-builder community.

Q. WHY SHOULD EXISTING AGUA FRIA WATER CUSTOMERS PAY ALMOST HALF THE COST OF THE WHITE TANKS PLANT?

A. First, as I discussed above, the plant will enter service shortly after rates are effective as a result of this filing and will immediately begin providing renewable surface water to customers, nearly all of whom will never pay a hook-up fee. Thus, it is certainly fair that these customers shoulder a reasonable share of the plant's cost. Second, if CWIP were not included in rate base, the accumulated balance of the hook-up fee is forecasted to be exhausted by the end of 2010, given the revised customer forecast. Arizona-American needs to avoid this situation as our auditors may not allow us to recognize the associated deferrals and even a portion of the plant balance may be in jeopardy under possible interpretations of FASB 92. Setting this very important concern aside, the accumulated hook-up fees would not pay off the White Tanks Plant until 2027 without any CWIP in rate base, again given the revised customer forecast. Clearly, the year 2027 is not an acceptable pay off date.

Q. ISN'T THIS A CHANGE FROM ARIZONA-AMERICAN'S PREVIOUS PROPOSAL FOR NEW CUSTOMERS TO PAY FOR THE ENTIRE COST OF THE WHITE TANKS PLANT VIA THE WHU-1 HOOK-UP FEE?

A. Yes, this is an update to our original funding plan for this project. As I testified in the White Tanks case:

If the Agua Fria Water Facilities Hook-up Fee is set at the level proposed by Staff and the Commission provides the necessary accounting approvals, then Arizona-American does not presently intend to ask for a rate increase for capital costs associated with building the White Tanks Plant. <u>This intention will be re-examined based on information known at the time of the next rate cases for the Agua Fria Water District.</u>[1]

Q. WHAT WILL ARIZONA-AMERICAN DO IF THE COMMISSION DOES NOT AUTHORIZE INCLUDING CWIP IN RATE BASE?

A. If hook-up fees remain low through 2009 and the Commission does not authorize including CWIP in rate base, Arizona-American will face an even more difficult financial situation by 2010. The primary issue is cash-flow. By 2010, Arizona-American will have funded (provided cash for) the White Tanks Plant and it will then go in service with additional cash requirements for O&M expenses. Although the Commission has authorized the deferral of White Tanks Plant depreciation, post in-service AFUDC and will also consider a deferral of White Tanks Plant O&M expenses in this case, Arizona-American will still be providing cash until White Tanks Plant is either paid for by hook-up fees or placed in rates. Given this difficult scenario, Arizona-American may be forced in the next rate case to request approval to include the entire White Tanks Plant investment in rate base. Arizona-American's request for CWIP in rate base is designed, in large part, to reduce the likelihood that such a rate-base request will be necessary. Including a portion of the White Tank Plant's CWIP in rate base will help stay the course for having the balance funded via hook-up fees.

If the Commission approves Arizona-American's request for CWIP in rate base in this case, Arizona-American will endeavor to do its best to have the balance of the White Tanks Plant funded via hook-up fees. Put differently, the Commission can help preserve the intention of funding much of the White Tanks Plant by hook-up fees if it allows $25 million of CWIP in rate base in this case.

Q. WHY DOES CASH-FLOW MATTER?

A. Cash pays the bills, and Arizona-American is already unable to generate enough cash to pay all bills, which forces additional borrowing. For the adjusted test year 2007, Arizona-American's operating income for these seven districts was $4,623,998 (Exhibit TMB-1, Summary of Schedule A-1's), yet interest expense alone was

[1] Docket No W-01303A-05-0718, Exhibit A-7 – Surrebuttal Testimony of Thomas M. Broderick at 6.

$5,769,740 (Exhibit TMB-1, Summary of Schedule C-1's). This situation is not sustainable, especially as debt and interest expense will increase further during the construction of the White Tanks Plant. For several years now, American Water has been infusing equity into Arizona-American in order to pay interest expense and maintain a balanced capital structure.

Q. HOW MUCH WOULD AFUDC BE REDUCED IF THE COMMISSION APPROVED CWIP IN RATE BASE?

A. I do have an exhibit, but first one must bear in mind that AFUDC is greater than previously forecasted simply because hook-up fees (which begin reducing AFUDC in the month received) are so much lower during the construction period than earlier forecasted. But, setting that aside, Exhibit TMB-4 re-forecasts the White Tanks Plant cost including AFUDC and offsets the cost with revised forecasted hook-up fees using current forecast information. It also offsets the White Tanks Plant cost with $25 million of CWIP in rate base starting September 2009. It also incorporates the impacts of several proposed accounting entries resulting from the recent Commission-authorized deferral. By performing the calculation both with and without CWIP in rate base, accumulated AFUDC is reduced by $6.0 million when CWIP is included in rate base for the period September 2009 through September 2011 (the forecasted date of new rates in the next rate case for the Agua Fria Water District). Exhibit TMB-4 assumed the $25 million CWIP in rate base remains in rate base through the next rate case.

Mr. Gross sponsors the revised customer forecast and associated adjustments to arrive at the effective customer growth in Agua Fria district that pays the WHU-1 fee.

Q. HAS RUCO PREVIOUSLY EXPRESSED SUPPORT FOR REDUCING WHITE TANKS PLANT AFUDC?

A. Yes. During the proceeding to increase the WHU-1 fee, RUCO supported a much larger hook-up fee increase and stated "RUCO still believes that the Company's Option 2 will result in less AFUDC accruals than will Option 1, and is therefore still preferable."[2]

Q. WHAT IS THE FORECASTED UNRECOVERED WHITE TANKS PLANT BALANCE AT SEPTEMBER 2009 ASSUMING $25 MILLION OF CWIP GOES INTO RATE BASE?

[2] Docket No. W-01303A-05-0718, Exhibit R-2 – Rebuttal Testimony of William Rigsby at 2. (Option 2 was a significantly larger hook-up fee.)

A. Exhibit TMB-4 displays a remaining net investment of $29.3 million at September 30, 2009. This balance is forecasted to grow to a maximum of $33.1 million at December 2010. This remaining balance would be recovered by hook-up fees.

Q. EXHIBIT TMB-4 ALSO SHOWS AN UNRECOVERED WHITE TANKS PLANT BALANCE AT FEBRUARY 2017 TO BE $0. IS THAT WHEN WHITE TANKS PLANT AND DEFERRALS ARE FORECASTED TO BE FULLY RECOVERED?

A. Yes, based on current forecast information and assuming the Commission authorizes the inclusion of $25 million of CWIP in rate base in this proceeding. That date is already several years later than initially desired and planned for.

Q. ARE YOU AWARE THAT ANY PARTY TO DOCKET 08-0227, UPON REVIEWING THE COMPANY'S UPDATE IN MID-2008, SUGGESTED THE COMPANY SHOULD HALT OR EVEN CONSIDER HALTING, MOTHBALLING OR OTHERWISE CEASING CONSTRUCTION OF THE WHITE TANKS PLANT?

A. No, I am not. No party to that case nor any person anywhere until this rate case (i.e., Mr. Arndt) suggested that White Tanks should not have finished construction.

Q. IS THIS THE ENTIRE SET OF CORRECTIONS TO MR. ARNDT'S SURREBUTTAL?

A. No, but these are my major corrections.

Q. BY WHEN DID CERTAIN OF ARIZONA'S LEADING ECONOMISTS KNOW ABOUT THE TIMING AND MAGNITUDE OF ARIZONA'S ON-GOING REAL ESTATE DEPRESSION?

A. By approximately May 2008, the Arizona Blue Chip Panel's consensus forecast first displayed evidence that Arizona's slow down would be more severe than merely a typical temporary slow down. Rejoinder Exhibit TMB-5 contains excerpts from ASU's Western

Blue Chip Economic Forecast made for the period starting January 2006 through January 2011, along with actual annual Arizona economic data for the period 2000 through 2010, plus a listing of the current Arizona Blue Chip Panelists.

Q. WHAT WAS THE ARIZONG BLUE CHIP PANEL'S OUTLOOK IN JANUARY 2006?

A. Coming off the best or one of the best years in Arizona history, the outlook for 2006 and 2007 was also quite good with Arizona employment expected to grow 4.0% and 3.6%, respectively, in 2006 and 2007. Single housing permits were anticipated to decline off their record pace of over 80,000 units in 2005 by only (5.9%) and (3.8%).

Q. WHAT WAS THE PANEL'S OUTLOOK ONE YEAR LATER?

A. The Panel's outlook in January 2007 saw continued strong employment growth – the engine of the Arizona economy – of 3.6% and 3.6%, respectively, for 2007 and 2008. In other words, the Panel's employment growth outlook for 2007 did not change over that period, staying firm at the 3.6% growth outlook.

Q. WAS THE PANEL'S VIEW DIFFERENT IN JANUARY 2008?

A. In its January/February 2008 outlook, the Panel did see growth reducing somewhat from its previous strong levels to only 2.2% and 2.6% employment growth, respectively, for 2008 and 2009. The Panel's reduction was likely in response to the slow down commencing in Arizona's employment growth in 2007. We now know that employment grew 5.1% in 2006 and only 1.5% in 2007. (To truly know what the Panel was reviewing in this time frame one must obtain the preliminary actual employment data which is subsequently revised.)

Q. SINCE WE NOW KNOW THAT EMPLOYMENT IN ARIZONA DECLINED (2.1%) IN 2008, THEN FURTHER DECLINED (7.3%) IN 2009 AND DECLINED (2.1%) AGAIN IN 2010, WHEN DID THE PANEL FIRST BEGIN TO TRACK MORE CLOSELY TO WHAT ACTUALLY HAPPENED?

A. In March 2008, the Panel was still forecasting 2.2% employment growth for 2008, but in April 2008 dropped the outlook to 1.1% and then in May 2008 dropped it further to 0.7%. At that time, the Panel viewed the slow down to be shallow and short lived and forecasted employment growth of 1.9% for 2009. In December 2008, the Panel projected zero Arizona employment growth for 2009 and in January 2009, the Panel projected a (0.7%) decline. However, even as late as January 2009 the Panel believed the recession would be short and shallow and forecasted a 1.9% employment growth rate for 2010. A year later, in January 2010, the Panel forecasted only a 0.2% employment increase for 2010.

Q. GIVEN THAT ARIZONA'S LEADING ECONOMISTS ONLY FIRST BEGAN TO SHOW LIMITED UNDERSTANDING OF THE TIMING AND DEPTH OF ARIZONA'S REAL ESTATE DEPRESSION BY MAY 2008, SHOULD THE COMMISSION HAVE EXPECTED THE COMPANY TO HAVE BEEN ABLE TO - AS SOME PARTIES IN THIS CASE SUGGEST – FULLY GRASP THE EMERGING ECONOMIC SITUATION, FACTOR THAT INFORMATION IMMEDIATELY AND ACCURATELY INTO ITS CONSTRUCTION PLANS, AND TAKE IMMEDIATE ACTION ON THOSE PLANS EARLIER THAN 2009 SUCH THAT WHITE TANKS WOULD HAVE BEEN HALTED, MOTHBALLED OR ABANDONED?

A. Absolutely not. As the above contemporaneous information demonstrates, the Company simply did not have adequate evidence from any reliable and credible source of expertise to take such dramatic action in 2008.

VIII RATE DESIGN

Q. DID STAFF RESPOND TO YOUR CONCERNS EXPRESSED IN REBUTTAL CONCERNING STAFF'S PROPOSED RATE DESIGN AND POLICY?

A. Partially, yes. It was important for Staff to link the Company's proposed declining usage adjustment to the discussion of its policy for water use efficiency as Mr. Michlik did in his Surrebuttal (Page 2). If the Commission expects the Company to fully cooperate with its policy to promote efficient water use, it is important for the Commission to embrace adjustments and mechanisms which help mitigate the negative financial impact of its policy. A declining usage adjustment is one such helpful adjustment.

Q. IS THE COMPANY IMPROVING ITS TECHNICAL KNOWLEDGE OF THE IMPACT OF PRICE INCREASES AND RATE DESIGN CHANGES ON CUSTOMER USAGE?

A. Yes, because we are very concerned about an eroding base of revenues due to declining usage in a nearly zero growth economy. The Company's employee Mr. Miles Kiger earlier analyzed Anthem and provided that compliance study to the Commission, but more recently the Company has engaged economists at the U of A to build a fully specified econometric model of the Company's service territories. The U of A team selected the Paradise Valley district as its first geographic area to analyze and its initial preliminary estimate of an intermediate duration price elasticity is approximately (0.1). This price elasticity can be interpreted as, for example, a 10% increase in the price of water causes a 1.0 percent reduction in water usage. The U of A team also analyzed price elasticity by rate tier and as expected preliminarily found that usage is more negatively responsive to price increases in higher blocks. The Company looks forward to the U of A making more information available in the near future.

Q. WHAT ARE THE COMPANY'S REMAINNG CONCERNS WITH STAFF'S PROPOSED RATE DESIGN AND POLICY?

A. It concerns the Company that Staff seems to be almost completely unconcerned with cost of service in making its rate design proposals. The Company has learned its lesson in this case and plans to include a cost of service study in the next rate case so we can be informed as to how far rate design is deviating from cost of service. The Company is also concerned that Staff is moving forward quickly and strongly in implementing a water use policy, but the Company is unaware of its specific goals. The Commission and the Company have been embracing Best Management Practices for several years now and they are working well to reduce usage. Perhaps, its time to slow down and take stock of the situation. It is not inconceivable that in the next round of rate cases for the Company, a significant amount of the proposed rate increase could simply be for recovering in rates a previously approved level of revenue requirement.

Q. DOES YOUR SILENCE ON ANY ISSUE RAISED BY ANY PARTY IN SURREBUTTAL TESTIMONY INDICATE YOUR ACCEPTANCE OF THEIR POSITION?

A. No.

Q. DOES THIS CONCLUDE YOUR REJOINDER TESTIMONY IN THIS CASE?

A. Yes.

REJOINDER EXHIBIT TMB-1

GENERAL WATER RATE
(continued)

LOW INCOME PROGRAM TARIFF

Requires the completion of a Low Income Program Application. Restricted to up to the number of eligible residential participants identifed per district below.

Agua Fria District:

Maximum participants: 1,000 residential customers on 5/8 x 3/4 inch meters
Monthly Low Income Credit: $7.50

Increase in last block commodity rate for all residential and commercial customres:

$0.0846 per thousand gallons

Havasu:

Maximum participants: 100 residential customers on 5/8 x 3/4 inch meters
Monthly Low Income Credit: $10.00

Increase in last block commodity rate for all residential and commercial customres:

$0.0 per thousand gallons

Mohave:

Maximum participants: 1,000 residential customers on 5/8 x 3/4 inch meters
Monthly Low Income Credit: $5.00

Increase in last block commodity rate for all residential and commercial customres:

$0.0846 per thousand gallons

Terms and Conditions

Applicants must swear that he/she has annual income below a threshold of 150% of the federal low income guidelines as periodically revised. Applicant may not be claimed as a dependent on another person's tax return. Applicant must reapply each time moving residences. Refusal or failure to provide acceptable documentation of eligibility, upon request, shall result in removal from the low income program. Repayment of low income credits by customers may occur for periods of ineligibility previously receiving low income credits. Annual income means the value of all money and non-cash benefits available for living expenses, from all sources, both taxable and non-taxable, before deductions, for all people who live with the applicant.

ARIZONA AMERICAN WATER CAPITAL STRUCTURE[1]

ACTUAL AS OF JUNE 30, 2011

	Amount Outstanding	% of Capital Structure
Long Term Debt	$186,993,000[2]	46.88%
Short Term Debt	$54,508,000	13.67%
Total Debt	241,501,000	**60.55%**
Total Common Equity	$157,372,000	39.45%
Total Capitalization	$398,873,000	100.00%

ACTUAL AS OF JULY 31, 2011

	Amount Outstanding	% of Capital Structure
Long Term Debt	$186,987,000	46.81%
Short Term Debt	$50,881,000	12.74%
Total Debt	237,868,000	**59.55%**
Total Common Equity	161,558,000	40.45%
Total Capitalization	399,426,000	100.00%

PROJECTION AS OF DECEMBER 31, 2011

	Amount Outstanding	% of Capital Structure
Long Term Debt	$186,940,000	47.19%
Short Term Debt	$47,818,000	12.07%
Total Debt	234,758,000	**59.26%**
Total Common Equity	$161,416,000	40.74%
Total Capitalization	$396,174,000	100.00%

[1] As per Staff definition to include short term debt.
[2] As a reminder, Tolleson related debt ($8.56 m) is always removed as per prior Commission precedent which provided the benefit of this low cost debt entirely to Sun City Wastewater district.

** YOU ARE A CUSTOMER IN THE AGUA FRIA DISTRICT ** For more information about your district, the pending rate case, payment options, conservation tips, or Arizona American Water, please call our Customer Service Center at 1-800-383-0834 or visit us online at www.arizonaamwater.com.

** YOU ARE A CUSTOMER IN THE MOHAVE DISTRICT ** For more information about your district, the pending rate case, payment options, conservation tips, or Arizona American Water, please call our Customer Service Center at 1-800-383-0834 or visit us online at www.arizonaamwater.com.

** YOU ARE A CUSTOMER IN THE HAVASU DISTRICT ** For more information about your district, the pending rate case, payment options, conservation tips, or Arizona American Water, please call our Customer Service Center at 1-800-383-0834 or visit us online at www.arizonaamwater.com.

** YOU ARE A CUSTOMER IN THE PARADISE VALLEY DISTRICT ** For more information about your district, payment options, conservation tips, or Arizona American Water, please call our Customer Service Center at 1-800-383-0834 or visit us online at www.arizonaamwater.com.

** YOU ARE A CUSTOMER IN THE SUN CITY DISTRICT ** For more information about your district, payment options, conservation tips, or Arizona American Water, please call our Customer Service Center at 1-800-383-0834 or visit us online at www.arizonaamwater.com.

** YOU ARE A CUSTOMER IN THE SUN CITY WEST DISTRICT ** For more information about your district, payment options, conservation tips, or Arizona American Water, please call our Customer Service Center at 1-800-383-0834 or visit us online at www.arizonaamwater.com.

** YOU ARE A CUSTOMER IN THE ANTHEM DISTRICT ** For more information about your district, payment options, conservation tips, or Arizona American Water, please call our Customer Service Center at 1-800-383-0834 or visit us online at www.arizonaamwater.com.

** YOU ARE A CUSTOMER IN THE TUBAC DISTRICT ** For more information about your district, payment options, conservation tips, or Arizona American Water, please call our Customer Service Center at 1-800-383-0834 or visit us online at www.arizonaamwater.com.

REJOINDER EXHIBIT TMB-4

ORIGINAL

OPEN MEETING AGENDA ITEM

BEFORE THE ARIZONA CORPORATION COMMISSION

RECEIVED

2007 SEP 13 P 4: 10

AZ CORP COMMISSION
DOCKET CONTROL

12

COMMISSIONERS

MIKE GLEASON, Chairman
WILLIAM A. MUNDELL
JEFF HATCH-MILLER
KRISTIN K. MAYES
GARY PIERCE

IN THE MATTER OF THE APPLICATION OF ARIZONA-AMERICAN WATER COMPANY, INC., AN ARIZONA CORPORATION, FOR APPROVALS ASSOCIATED WITH A PROPOSED TRANSACTION WITH MARICOPA COUNTY MUNICIPAL WATER CONSERVATION DISTRICT NUMBER ONE TO ALLOW THE CONSTRUCTION OF A SURFACE WATER TREATMENT FACILITY KNOWN AS THE WHITE TANKS PROJECT	DOCKET NO. W-01303A-05-0718

Arizona Corporation Commission
DOCKETED
SEP 13 2007
DOCKETED BY nr

EXCEPTIONS OF
ARIZONA-AMERICAN WATER COMPANY

Arizona-American Water Company ("Arizona-American" or the "Company") hereby submits the following exceptions to the September 4, 2007, Recommended Opinion and Order:

Exception 1: On page 28, there are two ordering paragraphs (beginning on line 14 and on line 21) that provide deadlines of December 31, 2013, for the provided accounting relief. The requested accounting relief was based on hook-up fee projections contained in Arizona-American's September 1, 2006, revised application. The revised application anticipated that no hearing would be required and that hook-up fee increases would go into effect in December 2006. Now, the earliest that hook-up fees can be increased is October 2007. Further, as a result of the recent real estate slow-down, hook-up fees will not generate funds as quickly as originally projected. Although Arizona-American does not object to deadlines *per se*, they should reflect the latest circumstances. Therefore, to compensate for the delay in implementing a hook-up fee increase and for the expected slower pace of hook-up fee funding, Arizona-American asks that the deadlines in these two ordering paragraphs be set as December 31, 2015.

REJOINDER EXHIBIT TMB-5

BLUE CHIP ECONOMIC FORECAST

WESTERN

ASU W. P. CAREY SCHOOL OF BUSINESS ARIZONA STATE UNIVERSITY

Arizona Historical Table

	Personal Income ($ millions)	Retail Sales ($ millions)	Wage & Salary Employment (thousands)	Population (thousands)	Single-family Permits (number)
2010	223,716	43,035	2,377.3	6,392	10,755
% change	2.1	-1.7	-2.1		-16.1
2009	219,027	43,177	2,429.20		12,826
% change	-2.2	-10.7	-7.3		-33.0
2008	223,961	49,031	2,619.5		17,762
% change	2.5	-9.6	-2.1		-52.8
2007	218,588	54,246	2676.8		37,666
% change	5.6	0.1	1.6		-32.3
2006	206,958	54,211	2,637.0		55,533
% change	10.0	7.3	5.1		-31.2
2005	188,152	50,533	2,508.8		80,804
% change	10.7	13.8	5.4		0.0
2004	170,026	44,402	2,381.3		80,778
% change	9.3	8.5	3.7		22.7
2003	155,607	40,910	2,296.4		65,845
% change	5.0	5.3	1.4		18.0
2002	148,175	38,865	2,265.1		55,798
% change	3.7	1.0	0.0		7.6
2001	142,864	38,484	2,265.0		51,839
% change	5.3	1.9	1.0		6.1
2000	135,687	37,766	2,242.7	5,131	48,844
% change	8.9	7.8	3.7		-8.3

Data Sources

Personal Income: U. S. Department of Commerce, revised March 2011

Retail Sales: Taxable sales not including restaurant & bar sales, Arizona Department of Revenue

Wage & Salary Employment: Arizona Department of Commerce (revised March 2011)

Population: U. S. Census Bureau, Inter-census values not yet available

Single Family Permits: U. S. Census Bureau, June 2011

CONSENSUS FORECASTS

WESTERN BLUE CHIP ECONOMIC FORECAST

Methodology

The consensus forecasting approach used in the *Western Blue Chip* was inspired by Robert J. Eggert of Sedona, Arizona. Eggert popularized consensus forecasting with the introduction of his widely cited newsletter on the national economy, Blue Chip Economic Indicators. This approach has been consistently shown to be more accurate than projections from an individual forecaster.

Consensus panelists for the *Western Blue Chip* are drawn from leading firms, universities and state agencies across the West. Panelists are contacted during the final week of each month and forecast data are compiled by telephone and fax transmission until the last day of the month. Thus, data reported in the forecast tables for a given month are current as of the first day of that month.

The consensus for each state is the mean of all forecasts shown in the table. Data are expressed as annual percentage changes relative to the annual average value for each indicator during the previous year. Since not all panelists revise their forecasts each month, changes in the consensus may result from revisions by an individual contributor.

ARIZONA

	2006 Annual Percent Change, 2006 from 2005					2007 Annual Percent Change, 2007 from 2006				
Source:	Current $ Personal Income	Retail Sales	Wage & Salary Empl.	Population Growth	Single-family Housing Permits	Current $ Personal Income	Retail Sales	Wage & Salary Empl.	Population Growth	Single-family Housing Permits
Arizona Public Service	8.0	9.0	3.7	2.9	(5.0)	8.2	7.0	3.7	2.8	3.6
ASU - Bank One EOC	7.7	7.2	4.2	2.9	(8.0)	6.8	6.8	4.0	2.8	(7.0)
Arizona Department of Commerce	7.9	7.2	4.0	3.0	(7.0)	7.5	6.1	3.7	2.9	(10.0)
Department of Economic Security	7.8	7.1	3.7	2.9		7.1	6.8	4.0	3.0	
ECON-LINC	7.8	7.5	4.0	3.0	(10.0)	8.0	7.2	4.0	3.1	(5.0)
EconLit LLC	7.5	7.0	4.2	3.0	(5.0)	7.5	6.9	3.8	2.9	(5.0)
Eggert Economic Enterprises Inc.	8.6	7.3	4.2	3.1	(5.1)	8.4	7.2	4.3	3.3	(4.1)
Elliott D. Pollack & Co.	8.0	8.0	4.0	3.0	(10.0)	7.5	7.5	3.8	3.0	(5.0)
H. C. Reardon Economics	7.7	7.2	4.1	3.1	(7.0)	7.2	6.8	3.8	2.8	(2.0)
Joint Legislative Budget Committee	7.6	7.5	4.0	3.0	(5.0)	7.2	7.0	3.1	3.0	(1.5)
The Maguire Company	8.1	7.2	3.9	3.1	(5.0)	7.6	6.9	3.8	3.1	(5.0)
Metropolitan West Asset Management	7.9	7.4	4.1			7.9	7.1	4.0		
NAU - BBER	7.8	7.0	3.8	2.8	(5.0)	8.0	6.4	3.7	2.7	0.0
Salt River Project	8.5	7.0	4.2	3.2	(4.0)	7.0	6.0	2.5	2.7	(4.0)
Stellar Capital Management	7.2	7.0	3.8	2.7	(7.5)	7.1	6.9	3.6	2.6	(5.0)
UA - Eller College	9.4	6.7	4.4	3.3	(7.2)	7.4	6.3	3.0	3.1	(4.3)
VisionEcon	8.0	8.3	4.4	3.4	0.0	6.1	6.7	2.9	2.9	(2.0)
Wells Fargo & Co.	7.4	6.7	3.2	2.8	(3.3)	7.2	6.3	3.0	2.7	(4.0)
Consensus Forecast — This Month	**7.9**	**7.4**	**4.0**	**3.0**	**(5.9)**	**7.4**	**6.8**	**3.6**	**2.9**	**(3.8)**
— Last Month	**7.9**	**8.2**	**4.2**	**3.1**	**1.1**					

CALIFORNIA

	2006 Annual Percent Change, 2006 from 2005					2007 Annual Percent Change, 2007 from 2006				
Source:	Current $ Personal Income	Retail Sales	Wage & Salary Empl.	Population Growth	Single-family Housing Permits	Current $ Personal Income	Retail Sales	Wage & Salary Empl.	Population Growth	Single-family Housing Permits
Anonymous	5.8	5.2	1.7	1.7	(0.8)					
California State University, Long Beach *	5.9	7.8	1.7	1.8	(26.4)	7.0	7.1	2.1	2.1	(3.2)
Chapman University	5.5	4.8	1.1	1.5	(12.5)	5.1	4.6	0.8	1.5	(6.1)
L.A. County Econ. Development Corp.	6.1	9.4	1.5	1.4	(5.2)	5.9	8.7	1.4	1.3	(1.3)
Legislative Analyst's Office	5.7	5.2	1.3	1.4	(10.0)	5.5	5.6	1.4	1.4	(1.0)
UCLA - Business Forecasting Project	5.7	5.2	1.3	1.4	(10.0)	5.5	5.6	1.4	1.4	(1.0)
University of the Pacific	6.9	4.6	1.7	1.6	(8.4)	6.0	4.9	1.3	1.5	(4.5)
Wells Fargo & Co.	5.9	4.8	1.6	1.3	(6.0)	5.8	4.7	1.0	1.3	(6.5)
Consensus Forecast — This Month	**5.9**	**5.6**	**1.5**	**1.5**	**(7.6)**	**5.6**	**5.7**	**1.2**	**1.4**	**(3.4)**
— Last Month	**5.9**	**5.2**	**1.6**	**1.6**	**(2.9)**					

*This forecast is for Southern California only

CONSENSUS FORECASTS

WESTERN BLUE CHIP ECONOMIC FORECAST

Methodology

The consensus forecasting approach used in the *Western Blue Chip* was inspired by Robert J. Eggert of Sedona, Arizona. Eggert popularized consensus forecasting with the introduction of his widely cited newsletter on the national economy, Blue Chip Economic Indicators. This approach has been consistently shown to be more accurate than projections from an individual forecaster.

Consensus panelists for the *Western Blue Chip* are drawn from leading firms, universities and state agencies across the West. Panelists are contacted during the first week of the month and forecast data are compiled by telephone, fax, e-mail and online submission until the third week of the month. These data are then published during the first week of the subsequent month. Thus, the data are current for the month of publication. The consensus for each state is the mean of all forecasts shown in the table. Data are expressed as annual percentage changes relative to the annual average value for each indicator during the previous year. Since not all panelists revise their forecasts each month, changes in the consensus may result from revisions by an individual contributor.

ARIZONA

	2007 Annual Percent Change, 2007 from 2006					2008 Annual Percent Change, 2008 from 2007				
Source:	Current $ Personal Income	Retail Sales	Wage & Salary Empl.	Population Growth	Single-family Housing Permits	Current $ Personal Income	Retail Sales	Wage & Salary Empl.	Population Growth	Single-family Housing Permits
Arizona Department of Commerce	6.9	6.0	3.5	2.9	(10.0)	6.8	5.5	3.5	2.9	5.0
Arizona Public Service	7.8	7.5	4.0	3.0	(7.0)	7.9	8.0	4.3	3.0	5.0
ASU - Economic Outlook Center	7.2	5.6	2.9	3.0	(10.0)	7.0	5.3	3.4	2.8	(5.0)
Department of Economic Security	7.4	6.5	4.0	3.0		7.5	6.8	4.7	3.2	
ECON-LINC	7.5	6.9	4.0	3.1	(10.0)	7.2	6.7	3.8	3.0	5.0
EconLit LLC	7.5	6.9	3.8	2.9	(10.0)	7.6	7.2	3.9	3.0	0.0
Eggert Economic Enterprises Inc.	7.3	6.7	3.6	3.1	(8.1)	7.0	6.4	3.5	3.2	(4.6)
Elliott D. Pollack & Co.	7.4	5.8	4.0	3.5	(25.0)	7.0	4.5	3.0	3.0	15.0
H. C. Reardon Economics	6.8	6.8	4.0	3.0	(10.0)	8.0	7.0	5.3	3.2	15.0
Joint Legislative Budget Committee	7.5	6.7	3.7	3.0	(7.0)	7.2	6.0	3.2	3.0	(5.0)
The Maguire Company	7.4	7.1	4.1	3.1	(8.0)	7.4	7.0	3.9	3.1	(10.0)
Davidson Fixed Income Management	7.4	7.0	3.7			7.8	7.2	3.7		
NAU - BBER	7.7	6.4	3.7	2.7	(5.0)	8.1	6.5	3.9	2.8	0.0
Salt River Project	7.0	6.0	3.5	3.0	(15.0)	8.0	7.0	4.0	3.0	0.0
Stellar Capital Management	7.1	6.5	3.6	2.7	(9.0)	7.8	6.9	3.7	2.7	0.0
UA - Eller College	6.6	5.1	2.4	3.3	(11.6)	6.4	4.9	2.3	2.9	10.0
VisionEcon	7.2	6.9	3.5	2.9	(2.0)	6.8	7.0	2.2	2.9	
Wells Fargo & Co.	7.4	6.3	3.6	2.7	(9.0)	7.0	6.0	3.2	2.6	(7.0)
Consensus Forecast — This Month	**7.3**	**6.5**	**3.6**	**3.0**	**(9.8)**	**7.4**	**6.4**	**3.6**	**3.0**	**1.6**
— Last Month	**7.3**	**6.6**	**3.7**	**2.9**	**(6.8)**					

CALIFORNIA

	2007 Annual Percent Change, 2007 from 2006					2008 Annual Percent Change, 2008 from 2007				
Source:	Current $ Personal Income	Retail Sales	Wage & Salary Empl.	Population Growth	Single-family Housing Permits	Current $ Personal Income	Retail Sales	Wage & Salary Empl.	Population Growth	Single-family Housing Permits
Anonymous	5.8	5.3	1.5	1.7	(1.2)					
California State University, Long Beach *	4.9	5.7	1.8	2.0	(0.8)					
Chapman University	5.5	4.6	0.9	1.4	(12.4)	6.2	5.9	1.3	1.4	0.0
L.A. County Economic Development Corp.	6.0	5.5	0.9	1.2	(8.5)	6.2	5.9	1.3	1.2	(2.0)
Legislative Analyst's Office	5.4	4.7	1.3	1.1	(8.7)					
UCLA - Business Forecasting Project	4.3	4.2	0.5	1.1	(16.8)	4.6	4.7	1.0	1.1	4.4
University of the Pacific	5.5	2.6	1.4	1.0	(8.9)	5.4	4.3	1.1	1.0	(9.7)
Wells Fargo Company	4.8	4.0	1.0	1.0	(8.5)	5.4	4.2	1.2	1.0	(5.0)
Consensus Forecast — This Month	**5.3**	**4.4**	**1.1**	**1.2**	**(9.3)**	**5.6**	**5.0**	**1.2**	**1.1**	**(2.5)**
— Last Month	**5.3**	**4.5**	**1.1**	**1.3**	**(7.7)**					

*This forecast is for Southern California only

CONSENSUS FORECASTS

WESTERN BLUE CHIP ECONOMIC FORECAST

Methodology

The consensus forecasting approach used in the *Western Blue Chip* was inspired by Robert J. Eggert of Sedona, Arizona. Eggert popularized consensus forecasting with the introduction of his widely cited newsletter on the national economy, Blue Chip Economic Indicators. This approach has been consistently shown to be more accurate than projections from an individual forecaster.

Consensus panelists for the *Western Blue Chip* are drawn from leading firms, universities and state agencies across the West. Panelists are contacted during the first week of the month and forecast data are compiled by telephone, fax, e-mail and online submission until the third week of the month. These data are then published during the first week of the subsequent month. Thus, the data are current for the month of publication. The consensus for each state is the mean of all forecasts shown in the table. Data are expressed as annual percentage changes relative to the annual average value for each indicator during the previous year. Since not all panelists revise their forecasts each month, changes in the consensus may result from revisions by an individual contributor.

ARIZONA

	2008 Annual Percent Change, 2008 from 2007					2009 Annual Percent Change, 2009 from 2008				
Source:	Current $ Personal Income	Retail Sales	Wage & Salary Empl.	Population Growth	Single-family Housing Permits	Current $ Personal Income	Retail Sales	Wage & Salary Empl.	Population Growth	Single-family Housing Permits
Arizona Department of Commerce	5.5	5.1	2.8	2.8	-8.0	5.5	5.5	3.2	2.9	10.0
Arizona Public Service	6.2	5.5	2.3	2.6	-20.0	7.1	6.5	3.7	3.2	4.0
ASU - Economic Outlook Center	4.5	2.0	2.5	2.7	-18.0	4.7	3.0	2.8	2.5	0.0
Davidson Fixed Income Management	6.5	5.6	2.9			7.9	6.6	3.9		
ECON-LINC	6.4	4.2	2.5	2.7	-15.0	6.6	5.8	2.5	3.0	-5.0
EconLit LLC	6.2	2.2	1.5	2.8	-20.0	6.5	3.0	1.8	2.8	5.0
Elliott D. Pollack & Co.	5.5	1.0	1.0	2.5	-20.0	6.0	2.5	2.0	2.5	0.0
Grand Canyon University	5.6	4.0	1.2	3.0	0.0	3.9	1.3	0.7	2.8	5.0
H. C. Reardon Economics	5.6	5.0	3.0	2.8	-15.0	6.5	5.2	3.0	2.8	0.0
Joint Legislative Budget Committee	6.5	5.0	2.8	3.0	-10.0	6.2	5.0	2.7	2.8	-5.0
The Maguire Company	6.4	5.0	2.2	3.0	-15.0	6.2	5.4	2.8	3.0	-5.0
NAU - BBER	6.7	1.6	3.0	2.4	-5.0	7.5	2.7	4.0	2.3	2.3
Salt River Project	5.5	3.1	1.9	2.8	-15.0	6.2	4.5	2.4	2.6	12.0
Stellar Capital Management	6.5	5.5	3.0	2.6	-10.0	7.9	6.9	3.9	2.7	10.0
UA - Eller College	3.4	0.7	-0.4	2.7	-22.5	3.5	3.0	0.0	2.2	19.3
Wells Fargo & Co.	6.4	5.3	2.7	2.8	-10.3	6.1	5.0	2.5	2.8	-6.4
Consensus Forecast — This Month	**5.8**	**3.8**	**2.2**	**2.7**	**-13.6**	**6.1**	**4.5**	**2.6**	**2.7**	**3.1**
— Last Month	**6.3**	**4.4**	**2.5**	**2.8**	**-8.0**					

CALIFORNIA

	2008 Annual Percent Change, 2008 from 2007					2009 Annual Percent Change, 2009 from 2008				
Source:	Current $ Personal Income	Retail Sales	Wage & Salary Empl.	Population Growth	Single-family Housing Permits	Current $ Personal Income	Retail Sales	Wage & Salary Empl.	Population Growth	Single-family Housing Permits
Anonymous	4.8	3.4	0.7	1.2	-21.3	5.2	4.6	1.0	1.2	21.0
California State University, Long Beach *	5.9	6.5	1.8	1.7	-0.5					
Chapman University	3.1	2.6	0.1	1.1	-11.0	4.8	4.4	1.2	1.2	4.6
L.A. County Economic Development Corp.	4.9	-1.2	0.5	1.1	-26.4	5.2	1.6	1.0	1.1	3.0
Legislative Analyst's Office	4.9	3.8	1.0	1.2	3.3	5.3	4.7	1.3	1.3	19.2
UCLA - Business Forecasting Project	3.5	3.2	0.5	1.1	-8.8	4.6	4.0	0.9	1.0	18.2
University of the Pacific	4.7	4.1	0.8	1.0	-3.5					
Wells Fargo Company	4.0	3.1	0.5	1.0	-20.0	5.3	2.9	1.3	1.0	-3.0
Consensus Forecast — This Month	**4.3**	**2.7**	**0.6**	**1.1**	**-12.5**	**5.1**	**3.7**	**1.1**	**1.1**	**10.5**
— Last Month	**5.0**	**4.1**	**1.1**	**1.1**	**-1.0**					

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CONSENSUS FORECASTS

WESTERN BLUE CHIP ECONOMIC FORECAST

Methodology

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ARIZONA

	2008 Annual Percent Change, 2008 from 2007					2009 Annual Percent Change, 2009 from 2008				
Source:	Current $ Personal Income	Retail Sales	Wage & Salary Empl.	Population Growth	Single-family Housing Permits	Current $ Personal Income	Retail Sales	Wage & Salary Empl.	Population Growth	Single-family Housing Permits
Arizona Department of Commerce	4.6	1.4	0.3	2.6	-20.0	5.0	3.6	1.4	2.7	4.0
Arizona Public Service	6.2	5.5	2.3	2.6	-20.0	7.1	6.5	3.7	3.2	4.0
ASU - Economic Outlook Center	4.5	1.2	1.5	2.7	-18.0	4.7	2.5	2.5	2.5	0.0
Davidson Fixed Income Management	6.1	4.7	2.2			7.9	6.6	3.9		
ECON-LINC	5.6	2.1	1.8	2.5	-20.0	6.4	4.6	2.2	2.4	-5.0
EconLit LLC	5.9	2.2	1.5	2.8	-20.0	6.0	3.0	1.8	2.8	5.0
Elliott D. Pollack & Co.	5.0	-1.0	-2.0	2.0	-25.0	5.5	2.5	1.0	2.5	0.0
Grand Canyon University	5.6	4.0	1.2	3.0	0.0	3.9	1.3	0.7	2.8	5.0
H. C. Reardon Economics	4.5	1.0	0.0	2.8	-20.0	4.8	3.0	2.0	2.8	0.0
Joint Legislative Budget Committee	5.5	2.5	1.3	2.8	-12.0	5.7	3.5	2.5	2.8	0.0
The Maguire Company	6.4	5.0	2.2	3.0	-15.0	6.2	5.4	2.8	3.0	-5.0
NAU - BBER	5.7	0.8	2.0	2.4	-10.0	7.5	2.2	3.0	2.1	2.3
Salt River Project	5.2	2.2	0.8	2.7	-22.0	5.9	4.3	2.2	2.5	10.0
Stellar Capital Management	6.1	4.5	2.2	2.5	-18.0	7.2	6.5	3.5	2.7	10.0
UA - Eller College	3.4	0.7	-0.4	2.7	-22.5	3.5	3.0	0.0	2.2	19.3
Wells Fargo & Co.	5.9	4.5	0.2	2.8	-13.0	5.7	4.4	0.7	2.8	-9.0
Consensus Forecast — This Month	**5.4**	**2.6**	**1.1**	**2.7**	**-17.0**	**5.8**	**3.9**	**2.1**	**2.7**	**2.7**
— Last Month	**6.0**	**4.0**	**2.2**	**2.7**	**-12.7**	**6.3**	**4.7**	**2.7**	**2.7**	**3.1**

CALIFORNIA

	2008 Annual Percent Change, 2008 from 2007					2009 Annual Percent Change, 2009 from 2008				
Source:	Current $ Personal Income	Retail Sales	Wage & Salary Empl.	Population Growth	Single-family Housing Permits	Current $ Personal Income	Retail Sales	Wage & Salary Empl.	Population Growth	Single-family Housing Permits
Anonymous	4.8	3.4	0.7	1.2	-21.3	5.2	4.6	1.0	1.2	21.0
California State University, Long Beach *	5.9	6.5	1.8	1.7	-0.5					
Chapman University	2.5	1.9	-0.5	1.1	-14.9	4.5	4.3	1.2	1.1	3.5
L.A. County Economic Development Corp.	4.9	-1.6	0.7	1.1	-26.0	5.2	1.5	1.0	1.1	3.0
Legislative Analyst's Office	4.7	3.6	0.6	1.1	-18.2	5.1	3.8	0.9	1.1	5.6
UCLA - Business Forecasting Project	3.0	2.2	-0.1	1.1	-41.6	4.1	3.5	0.7	1.1	5.3
University of the Pacific	5.3	1.1	0.9	0.8	-10.1	5.4	3.5	1.4	0.8	20.2
Wells Fargo Company	3.7	2.7	0.2	1.0	-24.0	5.0	2.9	1.0	1.0	-5.0
Consensus Forecast — This Month	**4.1**	**1.9**	**0.4**	**1.1**	**-22.3**	**4.9**	**3.4**	**1.0**	**1.1**	**7.7**
— Last Month	**4.3**	**2.2**	**0.5**	**1.1**	**-17.0**	**5.1**	**3.6**	**1.1**	**1.1**	**9.8**

*This forecast is for Southern California only

CONSENSUS FORECASTS

WESTERN BLUE CHIP ECONOMIC FORECAST

Methodology

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ARIZONA

	2008 Annual Percent Change, 2008 from 2007					2009 Annual Percent Change, 2009 from 2008				
Source:	Current $ Personal Income	Retail Sales	Wage & Salary Empl.	Population Growth	Single-family Housing Permits	Current $ Personal Income	Retail Sales	Wage & Salary Empl.	Population Growth	Single-family Housing Permits
Arizona Department of Commerce	4.6	1.4	0.3	2.6	-20.0	5.3	3.6	1.4	2.2	4.0
Arizona Public Service	3.2	1.1	-1.3	1.5	-30.0	3.2	3.7	0.5	1.5	4.0
ASU - Economic Outlook Center	4.5	1.2	1.5	2.7	-18.0	4.7	2.5	2.5	2.5	0.0
Davidson Fixed Income Management	5.7	3.3	1.5			7.9	6.6	3.9		
ECON-LINC	5.8	2.1	1.2	2.5	-20.0	6.4	4.6	2.2	2.4	-5.0
EconLit LLC	5.5	2.2	1.5	2.8	-20.0	6.0	3.0	1.8	2.8	5.0
Elliott D. Pollack & Co.	4.0	-1.5	-2.0	2.0	-25.0	5.0	2.5	1.0	2.5	0.0
H. C. Reardon Economics	4.5	1.0	0.0	2.8	-20.0	4.8	3.0	2.0	2.8	0.0
Joint Legislative Budget Committee	5.5	1.5	1.0	2.7	-15.0	5.7	3.5	2.2	2.8	1.0
The Maguire Company	6.4	5.0	2.2	3.0	-15.0	6.2	5.4	2.8	3.0	-5.0
NAU - BBER	5.7	-0.1	1.5	2.2	-21.0	7.5	2.4	2.7	2.1	2.3
Salt River Project	4.8	1.8	0.4	2.6	-22.0	5.9	4.3	2.2	2.5	10.0
Stellar Capital Management	6.1	4.5	2.2	2.5	-18.0	6.9	6.5	3.5	2.7	7.5
UA - Eller College	3.4	0.7	-0.4	2.7	-22.5	3.5	3.0	0.0	2.2	19.3
VisionEcon/Governing Star Group	5.6	4.0	1.2	3.0	0.0	3.9	1.3	0.7	2.8	5.0
Wells Fargo & Co.	5.7	2.6	0.2	2.8	-17.0	5.5	2.7	0.6	2.8	-10.0
Consensus Forecast — This Month	**5.1**	**1.9**	**0.7**	**2.6**	**-18.9**	**5.5**	**3.7**	**1.9**	**2.5**	**2.5**
— Last Month	**5.4**	**2.6**	**1.1**	**2.7**	**-17.0**	**5.8**	**3.9**	**2.1**	**2.7**	**2.7**

CALIFORNIA

	2008 Annual Percent Change, 2008 from 2007					2009 Annual Percent Change, 2009 from 2008				
Source:	Current $ Personal Income	Retail Sales	Wage & Salary Empl.	Population Growth	Single-family Housing Permits	Current $ Personal Income	Retail Sales	Wage & Salary Empl.	Population Growth	Single-family Housing Permits
Anonymous	4.8	3.4	0.7	1.2	-21.3	5.2	4.6	1.0	1.2	21.0
California State University, Long Beach *	5.9	6.5	1.8	1.7	-0.5					
Chapman University	2.5	1.9	-0.5	1.1	-14.9	4.5	4.3	1.2	1.1	3.5
L.A. County Economic Development Corp.	4.9	-1.6	0.7	1.1	-26.4	5.2	1.7	1.0	1.1	3.0
Legislative Analyst's Office	4.7	3.6	0.6	1.1	-18.2	5.1	3.8	0.9	1.1	5.6
UCLA - Business Forecasting Project	3.0	2.2	-0.1	1.1	-41.6	4.1	3.5	0.7	1.1	5.3
University of the Pacific	4.0	1.9	0.1	0.8	-26.4	5.4	4.2	1.4	0.9	37.1
Wells Fargo Company	3.6	2.6	0.1	1.0	-24.5	4.9	2.8	0.9	1.0	-5.4
Consensus Forecast — This Month	**3.9**	**2.0**	**0.2**	**1.1**	**-24.8**	**4.9**	**3.6**	**1.0**	**1.1**	**10.0**
— Last Month	**4.1**	**1.9**	**0.4**	**1.1**	**-22.3**	**4.9**	**3.4**	**1.0**	**1.1**	**7.7**

*This forecast is for Southern California only

BLUE CHIP ECONOMIC FORECAST

WESTERN

BLUE CHIP CONSENSUS

Arizona

Forecast for December 2008

2008 Forecast

	Annual Percent Change 2008 from 2007				
	Current $ Personal Income	Retail Sales	Wage & Salary Empl.	Population Growth	Single-family Housing Permits
Arizona Department of Commerce	3.2	-5.0	-1.3	1.5	-35.0
Arizona Public Service	2.3	-6.8	-1.5	1.5	-50.0
ASU - Economic Outlook Center	4.0	-5.0	-1.5	2.2	-45.0
Davidson Fixed Income Management	3.3	-2.9	-1.8		
ECON-LINC	2.9	-4.8	-1.8	1.1	-45.0
EconLit LLC	3.9	0.0	-1.0	2.3	-30.0
Elliott D. Pollack & Co.	3.0	-5.0	-2.0	2.0	-50.0
Joint Legislative Budget Committee	4.0	-3.0	-1.5	2.2	-30.0
The Maguire Company	3.3	-6.0	-1.4	2.0	-40.0
NAU - BBER	4.3	-3.5	-1.5	1.7	-30.0
Salt River Project	3.6	-1.8	-1.2	1.2	-35.0
Southwest Growth Partners	2.6	-5.2	-1.6	2.2	-46.0
Stellar Capital Management	3.7	-2.0	-0.5	2.1	-35.0
UA - Eller College	3.8	-0.5	-0.3	2.3	-46.9
VisionEcon/Governing Star Group	4.5	0.5	0.3	2.5	-25.0
Wells Fargo & Co.	5.7	2.6	0.2	2.8	-17.0
Consensus - This Month	**3.6**	**-3.0**	**-1.2**	**2.0**	**-37.3**
Consensus - Last Month	3.8	-1.8	-1.0	2.1	-31.3

2009 Forecast

	Annual Percent Change 2009 from 2008				
	Current $ Personal Income	Retail Sales	Wage & Salary Empl.	Population Growth	Single-family Housing Permits
Arizona Department of Commerce	3.7	1.9	-0.5	2.1	2.5
Arizona Public Service	0.5	-5.0	-2.5	1.0	-15.0
ASU - Economic Outlook Center	3.0	-3.0	-1.0	2.0	5.0
Davidson Fixed Income Management	1.1	1.5	-1.3		
ECON-LINC	2.8	1.0	-0.5	1.4	-10.0
EconLit LLC	4.5	1.8	1.0	2.5	2.5
Elliott D. Pollack & Co.	2.5	0.0	-1.0	2.0	0.0
Joint Legislative Budget Committee	4.1	2.0	1.0	2.2	5.0
The Maguire Company	2.6	1.0	-1.0	1.8	0.0
NAU - BBER	7.5	1.0	3.5	1.5	10.0
Salt River Project	4.2	2.4	1.1	2.0	5.0
Southwest Growth Partners	3.2	1.2	0.5	2.4	-15.0
Stellar Capital Management	3.8	2.1	1.0	2.2	2.0
UA - Eller College	1.5	1.2	-1.5	2.0	14.6
VisionEcon/Governing Star Group	5.3	4.4	1.3	2.4	2.0
Wells Fargo & Co.	5.5	2.7	0.6	2.8	-10.0
Consensus - This Month	**3.5**	**1.0**	**0.0**	**2.0**	**-0.1**
Consensus - Last Month	4.0	2.0	0.8	2.2	1.5

Arizona

Forecast for January 2009

2009 Forecast					
	Annual Percent Change 2009 from 2008				
	Current $ Personal Income	Retail Sales	Wage & Salary Empl.	Population Growth	Single-family Housing Permits
Arizona Department of Commerce	0.6	-3.0	-2.4	1.0	-10.0
Arizona Public Service	0.5	-5.0	-2.5	1.0	-15.0
ASU - Economic Outlook Center	3.0	-3.0	-1.0	2.0	5.0
Davidson Fixed Income Management	1.1	1.5	-1.3		
ECON-LINC	1.8	-2.6	-1.1	1.4	-7.0
EconLit LLC	2.4	0.0	-1.0	2.5	0.0
Elliott D. Pollack & Co.	2.0	0.0	-1.0	1.8	-15.0
Joint Legislative Budget Committee	4.1	2.0	1.0	2.2	5.0
The Maguire Company	2.6	1.0	-1.0	1.8	0.0
NAU - BBER	4.0	1.0	1.2	1.5	1.0
Salt River Project	2.2	2.2	-1.3	1.3	2.5
Southwest Growth Partners	3.2	-1.5	-0.5	1.9	-12.0
Stellar Capital Management	3.2	1.9	-0.5	2.1	-5.0
UA - Eller College	1.5	1.2	-1.5	2.0	-14.6
VisionEcon/Governing Star Group	5.3	4.4	1.3	2.4	2.0
Wells Fargo & Co.	5.5	2.7	0.6	2.8	-10.0
Consensus - This Month	**2.7**	**0.2**	**-0.7**	**1.8**	**-2.9**
Consensus - Last Month	3.5	1.0	0.0	2.0	-0.1

2010 Forecast					
	Annual Percent Change 2010 from 2009				
	Current $ Personal Income	Retail Sales	Wage & Salary Empl.	Population Growth	Single-family Housing Permits
Arizona Department of Commerce	2.9	5.0	3.0	2.9	10.0
Arizona Public Service	4.0	3.5	0.0	1.0	0.0
ASU - Economic Outlook Center	4.8	10.0	2.0	2.5	40.0
Davidson Fixed Income Management	3.0	2.5	1.5		
ECON-LINC	3.7	2.8	2.2	2.0	18.0
EconLit LLC	3.5	1.9	2.2	2.3	2.5
Elliott D. Pollack & Co.	4.5	5.0	2.5	2.2	20.0
Joint Legislative Budget Committee					
The Maguire Company					
NAU - BBER	5.0	2.0	3.0	1.5	3.0
Salt River Project	4.6	3.2	1.1	2.1	20.0
Southwest Growth Partners	3.8	1.5	1.2	2.2	10.0
Stellar Capital Management	4.5	4.5	2.2	2.0	15.0
UA - Eller College					
VisionEcon/Governing Star Group					
Wells Fargo & Co.					
Consensus - This Month	**4.0**	**3.8**	**1.9**	**2.1**	**13.9**

Arizona Update and Outlook

Arizona's unemployment rate rose to 6.3 percent in November, below the November national figure of 6.7 percent, but up from 6.1 percent in October.

The Grand Canyon State lost 83,100 jobs in November compared to 2007, a decrease of 3.1 percent. The Arizona Department of Commerce notes that this is the greatest year-over-year percentage decline since the spring of 1975 (link: http://www.workforce.az.gov/admin/uploadedPublications/PrDec08.pdf).

Construction in the Grand Canyon State is still shrinking, with another 2,800 jobs lost in November. Construction employment in November was down 16.5 percent from 2007. Retail weakened by more with double-digit year-over-year job losses in November in furniture stores (-12.2 percent), department stores (-12.1 percent) and clothing stores (-12.1 percent).

But in the midst of troubling indicator reports, Arizona economy-watchers were pleasantly surprised by recent population growth estimates released by the U.S. Census Bureau. The Grand Canyon State ranked second (behind Utah) in the rate of population growth (2.3 percent) for

Arizona

Forecast for January 2010

2009 Forecast					
	Annual Percent Change 2009 from 2008				
	Current $ Personal Income	Retail Sales	Wage & Salary Empl.	Population Growth	Single-family Housing Permits
Arizona Department of Commerce	-3.0	-13.4	-6.8	0.8	-26.6
Arizona Public Service	-3.9	-12.0	-6.5	1.0	-27.0
ASU - Economic Outlook Center	-2.5	-10.0	-7.0	1.5	-40.0
Davidson Fixed Income Management	-2.5	-6.0	-3.8	0.9	-40.0
ECON-LINC	-3.5	-8.3	-6.5	0.5	-38.0
EconLit LLC	-0.5	-6.0	-4.1	1.3	-30.0
Elliott D. Pollack & Co.	-2.0	-9.0	-7.0	0.8	-40.0
Joint Legislative Budget Committee	-2.0	-11.0	-6.0	1.0	-35.0
The Maguire Company	-2.0	-10.0	-6.5	0.9	-35.0
NAU - BBER	-1.5	-9.0	-4.5	0.8	-30.0
Salt River Project	-2.2	-9.6	-6.4	1.1	-33.0
Southwest Growth Partners	-3.5	-4.9	-5.2	0.7	-32.0
Stellar Capital Management	-0.8	-7.0	-4.8	0.9	-30.0
UA - Eller College	-2.6	-8.8	-7.1	1.1	-33.4
VisionEcon/Governing Star Group	1.6	0.1	0.0	1.4	-1.4
Wells Fargo & Company - MN	-1.3	-10.5	-7.2	1.5	-34.0
Consensus - This Month	**-2.0**	**-8.5**	**-5.6**	**1.0**	**-31.6**
Consensus - Last Month	-1.6	-8.9	-5.7	1.2	-32.6

2010 Forecast					
	Annual Percent Change 2010 from 2009				
	Current $ Personal Income	Retail Sales	Wage & Salary Empl.	Population Growth	Single-family Housing Permits
Arizona Department of Commerce	-2.5	-12.9	-0.7	0.8	-1.5
Arizona Public Service	4.4	5.0	1.5	1.0	0.0
ASU - Economic Outlook Center	2.0	5.0	-1.0	1.8	50.0
Davidson Fixed Income Management	2.8	2.5	0.9	1.1	15.0
ECON-LINC	2.2	3.2	0.4	0.8	12.0
EconLit LLC	2.2	3.0	0.5	1.6	15.0
Elliott D. Pollack & Co.	1.0	5.0	-1.0	1.4	20.0
Joint Legislative Budget Committee	2.0	4.0	1.0	1.5	20.0
The Maguire Company	2.0	5.0	-1.0	1.5	15.0
NAU - BBER	1.5	1.5	1.0	1.0	20.0
Salt River Project	2.1	4.4	0.8	1.2	25.0
Southwest Growth Partners	1.5	2.0	0.8	0.9	6.0
Stellar Capital Management	2.5	3.5	1.5	1.2	15.0
UA - Eller College	0.4	4.7	-2.7	1.0	38.8
VisionEcon/Governing Star Group	4.5	5.5	1.9	2.2	16.4
Wells Fargo & Company - MN	1.7	2.0	-0.1	1.7	7.1
Consensus - This Month	**1.9**	**2.7**	**0.2**	**1.3**	**17.1**
Consensus - Last Month	2.2	3.5	0.3	1.3	18.5

Arizona Update and Outlook

With some luck, the U.S. economy will pull Arizona along. It will be a long slog for real estate of any kind.

ECON-LINC

Total nonfarm employment gained 12,800 jobs in November (+0.5 percent). This is a good turnaround from November 2008 when total nonfarm employment lost 19,000 (-0.7 percent). The Private Sector accounted for 11,100 of the 12,800 job gains. Nine of the 11 sectors posted job gains, and two showed losses. Most of the gains were in Trade, Transportation, and Utilities; Professional and Business Services; and Leisure and Hospitality. Over-the-year, total nonfarm employment continued to show losses with employment levels 143,800 (-5.6 percent) lower than November 2008. Continuing a trend, November indicated a slowdown in the rate of over-the-year job losses. Construction continued to be the

Arizona

Forecast for January 2011

2010 Forecast					
	Annual Percent Change 2010 from 2009				
	Current $ Personal Income	Retail Sales	Wage & Salary Empl.	Population Growth	Single-family Housing Permits
Arizona Department of Commerce	2.3	-2.0	-1.1	0.5	-13.5
Arizona Public Service	2.7	-1.0	-1.0	1.0	-10.0
ASU - Economic Outlook Center	2.0	1.0	-1.5	1.4	-5.0
Davidson Fixed Income Management	1.7	2.5	-1.0	0.6	-5.0
ECON-LINC	2.2	1.5	-0.3	1.0	10.0
EconLit LLC	2.0	2.4	0.0	1.1	-5.0
Elliott D. Pollack & Co.	2.5	0.0	-1.0	1.0	0.0
Joint Legislative Budget Committee	2.5	-1.1	-0.9	1.1	-13.0
The Maguire Company	2.2	1.0	-1.0	1.0	5.0
NAU - BBER	2.1	1.6	-0.1	0.7	8.0
Salt River Project	1.8	4.3	0.2	1.3	20.0
Southwest Growth Partners	2.1	1.7	-0.6	1.1	-8.0
Stellar Capital Management	2.5	3.3	0.7	1.0	-10.0
UA - Eller College	2.4	0.7	-1.2	1.2	-9.3
VisionEcon/Governing Star Group	2.3	1.9	0.4	1.1	-5.0
Wells Fargo & Company - MN	2.1	2.8	-1.4	1.4	14.0
Consensus - This Month	**2.2**	**1.3**	**-0.6**	**1.0**	**-1.1**
Consensus - Last Month	2.2	1.5	-0.5	1.1	1.1

2011 Forecast					
	Annual Percent Change 2011 from 2010				
	Current $ Personal Income	Retail Sales	Wage & Salary Empl.	Population Growth	Single-family Housing Permits
Arizona Department of Commerce	2.8	2.9	0.7	0.7	13.5
Arizona Public Service	5.0	6.0	1.5	1.1	30.0
ASU - Economic Outlook Center	3.5	6.0	2.0	1.8	25.0
Davidson Fixed Income Management	2.5	4.0	0.9	0.9	10.0
ECON-LINC	3.3	6.2	2.2	1.2	25.0
EconLit LLC	3.5	7.0	2.0	1.6	30.0
Elliott D. Pollack & Co.	4.0	8.0	2.0	2.0	20.0
Joint Legislative Budget Committee	3.5	5.0	1.6	1.5	27.0
The Maguire Company	3.0	7.0	2.0	1.5	20.0
NAU - BBER	2.9	4.5	1.5	1.0	25.0
Salt River Project	3.6	5.5	2.1	1.9	25.0
Southwest Growth Partners	2.8	6.0	1.5	1.5	18.0
Stellar Capital Management	3.8	5.5	1.7	1.2	25.0
UA - Eller College	3.8	7.0	1.7	1.9	76.2
VisionEcon/Governing Star Group	3.7	4.4	1.2	2.2	35.0
Wells Fargo & Company - MN	2.5	4.3	1.3	1.7	20.0
Consensus - This Month	**3.4**	**5.6**	**1.6**	**1.5**	**26.5**
Consensus - Last Month	3.3	5.5	1.6	1.4	26.0

Arizona Update and Outlook

For the fourth month in a row, Arizona has gained jobs over the year. Arizona's 1.0 percent over-the-year gain is relatively higher than the U. S. gain of 0.6 percent. The 1.0 percent gain translates into 24,900 jobs that were added since November last year. The Private Sector had a net gain of 30,800 jobs while Government lost 5,900 over the year. Trade, Transportation and Utilities had the most over-the-year job gains (+13,600) followed closely by Professional and Business Services (+12,100) and Educational and Health Services (+12,000).

Arizona Department of Commerce
http://www.workforce.az.gov

BLUE CHIP ECONOMIC FORECAST

WESTERN

ASU W. P. CAREY SCHOOL of BUSINESS ARIZONA STATE UNIVERSITY

ARIZONA PANELISTS

Scott Anderson
Wells Fargo & Company - MN

Scott Anderson has more than 15 years of experience in the field of Macroeconomics. At Wells Fargo he is responsible for the analysis and forecasting of international, national and regional economic trends. Mr. Anderson joined Wells Fargo as senior economist in 2001, before that he held positions at Moody's Economy.com in Philadelphia, and the International Monetary Fund in Washington DC.

Mr. Anderson provides daily analyses of U.S. economic news, and produces the Wells Fargo Economics macroeconomic forecasts. He authors the Wells Fargo "California Outlook" report, the monthly "Economic Indicators" report, and the monthly Wells Fargo "Fixed Income" report, and co-authors Wells Fargo's weekly" Financial Market Strategies" report. In addition, he covers the United Kingdom, China, South Korea, Japan, Hong Kong, and Singapore as part of our bi-monthly international report.

Mr. Anderson's research is widely read by the financial and business community and he has appeared in numerous media including: CNN, Bloomberg, MSNBC, CBS MarketWatch, BBC, NPR, *Wall Street Journal, New York Times, Financial Times, Washington Post, Los Angeles Times, Chicago Tribune, USA Today, San Francisco Chronicle.*

Brian Cary
Salt River Project

Dwight Duncan
EconLit LLC

Pete Ewen
Arizona Public Service

Dennis Foster

NAU - BBER

Neal Helm
Davidson Fixed Income Management

Neal Helm has served as a portfolio manager for governments in Arizona since 2003. Mr. Helm also served as Arizona Deputy State Treasurer for Investments for 20 years. In that position, he was directly responsible for the management, strategy, and trading decisions for the $8 billion portfolio. The portfolio included high-grade corporate bonds, mortgage-backed bonds, asset-backed bonds and money market products. Mr. Helm was responsible for suggesting and implementing policies and procedures affecting the investment portfolio and ensuring that the investments complied with the adopted policy. Prior to joining the Treasurer's staff, Mr. Helm was employed as an analyst for the State Senate Finance Committee. Mr. Helm holds a B.S. degree in Economics from Arizona State University. Mr. Helm is a member of the Arizona and Western Blue Chip Economic Forecasting Panel and the Arizona Department of Transportation's Regional Economic Forecasting Group. He is an Assistant Scoutmaster for th e Boy Scouts, and is a veteran.

John Lucking
ECON-LINC

Alan Maguire
The Maguire Company

Alan Maguire is the President and Principal Economist of The Maguire Company, an independent, economic forecasting and public policy consulting firm. Prior to forming The Maguire Company, Alan was a senior investment banker with a regional securities firm. During his tenure, he was the leading financial advisor in the State of Arizona and served as either senior manager or senior financial advisor on over $1 billion in tax-exempt financing.

From 1983 to 1987, Alan was the Chief Deputy in the Office of the State Treasurer where he had overall management responsibility for an annual cash flow of $6 billion and an internally managed, fixed income investment portfolio of more than $2 billion.

He previously served as the Economic Advisor to the Arizona State Senate, in which he was involved in all legislation with either a direct or indirect impact on the municipal fiscal structure of state and local government in Arizona.

Alan has served as an advisor to four Arizona Governors, four Arizona Senate Presidents, and two Arizona House Speakers. His community organizations including serving as President of the Arizona Economic Forum and as a member of the Arizona Economic Estimates Commission, the Arizona Property Tax Oversight Commission, the Phoenix Economic Club, and the Arizona Economic Roundtable. He is past Chairman of the Arizona Town Hall, past Chairman of the Arizona State Retirement System Board and past President of the Maricopa County Industrial Development Authority. He is an original member of the Arizona, Western States, and Metro-Phoenix Blue Chip Economic Forecast Panels.

Lee McPheters
ASU - Economic Outlook Center

Lee McPheters is Research Professor of Economics in the W. P. Carey School of Business at Arizona State University and Director of the school's JPMorgan Chase Economic Outlook Center. The Center specializes in economic forecasts for Arizona and the Western states. Dr. McPheters is editor of the *Arizona Blue Chip Economic Forecast* and the *Western Blue Chip Economic Forecast* newsletters, published monthly by the Center.

His writings on the Western region have been quoted in the *Wall Street Journal, USA Today, The Economist, BusinessWeek, The New York Times*, and *Newsweek* as well as major metropolitan area newspapers throughout the nation. He has appeared nationally on Good Morning America and CNN news, commenting on the economy of the Western states. Dr. McPheters has published numerous articles in books and professional journals including the Review of Economics and Statistics, Land Economics, the National Tax Journal, and Journal of Long Range Planning. His recent research has emphasized transportation issues in economic development, with support from the U. S. Department of Transportation, the Arizona Department of Transportation, Phoenix Sky Harbor International Airport, Boeing, and other public and corporate sources.

He has been named a Distinguished Faculty Researcher in the School of Business, and received the Faculty Service Award in 2008, presented annually to one recipient for innovative and effective service. Dr. McPheters was recognized for the best research article in *Economic Inquiry* with an award from the Western Economic Association. He is a member of the National Association of Business Economists, the American Economic Association, the Western Economic Association, the Western Regional Science Association, and is past president of the Arizona Economic Roundtable. Dr. McPheters completed his undergraduate studies at San Francisco State University and received his Ph.D. from Virginia Tech. He has been at ASU since 1976.

JLBC

Hans Olofsson
Joint Legislative Budget Committee

The Joint Legislative Budget Committee (JLBC) was established in 1966, pursuant to Laws 1966, Chapter 96. The primary powers and duties of the JLBC relate to ascertaining facts and making recommendations to the Legislature regarding all facets of the state budget, state revenues and expenditures, future fiscal needs, and the organization and functions of state government.

David Petrenka
Davidson Fixed Income Management

Elliot Pollack
Elliott D. Pollack & Co.

Elliott D. Pollack is Chief Executive Officer of Elliott D. Pollack and Company in Scottsdale, Arizona, an economic and real estate consulting firm established in 1987, which provides a broad range of services, specializing in Arizona economics and real estate.

The firm maintains the most comprehensive economic database in Arizona, allowing it to accurately conduct economic forecasting, develop economic impact studies and prepare demographic analyses and forecasts.

Elliott D. Pollack and Company currently serves as the economics department for Maricopa County. As well, the firm serves a broad client base of both public and private sector entities that range from law firms and real estate developers to school districts and utility companies.

Mr. Pollack has syndicated and master planned numerous properties in Arizona through affiliated companies. He is recognized for his expertise in discerning the relationship between real estate trends and land value, usage and timing for improvements and development.

He constantly monitors construction, sales and leasing activity in the Phoenix metropolitan area, to determine absorption rates and anticipated time frames for market recovery. Mr. Pollack conducts marketability and supply demand studies on retail, industrial and residential properties. He also is an expert in the valuation of fractionalized interests in limited partnerships.

Mr. Pollack is widely sought after as a *member*, consultant and speaker for numerous economic and real estate boards and organizations. He also is respected by local, state and national news media as an expert source for economic and real estate matters.

During his career in the Phoenix metropolitan area, Mr. Pollack has undertaken extensive economic studies that examine real estate projects from a myriad of perspectives. Under contract to the Arizona State Land Department as a Land Disposition Consultant, Mr. Pollack provided services in the areas of land valuation, marketability studies, feasibility analysis, infrastructure cost analysis and commercial lease analysis.

He has developed models of real estate value appreciation for the Phoenix area that are devoted to analyzing alternative land use strategies for property and economic feasibility. Mr. Pollack served as Chief Economist of Valley National Bank in Arizona for 14 years, prior to establishing his consulting firm. His responsibilities included developing and maintaining the institution's asset/liability model and state and national econometric model; providing local, state and national economic forecasting to the Board of Directors, customers, businesses, industry and analysts; and serving as editor for Valley National Bank's monthly economic publication *Arizona Progress* and the annual *Arizona Statistical Review*.

Mr. Pollack earned a Bachelor of Science in Accounting from Boston University in 1967 and a Masters in Business Administration from University of Southern California in 1968.

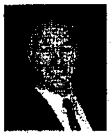
Steve Pritulsky
Southwest Growth Partners

Steve Pritulsky is the Founder and Principal of Southwest Growth Partners, an integrated advisory services, land development and investment company based in Phoenix, Arizona. Mr. Pritulsky has more than 24 years of real estate economics consulting, property portfolio due diligence and land development experience that spans the metropolitan Phoenix area, Arizona, Las Vegas, Southern California and other markets throughout the Southwestern U.S. Steve most recently served as Senior Vice President of Operations for Newland Communities' Phoenix Division and, prior to founding SGP in 2006, was Vice President of Planning and Development for Pulte Homes/Del Webb.

Mr. Pritulsky has delivered industry insights to the *Pacific Coast Builders Conference (PCBC)* and the *Arizona Economic Outlook*. Steve has also served as a guest lecturer in Regional & Urban Economic at Northern Arizona University. He has been involved for the past two decades in the Arizona Economic Roundtable, a forecaster for the *Western, Arizona and Metro Phoenix Blue Chip Real Estate and Economic Forecast Panels*, and has served in various capacities the Urban Land Institute, National Golf Foundation, the Home Builders Association of Central Arizona, the Maricopa Association of Governments and Valley Partnership.

Debra Roubik
VisionEcon/Governing Star Group

Debra J. Roubik began her career as an economist at Chicago's Harris Trust and Savings Bank where she was also solely responsible for the bank's macroeconomic model. During her tenure, the bank was rated number one for the most accurate interest rate forecast and she also provided research and editing for the book, "Taking the Voodoo Out of Economics." Later in her career, she held the positions of vice-president of Stotler Economics, Manager of Revenue Forecasting for Atchison Topeka & Santa Fe Railway and Economist for DES, Research Administration. Currently, Debra has been the Chief Economist and Founder of VisionEcon, a consulting firm that specializes in analyzing legislative, governmental and economic development impacts on local economies. She has been quoted by *Barron's, New York Times Service, USA Today, The Chicago Tribune, The Daily Herald, The Arizona Republic, The Business Journal, Tucson Citizen, The Arizona Daily Star* and *Today's Arizona Woman*. She has been published in *Chicago's Commerce Magazine, Phoenix Magazine, The Arizona Republic* and U of A's *Arizona's Economy*. She also has been heard on television and radio programs such as KAET, KUAT, Channel 12's KPNX TV and KFNX 1100 AM radio. Debra possesses a Bachelor of Science in Economics and Probability and Statistics, and is completing an MBA in Finance.



Stephen Taddie
Stellar Capital Management

Mr. Taddie is a Co-Founder and Managing Member of Stellar Capital Management, a Phoenix-based investment advisory firm specializing in custom-tailored portfolio management. He has over 20 years of professional experience in the investment field, spending seven years in the brokerage business with Merrill Lynch and Prudential Securities, prior to embarking on a career in portfolio management and ultimately forming his own firm and co-founding Stellar Capital Management. During that time he has worked with a select group of clients ranging from publicly traded corporations, government entities, and Native American Indian Tribes, to high net worth individuals and families across the country. He has been a frequent speaker on economic and investment management trends, has authored numerous articles and has often been quoted on the same subjects.

He is a member of the National Association for Business Economists, past President and member of the Arizona Economic Round Table, member and past board member of the Central Arizona Estate Planning Conference, a member of the CFA Institute, the Phoenix CFA Society, and is an Arbitrator with the Financial Industry Regulatory Authority (FINRA). He has been a member of the Economic Club of Phoenix, the Western Pension & Benefits Conference, Arizona Town Hall, and the Madison School District Financial Oversight Committee. He serves on the Finance Committee for the Desert Botanical Gardens, and has served on the Executive Board of Directors for the Foundation for Burns & Trauma, the Foothills Foundation, and on the Board of the Phoenix Camelback Rotary Club, and has also volunteered with Junior Achievement and coached youth sports teams.

Mr. Taddie holds a Bachelor of Science degree in Business and Economics from Lehigh University, and a Master of Business Administration from the University of Phoenix.

Marshall Vest
UA - Eller College

Marshall J. Vest is director of the Economic and Business Research Center (EBR) at the University of Arizona's Eller College of Management. EBR was founded in 1949 with the purpose of practical investigation and study of business and economic issues that pertain to Arizona. The Center researches and disseminates economic information that businesses and government units use to intelligently deal with current developments as well as to plan for the future.

Vest is an authority on Arizona's economy and is a consultant to a number of Arizona's largest companies, Arizona's Governor and Legislature, as well as a number of local governments. With 30 years heading the College's Forecasting Project, Marshall has authored over 175 articles on the economy. These forecasts are recognized as among the most accurate in the western states, and he is frequently quoted in both the local and national business press. He also authors the Arizona Business Leaders Confidence Index (BLCI), produced in partnership with Compass Bank, which surveys Arizona business leaders to ascertain their expectations for the immediate future.

Vest is past-president of the Association for University Economic and Business Research, whose membership includes university-based applied research centers from across the country. He also is a member of the National Association for Business Economics (NABE) and is past president of the Arizona Chapter of NABE.

Jack York
Arizona Department of Commerce

EXHIBIT

A-35

PENGAD 800-631-6989

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

GARY PIERCE, Chairman
BOB STUMP
PAUL NEWMAN
SANDRA D. KENNEDY
BRENDA BURNS

IN THE MATTER OF THE APPLICATION OF ARIZONA-AMERICAN WATER COMPANY, AN ARIZONA CORPORATION, FOR A DETERMINATION OF THE CURRENT FAIR VALUE OF ITS UTILITY PLANT AND PROPERTY AND FOR INCREASES IN ITS RATES AND CHARGES BASED THEREON FOR UTILITY SERVICE BY ITS AGUA FRIA, HAVASU AND MOHAVE WATER DISTRICTS	DOCKET NO. W-01303A-10-0448

**SECOND REBUTTAL TESTIMONY
OF
THOMAS M. BRODERICK
ON BEHALF OF
ARIZONA-AMERICAN WATER COMPANY
NOVEMBER 17, 2011**

**REBUTTAL TESTIMONY
OF
THOMAS M. BRODERICK
ON BEHALF OF
ARIZONA-AMERICAN WATER COMPANY
NOVEMBER 17, 2011**

TABLE OF CONTENTS

I INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Thomas M. Broderick. My business address is 2355 North Pinnacle Peak Road, Ste 300, Phoenix, AZ 85027.

Q. ARE YOU THE SAME THOMAS M. BRODERICK WHO PROVIDED DIRECT, REBUTTAL AND REJOINDER TESTIMONY IN THIS CASE?

A. Yes.

II UPDATES TO REVENUE REQUIREMENT

Q. IN YOUR EARLIER REBUTTAL AND REJOINDER TESTIMONIES YOU PROVIDED SEVERAL UPDATES TO THE COMPANY'S DECLINING OUTSTANDING BALANCE OF SHORT-TERM DEBT. ARE YOU, AT THIS TIME, FURTHER UPDATING THAT BALANCE AS WELL AS INCORPORATING THAT UPDATE INTO THE COST OF CAPITAL AND REFLECTING THE UPDATED COST OF CAPITAL IN THE COMPANY'S PROPOSED REVENUE REQUIREMENT?

A. Yes. I am sponsoring Second Rebuttal Schedules D-1 and D-2. These Schedules display an updated actual cost of debt and an updated actual capital structure as of September 30, 2011, along with the resulting lower cost of capital as of September 30, 2011. The updated lower cost of capital is used in Second Rebuttal Schedule A-1 to determine an updated Company proposed revenue requirement.

As of the most recently available date of September 30, 2011, the Company's short-term debt balance was $44,598,345, which - as was disclosed in my earlier Rebuttal and Rejoinder testimonies - is a substantial reduction from the earlier test year-end balance.

The Company's retained earnings have also been updated as of September 30, 2011 and likewise reflect an improvement from the test year-end balance. The total effect of these changes results in an updated capital structure of 41.27% equity and 58.73% debt proposed for ratemaking purposes. The Company's proposed updated weighted cost of capital is 7.48%, which is a reduction from its original proposed 8.30%. The reduction is largely due to reflecting short-term debt in the cost of debt, the typical recent practice at the Commission. All else constant, this reduces the revenue requirement requested for Agua Fria, Havasu and Mohave water districts. The Company would appreciate the parties, particularly Staff and RUCO, likewise incorporating the update to the cost of debt and capital structure into their final proposed schedules.

Q. IN THE COMPANY'S INITIAL APPLICATION, THE WHITE TANKS PLANT RELATED DEFERRALS WERE CALCULATED AND INCLUDED THROUGH NOVEMBER 1, 2011. BUT GIVEN THAT IT IS ALREADY NOVEMBER 2011 AND THIS RATE CASE IS NOT YET CLOSE TO CONCLUDING, TO WHAT DATE HAVE YOU FURTHER UPDATED THE COMPANY'S PROPOSED REVENUE REQUIREMENT FOR THE WHITE TANKS PLANT RELATED DEFERRALS?

A. Although the Company hopes it does not take quite this long, the Company has updated to July 1, 2012. Given a hearing date of December 2011, an outside assumed implementation date for new rates is July 1, 2012. Thus, the Company's proposed rate base has been updated to reflect the White Tanks Plant related deferrals through July 1, 2012. This is reflected in ADJ TMB-1RB2 on Schedule B-2 Second Rebuttal for the Agua Fria Water district. The update was prepared by relying on actual deferrals through September 30, 2011 as well as an updated estimate of deferrals for the period October 2011 thru June 2012, the details of which are displayed in my Second Rebuttal Exhibit

TMB-1. This new Exhibit replaces my original Direct Testimony Exhibit TMB-3. As a result of this update, Agua Fria's proposed rate base increases $$3,439,075. The annual amortization of the updated total White Tanks Plant related deferrals likewise increases to524,500 as displayed in ADJ SLM-3RB2. If for any reason, new rates from this proceeding are implemented on a date other than July 1, 2012, then Second Rebuttal Exhibit TMB-1 can be relied upon to select deferral values for months earlier in 2012.

In his Direct Testimony, Staff's Mr. Becker agreed with the Company and likewise recommended that the Commission include in rates these deferrals through the date that rates are implemented in order to comply with earlier Commission decisions.

III REBUTTAL OF SCGCA'S MR. WATKINS

Q. ON PAGE 24, LINE 1 THROUGH PAGE 25, LINE 12, MR. WATKINS CHARACTERIZES THE PORTION OF THE WHITE TANKS INVESTMENT THE COMPANY PROPOSES TO RECOVER IN RATES AS 126%. IS THAT MISLEADING?

A. Yes, that amount is an exaggeration and a mischaracterization of the concept expressed in my earlier testimony Mr. Watkins cites. Mr. Watkins erroneously excludes legitimate White Tanks Plant financing costs from the cost of the plant and then adds them back in as regards the amount being sought in rates in arriving at his 126% figure. However, my concept related to the portion of the plant recovered via hook-up fee proceeds versus the amount being sought in recovery in base rates. As regards my concept, displayed in my Second Rebuttal Schedule TMB-1, on Page 1 is the accumulated amount of $4.3 million in White Tanks related hook-up fees through July 1, 2012. Since the Company is seeking to recover $78.9 m of White Tanks Plant related costs, thus the portion of total cost sought to be recovered in base rates is 95%. Clearly, the accumulated hook-up fee proceeds have been disappointing, so there is not need to exaggerate and we are not seeking more than 100% of the White Tanks costs in rates.

Q. ON PAGE 41, LINES 1 THROUGH 11, MR. WATKINS STATES THAT RECENT ADDITIONAL WELLS HAVE NOT REQUIRED SHAREHOLDER FUNDING. IS THIS TRUE?

A. No. The implication of Mr. Watkins' statement is that the Company had essentially a free well alternative to a costly White Tanks, but even though Mr. Watkins recognizes on line 6 that wells were advanced or contributed, he does not acknowledge that advances will later be refunded using shareholder funds.

IV <u>ARIZONA ECONOMIC OUTLOOK 2006 TO-DATE</u>

Q. HAVE YOU PREPARED ADDITIONAL SUMMARY INFORMATION ON WHAT ARIZONA'S LEADING ECONOMISTS WERE PREDICTING FOR THE ARIZONA JOB GROWTH DURING THE POST 2006 PERIOD WHEN WHITE TANKS WAS IN ITS FINAL PLANNING STAGES AND LATER DURING ITS CONSTRUCTION?

A. Yes. Attached is Second Rebuttal Exhibit TMB-2 which presents a summary of excerpts from each month's ASU's Western Blue Chip Economic Forecast since 2006 and further supports my discussion in Rejoinder testimony. This summary data continues to support the conclusion that Arizona's business economists did not begin to predict that Arizona would begin to lose employment until late 2008 and even then, they believed that job losses would be relatively shallow into 2009. We now know that 2009 was the worst year for lost jobs in Arizona, but that it was not until late 2009 that Arizona's economists saw that and predicted very slow growth for 2010 as well. However, by late 2009, White Tanks was nearly finished and in November 2009 it went into service.

Q. DOES THIS CONCLUDE YOUR SECOND REBUTTAL TESTIMONY IN THIS CASE?

A. Yes.

Arizona American Water Company - Agua Fria Water
Test Year Ended June 30, 2010

Second Rebuttal Exhibit TMB-1
Schedule B-2 Second Rebuttal

Witness: Broderick

Line No.			Original Estimate	Second Rebuttal Update 11/17/2011	Second Rebuttal Adjustment
1	White Tanks Plant Deferrals and Amortization				
2					
3	An adjustment is being made to Rate Base for the amounts associated with the authorized White				
4	Tanks Plant deferral.				
5	A corresponding adjustment is being made to annual amortization expense to recover the				
6	authorized deferrals based on their June 30, 2012 balance.				
7					
8					
9					
10					
11					
12	Regulatory Asset - White Tanks Deferrals:				
13	Post In Service AFUDC		$ 10,161,705.41	$ 13,404,183.18	$ 3,242,477.78
14	Deferred Depreciation		$ 4,318,338.39	$ 5,761,920.99	$ 1,443,582.60
15	Total Regulatory Asset - White Tanks Deferrals		$ 14,480,043.80	$ 19,166,104.17	$ 4,686,060.37
16					
17					
18	Contributions in Aid of Construction - White Tanks Hook-Up Fee				
19	Contributions through 6/2010		$ 2,159,073.00	$ 2,918,639.00	$ 759,566.00
20	Estimated Contributions through 11/30/11		$ 1,072,243.12		$ (1,072,243.12)
21	Estimated Contributions through 06/30/12			$ 1,416,494.12	$ 1,416,494.12
22	Total Contributions in Aid of Construction		$ 3,231,316.12	$ 4,335,133.12	$ 1,103,817.00
23					
24	Unamortized Balance at 11/30/11 (line 15 - line 21)		$ 11,248,727.67		
25	Unamortized Balance at 06/30/12 (line 15 - line 21)			$ 14,830,971.04	**$ 3,582,243.37**
26					
27					
28	Amortization of Regulatory Asset	3.39%	$ 381,331.87		
29	Amortization of Regulatory Asset	3.54%		$ 524,499.81	**$ 143,167.94**
30					

Consesus Blue Chip Economic Forecast

Arizona Wage & Salary Employment Growth

	2006	2007	2008	2009	2010	2011	2012
January 2006	4.00%	3.60%					
February	4.00%	3.60%					
March	4.00%	3.70%					
April	4.10%	3.70%					
May	4.30%	3.70%					
June	4.50%	3.80%					
July	4.60%	3.80%					
August	4.60%	3.80%					
September	4.60%	3.70%					
October	4.60%	3.70%					
November	4.60%	3.70%					
December	4.60%	3.70%					
January 2007		3.60%	3.60%				
February		3.60%	3.60%				
March		3.60%	3.60%				
April		3.50%	3.60%				
May		3.50%	3.50%				
June		3.50%	3.40%				
July		3.50%	3.40%				
August		3.50%	3.40%				
September		3.40%	3.20%				
October		3.40%	3.10%				
November		3.40%	3.10%				
December		3.20%	2.90%				
January 2008			2.20%	2.60%			
February			2.20%	2.60%			
March			2.20%	2.70%			
April			1.10%	2.10%			
May			0.70%	1.90%			
June			0.70%	1.90%			
July			0.30%	1.40%			
August			0.30%	1.40%			
September			0.00%	1.40%			
October			-0.04%	1.30%			
November			-1.00%	0.80%			
December			-1.20%	0.00%			
January 2009				-0.70%	1.90%		
February				-0.90%	1.80%		
March				-1.20%	1.20%		
April				-2.00%	1.00%		
May				-2.80%	0.80%		
June				-3.60%	0.60%		
July				-4.30%	0.40%		
August				-4.60%	0.40%		

Consesus Blue Chip Economic Forecast

Arizona Wage & Salary Employment Growth

	2006	2007	2008	2009	2010	2011	2012
September				-4.80%	0.50%		
October				-5.20%	0.40%		
November				-5.50%	0.40%		
December				-5.70%	0.30%		
January 2010					0.20%	1.90%	
February					0.20%	1.90%	
March					0.20%	1.90%	
April					0.10%	1.90%	
May					-0.10%	1.80%	
June					-0.10%	1.90%	
July					-0.10%	1.90%	
August					-0.30%	1.90%	
September					-0.50%	1.70%	
October					-0.50%	1.60%	
November					-0.50%	1.50%	
December					-0.50%	1.60%	
January 2011						1.60%	
February						1.60%	2.10%
March						1.70%	2.40%
April						1.50%	2.30%
May						1.40%	2.30%
June						1.10%	2.10%
July						1.10%	2.00%
August						1.00%	1.80%
September						0.90%	1.70%
October						1.00%	1.70%
November						N/A	N/A
December						N/A	N/A
ACTUAL	**5.10%**	**1.50%**	**-2.10%**	**-7.30%**	**-2.10%**	N/A	N/A

EXHIBIT
A-36

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

GARY PIERCE, Chairman
BOB STUMP
PAUL NEWMAN
SANDRA D. KENNEDY
BRENDA BURNS

IN THE MATTER OF THE APPLICATION OF ARIZONA -AMERICAN WATER COMPANY, AN ARIZONA CORPORATION, FOR A DETERMINATION OF THE CURRENT FAIR VALUE OF ITS UTILITY PLANT AND PROPERTY AND FOR INCREASES IN ITS RATES AND CHARGES BASED THEREON FOR UTILITY SERVICE BY ITS AGUA FRIA WATER DISTRICT, HAVASU WATER DISTRICT AND MOHAVE WATER DISTRICT	DOCKET NO. W-01303A-10-0448

REJOINDER TESTIMONY

OF

GREGORY A. BARBER

ON BEHALF OF

ARIZONA-AMERICAN WATER COMPANY

DATED AUGUST 9, 2011

REJOINDER TESTIMONY
OF
GREGORY A. BARBER
ON BEHALF OF
ARIZONA-AMERICAN WATER COMPANY
AUGUST 9, 2011

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EXECUTIVE SUMMARY

Mr. Barber responds to the surrebuttal testimony of RUCO witness Rodney Moore and describes the financial impact of RUCO's proposed disallowance of fifty percent of the cost of the White Tanks Plant from rate base and fifty percent of the deferred debits associated with the proposed fifty percent disallowance.

I INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. Gregory A. Barber, 2355 West Pinnacle Peak Rd., Phoenix, AZ 85027.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I hold the position of Director, Finance for Arizona-American Water Company (the "Company").

Q. WHAT ARE YOUR RESPONSIBILITIES AS DIRECTOR, FINANCE?

A. In this position, I am responsible for leading the finance, accounting, budgeting and rate administration functions within the Company.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND.

A. I graduated from the University of New Mexico in 1980 with a Bachelor of Business and Administration Degree in Accounting and Financial Management. I am a Certified Public Accountant (CPA).

Q. PLEASE DESCRIBE YOUR PROFESSIONAL EXPERIENCE.

A. I have more than thirty years of accounting and financial management experience. I joined the Company in August 2010.

My utility experience began in 2008 when I joined Global Water Resources in Phoenix, AZ. While at Global Water Resources, I was a Senior Vice President and Chief Financial Officer.

I am a member of the American Institute of Certified Public Accountants and the Arizona Society of Certified Public Accountants.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS CASE?

A. To respond to and explain the impact on the Company of Mr. Moore's proposed RUCO Surrebuttal Rate Base Adjustment No. 7 – White Tanks Regional Water Treatment Plant – Agua Fria ONLY disallowing rate base treatment of a portion of the White Tanks plant and RUCO Surrebuttal Rate Base Adjustment No. 9 – Deferred Debits for White Tanks Regional Water Treatment Plant – Agua Fria ONLY disallowing rate base treatment of a portion of the deferred debits associated with the White Tanks plant filed on behalf of the RUCO.

II RESPONSE TO RUCO

Q. HAVE YOU REVIEWED MR. MOORE'S PROPOSED ADJUSTMENTS?

A. Yes. Mr. Moore has proposed several adjustments to rate base. My testimony will explain the impact to the Company of RUCO Surrebuttal Rate Base Adjustment No. 7 – White Tanks Regional Water Treatment Plant – Agua Fria ONLY and RUCO Surrebuttal Rate Base Adjustment No. 9 – Deferred Debits for White Tanks Regional Water Treatment Plant – Agua Fria ONLY.

In RUCO Surrebuttal Rate Base Adjustment No. 7 – White Tanks Regional Water Treatment Plant – Agua Fria ONLY Mr. Moore is proposing to disallow 50 percent of the cost of the White Tanks plant and exclude it from the Company's rate base. This adjustment will reduce the Agua Fria adjusted test year rate base by ($33,572,349), which is made up of a ($33,662,500) reduction of the original cost of the White Tanks $67,325,000 plant, partially offset by a $90,151 reduction of the deferred depreciation expense related to the White Tanks plant.

In RUCO Surrebuttal Rate Base Adjustment No. 9 – Deferred Debits for White Tanks Regional Water Treatment Plant – Agua Fria ONLY Mr. Moore is proposing to disallow 50 percent of the deferred debits associated with the 50 percent disallowance of the

White Tanks plant and exclude it from the Company's rate base. This adjustment will reduce the Agua Fria adjusted test year rate base by ($5,433,698).

Mr. Moore's adjustments would immediately remove 50% of the White Tanks plant and related costs from the Company's current rate base and it does not allow the Company to earn a return on and of its investment of this portion of the White Tanks plant and related costs.

Q. CAN YOU DESCRIBE THE ACCOUNTING STANDARDS APPLICABLE TO MR. MOORE'S ADJUSTMENTS?

A. Yes. The adjustments, as mentioned by Mr. Moore, would be subject to applicable accounting guidance including the ASC Topic 980, specifically section 360 of ASC Topic 980 pertaining to Plant Disallowances.

The Company is a regulated operation and does not have the option or election to avoid ASC Topic 980. ASC Topic 980-10-15-2 states this guidance must be applied to general-purpose external financial statements of an entity that has regulated operations if all of the following criteria are met:

- The entity's rates for regulated services or products provided to its customers are established by or are subject to approval by an independent, third-party regulator or by its own governing board empowered by statute or contract to establish rates that bind customers.
- The regulated rates are designed to recover the specific entity's costs of providing the regulated services or products.

CONFIDENTIAL - SUBJECT TO PROTECTIVE AGREEMENT
IN DOCKET NO. W-01303A-10-0448

- In view of the demand for the regulated services or products and the level of competition, direct and indirect, it is reasonable to assume that rates set at levels that will recover the entity's costs can be charged to and collected from customers. This criterion requires consideration of anticipated changes in levels of demand or competition during the recovery period for any capitalized costs.

- ASC 980-360-35-12 provides guidance on cost disallowances. When it becomes probable that part of the cost of a recently completed plant will be disallowed for rate-making purposes and a reasonable estimate of the amount of the disallowance can be made, the estimated amount of the probable disallowance shall be deducted from the reported cost of the plant and recognized as a loss. If part of the cost is explicitly, but indirectly, disallowed (for example, by an explicit disallowance of return on investment on a portion of the plant), an equivalent amount of cost shall be deducted from the reported cost of the plant and recognized as a loss.

Q. **WHAT WILL BE THE ACCOUNTING AND FINANCIAL IMPACT OF MR. MOORE'S ADJUSTMENTS UNDER THESE APPLICABLE ACCOUNTING STANDARDS?**

A. As described earlier, Mr. Moore's testimony does not allow the Company to earn a return on and of its investment and in fact, Mr. Moore's plan calls for a plant disallowance.

BEGIN CONFIDENTIAL:

CONFIDENTIAL - SUBJECT TO PROTECTIVE AGREEMENT
IN DOCKET NO. W-01303A-10-0448

END CONFIDENTIAL

Q **DOES THIS CONCLUDE YOUR REJOINDER TESTIMONY?**

A Yes, it does.

CONFIDENTIAL - SUBJECT TO PROTECTIVE AGREEMENT
IN DOCKET NO. W-01303A-10-0448

BEGIN CONFIDENTIAL:

END CONFIDENTIAL

EXHIBIT
A-38

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

KRISTIN K. MAYES, Chairman
GARY PIERCE
BOB STUMP
PAUL NEWMAN
SANDRA D. KENNEDY

IN THE MATTER OF THE APPLICATION OF ARIZONA-AMERICAN WATER COMPANY, AN ARIZONA CORPORATION, FOR A DETERMINATION OF THE CURRENT FAIR VALUE OF ITS UTILITY PLANT AND PROPERTY AND FOR INCREASES IN ITS RATES AND CHARGES BASED THEREON FOR UTILITY SERVICE BY ITS AGUA FRIA, HAVASU AND MOHAVE WATER DISTRICTS	DOCKET NO. W-01303A-10-

**DIRECT TESTIMONY
OF
JOHN F. GUASTELLA
ON BEHALF OF
ARIZONA-AMERICAN WATER COMPANY
NOVEMBER 3, 2010**

DIRECT TESTIMONY
OF
TESTIMONY OF JOHN F. GUASTELLA
ON BEHALF OF
ARIZONA-AMERICAN WATER COMPANY
NOVEMBER 3, 2010

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EXECUTIVE SUMMARY

Mr. Guastella testifies as follows:

The purpose of the Depreciation Study is to establish depreciation rates that are reasonably applicable to the depreciable assets of the water and wastewater systems of the Company. The Depreciation Study was performed on the basis of comparative average service lives and depreciation rates.

The source data relied upon with respect to average service lives was obtained from Guastella Associates' files and from data provided by the Company with respect to its Arizona and other American Water properties and by the Arizona Corporation Commission Staff.

The basis for average service lives resulted from a careful account-by-account review of average service lives that have been established by utilities and regulatory agencies around the country. Mr. Guastella also inspected a number of the Company's systems in Arizona, and discussed their operation and maintenance with Company engineers and operators. Mr. Guastella also discussed the Company's asset management with its accountants and administrative employees.

Having selected the average service lives, the next step was to assign net salvage values to each account. Under the required accounting treatment, it is necessary to determine the net salvage value with respect to an item of property being retired. The calculation of depreciation rates also requires the inclusion of net salvage values. Estimates of positive salvage values, such as trade-in payments or discounts, or resale values on meters and transportation equipment are fairly consistent. On the other hand, determining the cost of removal is more challenging for assets being retired as part of a replacement during a common project and, therefore, requiring an allocation of costs.

Having selected average service lives and net salvage values, the determination of depreciation rates is simply a matter of arithmetic: the percent depreciation is 1.0 minus percentage net salvage value divided by the average service life. Accordingly, where the net salvage value is negative, indicating cost of removal exceeds the salvage value, the depreciation rate is higher -- because it must recover both the original cost and cost of removal.

I INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. John F. Guastella, Guastella Associates, LLC, 6 Beacon Street, Suite 410, Boston, MA 02108.

Q. BY WHO ARE YOU EMPLOYED?

A. I am president of Guastella Associates, LLC.

Q. PLEASE DESCRIBE GUASTELLA ASSOCIATES, LLC.

A. Guastella Associates, LLC provides utility management, valuation and rate consulting services to both regulated and unregulated utilities.

Q. HAVE YOU ATTACHED A DETAILED STATEMENT OF YOUR QUALIFICATIONS AND EXPERIENCE?

A. Yes, it is set forth in Exhibit JFG-1.

Q. WHAT IS THE NATURE OF YOUR INVOLVEMENT IN THIS PROCEEDING?

A. Guastella Associates, LLC has been employed by Arizona-American Water Company, Inc. ("Company") to perform a depreciation study, and to present the results of the study in support of any recommended revisions to depreciation expense of the systems for which the Company would submit an application to the Arizona Corporation Commission ("ACC") for a rate increase.

Q. HAVE YOU COMPLETED THE DEPRECIATION STUDY?

A. Yes, I have. The Depreciation Study completed for the Company is set forth in Exhibit JFG-2.

Q. ARE THE RECOMMENDATIONS IN YOUR STUDY APPLICABLE TO ALL OF THE COMPANY'S WATER AND WASTEWATER SYSTEMS IN ARIZONA, INCLUDING THE AGUA FRIA, HAVASU AND MOHAVE WATER SYSTEMS?

A. Yes.

Q. WOULD YOU BRIEFLY DESCRIBE YOUR DEPRECIATION STUDY?

A. The study consists of a determination of depreciation rates selected on the basis of comparisons of average service lives and net salvage values for similar assets of other utilities and as accepted by other regulatory agencies.

Q. DOES YOUR STUDY CONTAIN RECOMMENDED SPECIFIC DEPRECIATION RATES FOR ALL DEPRECIABLE PLANT ACCOUNTS?

A. Yes. It also contains schedules that compare depreciation rates and annual expense under existing and recommended depreciation rates for all systems. For Agua Fria, Havasu and Mohave, it applies the depreciation rates to the pro forma utility plant balances as contained in the Company's rate filing for those systems.

Q. IN ADDITION TO INCLUDING THOSE COMPARISONS IN YOUR DEPRECIATION STUDY, HAVE YOU PROVIDED SEPARATE COPIES OF THE SCHEDULES APPLICABLE TO AGUA FRIA, HAVASU AND MOHAVE AS A SEPARATE EXHIBIT TO BE INCLUDED, FOR CONVENIENCE, IN THE RECORD IN THIS CASE?

A. Yes. Those schedules are set forth in Exhibit JFG-3.

Q. IS YOUR DEPRECIATION STUDY SELF-EXPLANATORY?

A. Yes, I believe it is. The Depreciation Study describes in detail the source of the data for the study, how average service lives and net salvage values were determined, and the depreciation rate calculations resulting from this data.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY IN THIS CASE?

A. Yes.

EXHIBIT JFG-1

Guastella Associates, LLC

Qualifications & Experience

Rate Setting
Valuation
Management
Consulting

SERVING REGULATED AND UNREGULATED WATER AND WASTEWATER UTILITIES SINCE 1978

6 Beacon Street, Suite 410, Boston, MA 02108
(617) 423-3030
www.guastella.com

INTRODUCTION
GUASTELLA ASSOCIATES, LLC

Guastella Associates, LLC ("formerly John F. Guastella Associates, Inc.") is a consulting firm that specializes in providing utility rate setting, valuation and management services for public and privately-owned water and wastewater utilities.

John F. Guastella established Guastella Associates in 1978. Previously, Mr. Guastella was Director of the Water Division of the New York Public Service Commission. The Water Division provided the New York Commission with technical assistance in regulating the rates and service provided by approximately 450 privately-owned utilities. During the period from 1987 through 1991, Mr. Guastella also managed a 5,500 customer water utility in New York State. In 1989, Guastella Associates acquired the rates and valuation section of Coffin & Richardson, Inc., a general consulting firm that also provided a full range of services to water and wastewater utilities.

As can be seen from the following qualifications and experience, key staff members have many years of combined experience in virtually every aspect of utility rate setting and valuation. The technical expertise of key staff, combined with their former employment by real estate and utility companies, a regulatory agency, and the management of water utilities, provides a total perspective towards addressing the rates and valuation needs of today's water and wastewater utilities.

Guastella Associates has assisted the largest privately-owned utilities with respect to the most challenging issues, performing complex studies and providing expert testimony in administrative hearings as well as court proceedings. In addition, our client base has included hundreds of small water and wastewater utilities - - obtaining rate increases that turn operating losses into profits, posturing them for financing, correcting record keeping errors and, for some, negotiating their sale at multiples of their original cost net investment rate base. Some of our most successful assignments have been to help establish new developer-related water and wastewater utilities, applying the correct principles at the outset in order to develop fully compensatory initial rates, record keeping procedures and asset management, so they are structured to become self-sustaining utilities that will achieve the highest possible profit and ultimate market value.

Our wide-range of experience and expertise has enabled us to successfully address the special needs of large investor-owned utilities in rate cases and condemnation proceedings. We bring the same high level of expertise to the small water and wastewater utilities, which is essential to their success, and at prices they can afford.

OUTLINE OF SERVICES
GUASTELLA ASSOCIATES, LLC

Guastella Associates, LLC ("formerly John F. Guastella Associates, Inc.") is a consulting firm specializing in utility management, valuation, appraisals and rate determinations. Guastella Associates has been providing professional services to regulated and unregulated utilities since 1978.

Specific areas of expertise includes:

I. RATE ANALYSIS

A. Revenue Requirements

1. Examination of books and records -- revenues, expenses and capital investment.

2. Determination of the cost of providing service (revenue requirement) -- normalize historical data, establish known changes and perform projections.

B. Rate Design

1. Perform cost allocation studies to establish cost of service for residential, commercial, industrial, wholesale and fire protection cus-tomers, and for other special users.

2. Develop rate structures -- combine billing analyses and cost allocations to form usage rates, flat rates, minimum service and facilities charges, and such other special charges as connection fees, availability rates, etc.

C. Reports

1. Investor-owned utilities -- prepare complete rate filings for submission to regulatory agencies; prepare testimony, exhibits, and assist in all aspects of adjudication process.

2. Municipal utilities -- prepare detailed rate reports in support of rate increases for use by municipal officials and presentation at municipal hearings.

OUTLINE OF SERVICES

GUASTELLA ASSOCIATES, LLC

II. VALUATIONS

A. Appraisals

1. Eminent domain condemnation proceedings, negotiations for sale of utilities, damage claims for insurance and ad valorem tax and management purposes.

2. Determinations of original cost, replacement cost, reproduction cost and market value, including going concern value.

3. Calculation of the present value of cash flow under the income approach to market value determinations.

4. Analyses of market data under the sales comparison approach.

B. Depreciation

1. Actuarial studies using retirement rate or simulated plant balances methods to determine average service lives of physical property, theoretical depreciation reserve requirements and depreciation rates.

2. Establish affordable depreciation rates on the basis of comparative analyses of similar property of other utilities and practices of regulatory agencies and association

C. Feasibility Studies

1. Utility acquisitions by investors and municipalities.

2. Economic studies to establish extension of service costs and policy -- inside and outside service area.

3. Main extension agreements, guaranteed revenue contracts, refund provisions.

D. Financial Planning

1. Establish financing requirements for capital improvements.

2. Determine revenue and rate needs for various combinations of debt and equity financing.

3. Assist certain utilities in securing financing.

4. Establish financing needs, initial rates and regulatory approval of proposed new utilities.

III. MANAGEMENT

A. Operations

1. Assist in day-to-day decisions as to utility accounting and related impact on rates.

2. Solve problems as to record keeping in accordance with regulatory requirements and prescribed systems of accounts.

3. Establish general policy and tariff provisions for customer service, billing, collecting, meter testing, complaint handling, and customer and regulatory relations.

B. Administrative

1. Coordinate activities with regulatory agencies to assure compliance with rules, regulations and orders.

2. Negotiations for purchase or sale of utility property and special contracts.

C. Training

1. On-the-job training for employees while working on various projects.

2. Special educational seminars on all aspects of utility rate settings, financing, valuation and rules

PROFESSIONAL QUALIFICATIONS AND EXPERIENCE
of
JOHN F. GUASTELLA

B.S., Mechanical Engineering, Stevens Institute of Technology, 1962, Licensed Professional Engineer.

Member:

American Water Works Association, Lifetime Member
National Association of Water Companies
New England Water Works Association, Lifetime Member

Committees:

AWWA, Water Rates Committee (Manual M-1, 1983 Edition)
National Association of Regulatory Utility Commissioners (NARUC) and NAWC, Joint-Committee on Rate Design
NAWC, Rates and Revenues Committee
NAWC, Small Water Company Committee

Mr. Guastella is President of Guastella Associates, LLC ("formerly John F. Guastella Associates, Inc.") which provides management, valuation and rate consulting services for municipal and investor-owned utilities, as well as regulatory agencies. His clients include utilities in the states of Alaska, Arkansas, California, Connecticut, Delaware, Florida, Georgia, Idaho, Illinois, Indiana, Maine, Maryland, Massachusetts, Missouri, Michigan, Montana, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Dakota, Ohio, Pennsylvania, South Carolina, Texas, Rhode Island and Virginia. He has provided consulting services that include all aspects of utility regulation and rate setting, encompassing revenue requirements, revenues, operation and maintenance expenses, depreciation, taxes, return on investment, cost allocation and rate design. He has performed depreciation studies for the establishment of average service lives of utility property. He has performed appraisals of utility companies for management purposes and in connection with condemnation proceedings. He has also negotiated the sale of utility companies.

Mr. Guastella served for more than four years as President of Country Knolls Water Works, Inc., a water utility that served some 5,500 customers in Saratoga County, New York. He also served as a member of the Board of Directors of the National Association of Water Companies.

Mr. Guastella has qualified and testified as an expert witness before regulatory agencies and municipal jurisdictions in the states of Alaska, California, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Maryland, Massachusetts, Missouri, Montana, Nevada, New Hampshire, New Mexico, New Jersey, New York, North Dakota, Ohio, Pennsylvania, Rhode Island, South Carolina, Texas and Virginia.

Prior to establishing his own firm, Mr. Guastella was employed by the New York State Public Service Commission for sixteen years. For two years he was involved in the regulation of electric and gas utilities, with the remaining years devoted to the regulation of water utilities. In 1970, he was promoted to Chief of Rates and Finance in the Commission's Water Division. In 1972, he was made Assistant Director of the Water Division. In 1974, he was appointed by Alfred E. Kahn, then Chairman of the Commission, to be Director of the Water Division, a position he held until he resigned from the Commission in August 1978.

At the Commission, his duties included the performance and supervision of engineering and economic studies concerning rates and service of many public utilities. As Director of the Water Division, he was responsible for the regulation of more than 450 water companies in New York State and headed a professional staff of 32 engineers and three technicians. A primary duty was to attend Commission sessions and advise the Commission during its decision making process. In the course of that process, an average of about fifty applications per year would be reviewed and analyzed. The applications included testimony, exhibits and briefs involving all aspects of utility valuation and rate setting. He also made legislative proposals and participated in drafting Bills that were enacted into law: one expanded the N.Y. Public Service Commission's jurisdiction over small water companies and another dealt specifically with rate regulation and financing of developer-related water systems.

In addition to his employment and client experience, Mr. Guastella served as Vice-Chairman of the Staff-Committee on Water of the National Association of Regulatory Utility Commissioners (NARUC). This activity included the preparation of the "Model Record-Keeping Manual for Small Water Companies," which was published by the NARUC. This manual provides detailed instruction on the kinds of operation and accounting records that should be kept by small water utilities, and on how to use those records.

Each year since 1974 he has prepared study material, assisted in program coordination and served as an instructor at the Eastern Annual Seminar on Water Rate Regulation sponsored over the years by the NARUC in conjunction with the University of South Florida, Florida Atlantic University, the University of Utah, Florida State University, the University of Florida and currently Michigan State University. In 1980 he was instrumental in the establishment of the Western NARUC Rate Seminar and has annually served as an instructor since that time. This course is recognized as one of the best available for teaching rate-setting principles and methodology. More than 5,000 students have attended this course, including regulatory staff, utility personnel and members of accounting, engineering, legal and consulting firms throughout the country.

Mr. Guastella served as an instructor and panelist in a seminar on water and wastewater regulation conducted by the Independent Water and Sewer Companies of Texas. In 1998, he prepared and conducted a seminar on basic rate regulation on behalf of the New England Chapter of the National Association of Water Companies. In 2000 and 2001, Mr. Guastella developed and conducted a special seminar for developer related water and wastewater utilities in conjunction with Florida State University, and again in 2003 in conjunction with the University of Florida. It provided essential training for the financial structuring of small water and wastewater utilities, rate setting, financing and the establishment of their market value in the event of a negotiated sale or condemnation. In 2004, he prepared and conducted a special workshop seminar on behalf of the Office of Regulatory Staff of South Carolina, covering rate setting, valuation and general regulation of water and wastewater utilities. In 2006, he participated in an expert workshop on full cost pricing conducted by the U. S. Environmental Protection Agency in coordination with the Institute of Public Utilities, Michigan State University. In 2006, he prepared and conducted a special seminar on rate setting and valuation on behalf of the New York Chapter of the NAWC. In 2007, he prepared and conducted a special seminar on rate setting and valuation on behalf of the New England Chapter of NAWC.

Mr. Guastella has made presentations on a wide variety of rate, valuation and regulatory issues at meetings of the National Association of Regulatory Utility Commissioners, the American Water Works Association, the New England Water Works Association, the National Association of Water Companies, the New England Conference of Public Utilities Commissioners, the Florida, New England, New Jersey and New York Chapters of NAWC, the Mid-America Regulatory Conference, the Southeastern Association of Regulatory Utility Commissioners, the Pennsylvania Environmental Conference, the Public Utility Law Section of the New Jersey Bar Association, and the NAWC Water Utility Executive Council.

John F. Guastella
List of Proceedings in which Expert Testimony was Presented

Year	Client	State	Regulatory Docket/Case Number
1966	Sunhill Water Corporation	New York	23968
1967	Amagansett Water Company	New York	24210
1967	Worley Homes, Inc.	New York	24466
1968	Amagansett Water Company	New York	24718
1968	Amagansett Water Company	New York	24883
1968	Sunhill Water Corporation	New York	23968
1968	Worley Homes, Inc.	New York	Supreme Court
1969	Amagansett Water Supply	New York	24883
1969	Citizens Water Supply Co.	New York	25049
1969	Worley Homes, Inc.	New York	24466/24992
1970	Brooklyn Union Gas Company	New York	25448
1970	Consolidated Edison of New York	New York	25185
1971	Hudson Valley Water Companies	New York	26093
1971	Jamaica Water Supply Company	New York	26094
1971	Port Chester Water Works, Inc.	New York	25797
1971	U & I Corp. - Merrick District	New York	26143
1971	Wanakah Water Company	New York	25873
1972	Spring Valley Water Company	New York	26226
1972	U & I Corp. - Woodhaven District	New York	26232
1973	Citizens Water Supply Company	New York	26366
1978	Rhode Island DPU&C (Bristol County)	Rhode Island	1367A
1979	Candlewick Lake Utilities Co.	Illinois	76-0218
1979	Candlewick Lake Utilities Co.	Illinois	76-0347
1979	Candlewick Lake Utilities Co.	Illinois	78-0151
1979	Jacksonville Suburban Utilities	Florida	770316-WS
1979	New York Water Service Corporation	New York	27594
1979	Salem Hills Sewerage Disposal Corp. v. V. of Vorheesville	New York	Supreme Court
1979	Seabrook Water Corporation	New Jersey	7910-846
1979	Southern Utilities Corporation	Florida	770317-WS
1979	Township of South Brunswick	New Jersey	Municipal
1979	Westchester Joint Water Works	New York	Municipal
1979	Woodhaven Utilities Corporation	Illinois	77-0109
1980	Crestwood Village Sewer Company	New Jersey	BPU 802-78
1980	Crestwood Village Water Company	New Jersey	BPU 802-77
1980	Gateway Water Supply Corporation	Texas	Municipal
1980	GWW-Central Florida District	Florida	800004-WS
1980	Jamaica Water Supply Company	New York	27587
1980	Rhode Island DPU&C (Newport Water)	Rhode Island	1480
1981	Briarcliff Utilities, Inc.	Texas	3620
1981	Candlewick Lake Utilities Co.	Illinois	81-0011
1981	Caroline Water Company, Inc.	Virginia	810065
1981	GDU, Inc. - Northport	Florida	Municipal
1981	GDU, Inc. - Port Charlotte	Florida	Municipal
1981	GDU, Inc. - Port Malabar	Florida	80-2192
1981	Hobe Sound Water Company	Florida	8000776
1981	Lake Buckhorn Utilities, Inc.	Ohio	80-999
1981	Lake Kiowa Utilities, Inc.	Texas	3621
1981	Lakengren Utilities, Inc.	Ohio	80-1001
1981	Lorelei Utilities, Inc.	Ohio	80-1000
1981	New York Water Service Corporation	New York	28042
1981	Rhode Island DPU&C (Newport Water)	Rhode Island	1581
1981	Shawnee Hills Utility Company	Ohio	80-1002
1981	Smithville Water Company, Inc.	New Jersey	808-541
1981	Spring Valley Water Company, Inc.	New York	27936
1981	Spring Valley Water Company, Inc.	New York	27936
1981	Sunhill Water Corporation	New York	27903
1981	Swan Lake Water Corporation	New York	27904
1982	Chesterfield Commons Sewer Company	New Jersey	822-84
1982	Chesterfield Commons Water Company	New Jersey	822-83
1982	Crescent Waste Treatment Corp.	New York	Municipal
1982	Crestwood Village Sewer Company	New Jersey	821-33
1982	Crestwood Village Water Company	New Jersey	821-38
1982	Salem Hills Sewerage Disposal Corp.	New York	Municipal
1982	Township of South Brunswick	New Jersey	Municipal
1982	Woodhaven Utilities Corporation	Illinois	82-0167
1983	Country Knolls Water Works, Inc.	New York	28194
1983	Heritage Hills Water Works Corp.	New York	28453
1984	Crestwood Village Sewer Company	New Jersey	8310-861
1984	Crestwood Village Water Company	New Jersey	8310-860
1984	Environmental Disposal Corp.	New Jersey	816-552
1984	GDU, Inc. - Port St. Lucie	Florida	830421
1984	Heritage Village Water (water/sewer)	Connecticut	84-08-03
1984	Hurley Water Company, Inc.	New York	28820
1984	New York Water Service Corporation	New York	28901
1985	Deltona Utilities (water/sewer)	Florida	830281
1985	J. Filiberto Sanitation, Inc.	New Jersey	8411-1213
1985	Sterling Forest Pollution Control	New York	Municipal
1985	Water Works Enterprise, Grand Forks	North Dakota	Municipal
1986	GDU, Inc. - Port Charlotte	Florida	Municipal
1986	GDU, Inc. - Sebastian Highlands	Florida	Municipal

John F. Guastella
List of Proceedings in which Expert Testimony was Presented

Year	Client	State	Regulatory Docket/Case Number
1986	Kings Grant Water/Sewer Companies (settled)	New Jersey	WR8508-868
1986	Mt. Ebo Sewage Works, Inc.	New York	Municipal
1986	Sterling Forest Pollution Control	New York	Municipal
1987	Country Knolls Water Works, Inc.	New York	29443
1987	Crestwood Village Sewer Co. (settled)	New Jersey	WR8701-38
1987	Deltona Utilities - Marco Island	Florida	850151-WS
1987	Deltona Utilities, Inc. - Citrus Springs (settled)	Florida	870092-WS
1987	First Brewster Water Corp. v. Town of Southeast (settled)	New York	Supreme Court
1987	GDU, Inc. - Silver Springs Shores	Florida	870239-WS
1987	Ocean County Landfill Corporation	New Jersey	SR-8703117
1987	Palm Coast Utility Corporation	Florida	870166-WS
1987	Sanlando Utilities Corp.(settled)	Florida	860683-WS
1987	Township of South Brunswick	New Jersey	Municipal
1987	Woodhaven Utilities Corp.(settled)	Illinois	87-0047
1988	Crescent Estates Water Co., Inc.	New York	88-W-035
1988	Elizabethtown Water Co.	New Jersey	OAL PUC3464-88
1988	Heritage Village Water Company	Connecticut	87-10-02
1988	Instant Disposal Service, Inc.	New Jersey	SR-87080864
1988	J. Filiberto Sanitation v. Morris County Transfer Station	New Jersey	01487-88
1988	Ohio Water Service Co.	Ohio	86-1887-WW-CO1
1988	St. Augustine Shores Utilities	Florida	870980-WS
1989	Elizabethtown Water Co.	New Jersey	BPU WR89020132J
1989	GDU (FPSC generic proceeding as to rate setting procedures)	Florida	880883-WS
1989	Gordon's Corner Water Co.	New Jersey	OAL PUC479-89
1989	Heritage Hills Sewage Works	Connecticut	Municipal
1989	Heritage Village Water Company	Connecticut	87-10-02
1989	Palm Coast Utility Corporation	Florida	890277-WS
1989	Southbridge Water Supply Co.	Massachusetts	DPU 89-25
1989	Sterling Forest Water Co.	New York	PSC 88-W-263
1990	American Utilities, Inc. - United States Bankruptcy Court	New Jersey	85-00316
1990	City of Carson City	Nevada	Municipal
1990	Country Knolls Water Works, Inc.	New York	90-W-0458
1990	Elizabethtown Water Company	New Jersey	WR900050497J
1990	Kent County Water Authority	Rhode Island	1952
1990	Palm Coast Utility Corporation	Florida	871395-WS
1990	Southern States Utilities, Inc.	Florida	Workshop
1990	Trenton Water Works	New Jersey	WR90020077J
1990	Waste Management of New Jersey	New Jersey	SE 87070552
1990	Waste Management of New Jersey	New Jersey	SE 87070566
1991	City of Grand Forks	North Dakota	Municipal
1991	Gordon's Corner Water Co.	New Jersey	OAL PUC8329-90
1991	*Southern States Utilities, Inc.*	Florida	900329-WS
1992	Elizabethtown Water Co.	New Jersey	WR 91081293J
1992	General Development Utilities, Inc. - Port Malabar Division	Florida	911030-WS
1992	General Development Utilities, Inc. - West Coast Division	Florida	911067-WS
1992	Heritage Hills Water Works, Inc.	New York	92-2-0576
1993	General Development Utilities, Inc. - Port LaBelle Division	Florida	911737-WS
1993	General Development Utilities, Inc. - Silver Springs Shores	Florida	911733-WS
1993	General Waterworks of Pennsylvania - Dauphin Cons. Water Supply	Pennsylvania	R-00932604
1993	Kent County Water Authority	Rhode Island	2098
1993	Southern States Utilities - FPSC Rulemaking	Florida	911082-WS
1993	Southern States Utilities - Marco Island	Florida	920655-WS
1994	Capital City Water Company	Missouri	WR-94-297
1994	Capital City Water Company	Missouri	WR-94-297
1994	Elizabethtown Water Company	New Jersey	WR94080346
1994	Elizabethtown Water Company	New Jersey	WR94080346
1994	Environmental Disposal Corp.	New Jersey	WR94070319
1994	General Development Utilities - *Port Charlotte*	Florida	940000-WS
1994	General Waterworks of Pennsylvania	Pennsylvania	R-00943152
1994	Hoosier Water Company - Mooresville Division	Indiana	39839
1994	Hoosier Water Company - Warsaw Division	Indiana	39838
1994	Hoosier Water Company - Winchester Division	Indiana	39840
1994	West Lafayette Water Company	Indiana	39841
1994	Wilmington Suburban Water Corporation	Delaware	94-149 (stld)
1995	Butte Water Company	Montana	Cause 90-C-90
1995 .	Heritage Hills Sewage Works Corporation	New York	Municipal
1996	Consumers Illinois Water Company	Illinois	95-0342
1996	Elizabethtown Water Company	New Jersey	WR95110557
1996	Palm Coast Utility Corporation	Florida	951056-WS
1996	PenPac, Inc.	New Jersey	OAL-00788-93N
1996	Southern States Utilities, Marco Island	Florida	950495-WS
1997	Crestwood Village Water Company	New Jersey	BPU 96100739
1997	Indiana American Water Co., Inc.	Indiana	IURC 40703
1997	Missouri-American Water Company	*Missouri*	WR-97-237
1997	South County Water Corp	New York	97-W-0667
1997	United Water Florida	Florida	960451-WS
1998	Consumer Illinois Water Company	Illinois	98-0632
1998	Consumers Illinois Water Company	Illinois	97-0351
1998	Heritage Hills Water Company	New York	97-W-1561
1998	Missouri-American Wastewater Company	Missouri	SR-97-238

John F. Guastella
List of Proceedings in which Expert Testimony was Presented

Year	Client	State	Regulatory Docket/Case Number
1999	Consumers Illinois Water Company	Illinois	99-0288
1999	Environmental Disposal Corp.	New Jersey	WR99040249
1999	Indiana American Water Co., Inc.	Indiana	IURC 41320
2000	South Haven Sewer Works, Inc.	Indiana	Cause: 41410
2000	Utilities Inc. of Maryland	Maryland	CAL 97-17811
2001	Artesian Water Company	Delaware	00-649
2001	Citizens Utilities Company	Illinois	01-0001
2001	Elizabethtown Water Company	New Jersey	WR-0104205
2001	Kiawah Island Utility, Inc.	South Carolina	2001-164-W/S
2001	Placid Lakes Water Company	Florida	011621-WU
2001	South Haven Sewer Works, Inc.	Indiana	41903
2001	Southlake Utilities, Inc.	Florida	981609-WS
2002	Artesian Water Company	Delaware	02-109
2002	Consumers Illinois Water- Grant Park	Illinois	02-0480
2002	Consumers Illinois Water- Village Woods	Illinois	02-0539
2002	Valencia Water Company	California	02-05-013
2003	Consumers Illinois Water - Indianola	Illinois	03-0069
2003	Elizabethtown Water Company	New Jersey	WR-030-70510
2003	Golden Heart Utilities, Inc.	Alaska	U-02-13, 14 & 15
2003	Utilities, Inc. – Georgia	Georgia	CV02-0495-AB
2004	Aquarion Water Company	Connecticut	04-02-14
2004	Artesian Water Company	Delaware	04-42
2004	El Dorado Utilities, Inc.	New Mexico	D-101-CU-2004-
2004	Environmental Disposal Corp.	New Jersey	DPU WR 03 070509
2004	Heritage Hills Water Company	New York	03-W-1182
2004	Sun Valley Water & Washoe County Dept. of Water Revenues	Nevada	TMWA Municipal
2004	Jersey City MUA	New Jersey	Municipal
2004	Rockland Electric Company	New Jersey	EF02110852
2005	Aquarion Water Company	New Hampshire	DW 05-119
2005	Intercoastal Utilities, Inc.	Florida	04-0007-0011-0001
2005	Haig Point Utility Company, Inc.	South Carolina	2005-34-W/S
2005	South Central Connecticut Regional Water Auth.	Connecticut	Municipal
2006	Pennichuck Water Works, Inc.	New Hampshire	DW-04048
2006	Village of Williston Park	New York	Municipal
2006	Jersey City MUA	New Jersey	Municipal
2006	Groton Utilities	Connecticut	Municipal
2006	Connecticut Water Company	Connecticut	06-07-08
2006	Birmingham Utilities, Inc.	Connecticut	06-05-10
2006	Aqua Florida Utilities, Inc.	Florida	060368-WS
2007	Aquarion Water Company of CT	Connecticut	07-05-19
2007	Pennichuck Water Works, Inc.	New Hampshire	DW 04-048
2007	Aqua Indiana - Utility Center	Indiana	43331
2007	Environmental Disposal Corp.	New Jersey	WR 04 080760
2007	Aqua Florida Utilities, Inc.	Florida	07-0183
2007	Aqua Illinois, Inc. - Hawthorn Woods, Willowbrook & Vermilion	Illinois	07-0620/07-0621/08-0067
2008	Aqua Florida Utilities, Inc.	Florida	080121-WS
2008	Aquarion Water Company of MA	Massachusetts	D.P.U. 08-27
2008	Haig Point Utility Company, Inc.	South Carolina	2007-414-WS
2009	R.M.V. Land & C.M. Livestock, L.C.C.	New Jersey	EM02050313
2010	City of Griffin	Georgia	Civil Action No. 09V-2866
2010	Connecticut Water Company	Connecticut	09-12-11
2010	Montville WPCA	Connecticut	1400012464

Papers and Presentations
By
John F. Guastella

Year	Title	Forum
1974 through 2010	1. Basics of Rate Setting 2. Cost Allocation and Rate Design 3. Revenue Requirements	Semi-annual seminars on utility rate regulation. National Association of Regulatory Utility Commissioners, sponsored by the University of South Florida, the University of Utah, Florida State University, The University of Florida and currently Michigan State University
1974	Rate Design Studies: A Regulatory Point-of-View	Annual convention of the National Association of Water Companies, New Haven, Connecticut
1976	Lifeline Rates	Annual convention of the National Association of Water Companies, Chattanooga, Tennessee
1977	Regulating Water Utilities: The Customers' Best Interest	Annual symposium of the New England Conference of Public Utilities Commissioners, Mystic Seaport, Connecticut
1978	Rate Design: Preaching v. Practice	Annual convention of the National Association of Water Companies, Baton Rouge, Louisiana
1979	Small Water Companies	Annual symposium of the New England Conference of Public Utilities Commissioners, Newport, Rhode Island
1979	Rate Making Problems Peculiar to Private Water and Sewer Companies	Special educational program sponsored by Independent Water and Sewer Companies of Texas, Austin, Texas
1980	Water Utility Regulation	Annual meeting of the National Association of Regulatory Utility Commissioners,Houston, Texas
1981	The Impact of Water Rates on Water Usage	Annual Pennsylvania Environmental Conference, Harrisburg, Pennsylvania
1981	A Realistic Approach to Regulating Water Utilities	Mid-America Regulatory Conference, Clarksville, Indiana
1982	Issues in Water Utility Regulation	Annual symposium of the New England Conference of Public Utilities Commissioners, Rockport, Maine
1982	New Approaches to the Regulation of Water Utilities	Southeastern Association of Regulatory Utility Commissioners, Asheville, North Carolina
1983	Allocating Costs and Revenues Fairly and Effectively	Maryland Water and Sewer Finance Conference, Westminster, Maryland
1983	Lifeline and Social Policy Pricing	Annual conference of the American Water Works Association, Las Vegas, Nevada (published)
1984	The Real Cost of Service: Some Special Considerations	Annual New Jersey Section AWWA Spring Meeting, Atlantic City, New Jersey
1987	Margin Reserve: It's Not the Issue	Florida Waterworks Association Newsletter, April/May/June 1987 issue
1987	A "Current" Issue: CIAC	NAWC - New England Chapter November 6, 1987 meeting
1988	Small Water Company Rate Setting: Take It or Leave It	NAWC - New York Chapter June 14, 1988 meeting
1989	The Solution to all the Problems of Good Small Water Companies	NAWC Quarterly magazine, Winter issue
1989	Current Issues Workshop - Panel	New England Conference of Public Utilities Commissioners, Kennebunkport, Maine
1991	Alternative Rate Structures	New Jersey Section 1991 Annual Conference, AWWA, Atlantic City, New Jersey
1994	Conservation Impact on Water Rates	New England NAWC and New England AWWA, Sturbridge, Massachusetts

Papers and Presentations
By
John F. Guastella

Year	Title	Forum
1996	Utility Regulation - 21st Century	NAWC Annual Meeting, Orlando, Florida
1997	Current Status Drinking Water State Revolving Fund	NAWC Annual Meeting, San Diego, California
1998	Small Water Companies - Problems and Solutions	NAWC Annual Meeting, Indianapolis, Indiana
1998	Basic Rate Regulation Seminar	New England Chapter - NAWC, Rockport, Maine
2000	Developer Related Water and Sewer Utilities Seminar	Florida State University, Orlando, Florida
2001	Developer Related Water and Sewer Utilities Seminar	Florida State University, Orlando, Florida
2002	Regulatory Cooperation - Small Company Education	New England Chapter - NAWC, Annual Meeting
2003	Developer Related Water and Sewer Utilities Seminar	University of Florida, Orlando, Florida
2004	Basic Regulation & Rate Setting Training Seminar	Office of Regulatory Staff, Columbia, South Carolina
2005	Municipal Water Rates	Nassua-Suffolk Water Commissioners Association, Franklin Square, New York
2005	Innovations in Rate Setting and Procedures	NAWC New York Chapter, West Point, New York
2006	Basics of Rate Setting	The Connecticut Water Company, Clinton, Connecticut
2006	Innovations in Rate Setting and Procedures	NAWC New York Chapter, Catskill, New York
2006	Best Practices as Regulatory Policy	NAWC New England Chapter, Ogunquit, Maine
2006	Rate and Valuation Seminar	NAWC New York Chapter
2006	Full Cost Pricing	U.S. Environmental Protection Agency Expert Workshop, Lansing, Michigan
2006	Innovations in Rate Setting	NAWC New England Chapter, Portsmouth, New Hampshire
2007	Weather Sensitive Customer Demands	NAWC Water Utility Executive Council, Half Moon Bay, California
2007	Basics of Rate Setting and Valuation Seminar	NAWC New England Chapter, Ogunquit, Maine
2007	Small Company Characteristics	National Drinking Water Symposium, La Jolla, California

EXHIBIT JFG-2

Arizona American Water Company, Inc.

Depreciation Study

October 2010

Guastella Associates, LLC
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October 21, 2010

Mr. Thomas M. Broderick
Director of Rates & Regulation
Arizona American Water Company
2355 W. Pinnacle Peak Road, Suite 300
Phoenix, AZ 85027

Dear Mr. Broderick:

We have completed our depreciation study of Arizona American Water Company's water and wastewater systems. The study was performed on the basis of a comparative analysis of depreciation practices with respect to similar utility assets as applicable to your assets in Arizona.

The results of our analysis are contained in this report, which includes specific recommendations of average service lives, net salvage values and resultant depreciation rates, by account, along with a comparison of depreciation expense under existing and proposed depreciation rates. We have also included a general discussion of depreciation principles and related accounting treatment.

I very much appreciate this opportunity to provide consulting services and am available to review this report with you and the Staff of the Arizona Corporation Commission.

Respectfully submitted,
GUASTELLA ASSOCIATES, LLC

John F. Guastella
President

Arizona American Water Company, Inc.

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Arizona American Water Company, Inc.

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Description

GENERAL

Purpose

The purpose of this study is to establish depreciation rates that are reasonably applicable to the depreciable assets of the water and wastewater systems of Arizona American Water Company, Inc. ("Company").

In accordance with discussions with the Company, it was determined that the depreciation study should be performed on the basis of comparative average service lives and depreciation rates. The primary reasons for this approach are the lack of sufficient retirement data because of the size of the various divisions and their historic development, and the high cost of performing actuarial studies that would likely produce incomplete or uncertain results for systems with limited retirement data. It has been our experience that for small water utilities, actuarial studies are rarely, if ever performed, and we are not aware of any such studies for assets of a wastewater system. Instead, depreciation rates are typically established on the basis of comparative analyses. Consistent with that experience, the National Association of Regulatory Utility Commissioners has published guidelines of average service lives and depreciation rates for small water companies, recognizing the need for such comparisons.

Recommendations

In order to better associate the discussions in the text of this report with the results of our study, Section A has been added that provides schedules containing our recommended depreciation rates. Schedule A-1 and A-2 show for water and wastewater, respectively, the number and description of each account, average service lives, net salvage values and annual depreciation rates.

Depreciation Rates and Rate Setting

The goal of depreciation for rate setting purposes is to allow utilities to recover the original cost of the assets that are used and useful in providing service to their customers, and at a level that spreads the recovery of the cost over the estimate life of the assets so that each generation of customers pays its fair share of the cost according to their use of the assets. The Uniform System of Accounts published by the National Association of Regulatory Utility Commissioners ("NARUC") defines depreciation as:

> Depreciation, as applied to depreciable utility plant, means the loss in service value not restored by current maintenance, incurred in connection with the consumption or prospective retirement of utility plant in the course of providing service from causes which are known to be in current operation and against which the utility is not protected by insurance. Among the causes to be given consideration are wear and tear, decay, action of the elements, inadequacy, obsolescence, changes in the art, changes in demand, and requirements of public authorities.

Under this definition, depreciation studies are performed in order to estimate the average service lives of various depreciable assets, the major components with which to calculate depreciation rates. Application of depreciation rates to the original cost of assets establishes annual depreciation expense allowances in utility rates for service that will meet the goal of reasonable cost recovery and intergenerational equity.

In addition to average service lives, the other component in the calculation of depreciation rates is net salvage values, or salvage value less cost of removal.

The relevant Uniform System of Accounts definitions are:

> Salvage Value means the amount received for property retired, less any expenses incurred in connection with the sale or in preparing the property for sale, or, if retained, the amount at which the material recoverable is chargeable to materials and supplies, or other appropriate account.
>
> Cost of Removal means the cost of demolishing, dismantling, tearing down or otherwise removing utility plant, including the cost of transportation and handling incidental thereto.
>
> Net Salvage Value means the salvage value of property retired less the cost of removal.

For proper rate setting, the calculation of depreciation rates and resultant depreciation expense recognizes that the allowance for depreciation should include the recovery of the original cost of the depreciable assets less any anticipated positive salvage values and/or plus any anticipated cost of removal. Under this calculation of depreciation rates, existing and future customers will pay their fair share of the cost and net salvage value of the assets that have been used to provide utility service to them.

Accounting for Depreciation and Rate Setting

Annual depreciation expense accruals are of course credits, or increases, to the accumulated depreciation. Recognition of positive net salvage decreases the accrual and negative net salvage, due to cost of removal, increases the accrual. Accordingly, accumulated depreciation is higher or lower depending on net salvage value, and the rate base on which utilities are given an opportunity to earn a return is lower or higher, respectively. Instructions in the Uniform System of Accounts describe the accounting with respect to the retirement of a retirement unit of property as follows:

> If the retirement unit is of a depreciable class, the book cost of the unit retired and credited to utility plant shall be charged to the accumulated depreciation

> applicable to such property. The cost of removal and the salvage shall be charged or credited, as appropriate, to such depreciation account.

Under the required accounting, the accumulated depreciation would decrease by the original cost of the retired property and also the cost of removal, determined at the time of retirement, which ideally would offset, on average, the annual accruals that had increased the accumulated depreciation over the years. In other words, as annual accruals that include recovery of the original cost as well as cost of removal accumulate, they increase the reserve for depreciation and, therefore, decrease the calculation of rate base. The booking of the cost of removal when assets are retired would decrease the reserve for depreciation, and increase the rate base.

It is also noted that for rate setting purposes the establishment of reasonable depreciation rates is primarily a matter of achieving intergenerational equity -- existing and future customers paying their fair share of the costs associated with the assets that are used to provide them with service. Further, while depreciation expense is a deduction to revenues when calculating utility operating income (return on net investment or rate base), it is a "non-cash" expense; depreciation expense is for the most part a recovery of the original cost of assets for which expenditures had previously been made. Thus, depreciation expense is a source of internally generated funds, along with retained earnings. Because dividends to stockholders are only paid out of net income, these internally generated funds provide financing of new plant, not additional return on investment. The level of these internally-generated funds, however, only provides part of the capital needed for new plant, because the original cost of the assets being recovered through depreciation allowances is typically only a small fraction of the current cost of new plant and facilities -- the balance of the funding must be obtained from the attraction of outside debt and/or equity capital.

Accordingly, in addition to intergenerational equity, establishing reasonable depreciation rates that provide for the recovery of the original cost of assets and net salvage values, including cost of removal, should, at least theoretically, improve the utility's ability to attract capital at a lower cost -- because the portion of the new outside capital in relation to existing investment would not be higher than otherwise needed to make up for a shortfall in internally generated capital and debt coverage requirements. Obviously, a lower cost of capital has a beneficial impact on rates for service. This potential benefit assumes a long-term effect of adequate depreciation practices. Depreciation practices, however, are not a substitute or offset for other rate setting policies that should establish new rates for service in order to cover the cost of service for the period when those rates become effective. Accordingly, appropriate depreciation practices, coupled with other rate setting practices that provide a utility with a realistic opportunity to achieve the allowed return on investment, will in the long run improve the utility's ability to attract the lowest cost of capital.

ANALYSIS

Source of Comparative Data

The source data relied upon with respect to average service lives have been obtained from this firm's files, and data provided by the Company with respect to its Arizona and other American Water properties, and by the Arizona Corporation Commission ("ACC") Staff with respect to its recommendations for certain systems. The source data include determinations of average service lives for utilities with which this firm has been directly or indirectly involved, many based on actuarial studies. The data included in this analysis are for utilities located in such areas of the country as the Northeast, Midwest, Southeast, West Coast, Arizona, and American Water systems in various states, and also from publications by the NARUC. It has been our experience that determinations of average service lives for investor-owned water utilities in the Northeast and Midwest areas of the county tend to produce results that are based on actuarial studies because of the age of the systems and availability of retirement data. Data for such states as Florida and California tend to use shorter average service lives, possibly due to different construction characteristic due to the climate in those parts of the country. The source data published by the NARUC are given significant weight because they were specifically developed to assist small water utilities in establishing reasonable depreciation rates.

Section B contains schedules showing the average service lives of utilities in various parts of the country, including Arizona. Schedule B-1 and B-2 shows the average service lives of each of the Company's Arizona properties for water and wastewater, respectively, along with the low, high and average of those average service lives[1]. Schedules B-3, B-4, B-5, B-6, B-7 and B-8 contain average service lives for water utilities in the Northeast, Midwest, American Water properties in various states Southeast, West Coast and NARUC recommended rates for small water utilities, respectively. Each schedule also adds columns, for comparative purposes showing the low, high and average of the average service lives for the Company's Arizona systems.

Average Service Lives

Whether the determination of average service lives is made on the basis of actuarial studies or an analysis of comparables, judgment is required to select average service lives of various types of assets. In this case, the basis for our judgment is a careful account-by-account review of average service lives that have been established by utilities and regulatory agencies around the country, as shown in Section B. We have also inspected a number of the Company's systems in Arizona, and discussed their operation and maintenance with Company engineers and operators. We have also discussed the Company's asset management with its accountants and administrative employees.

In selecting the average service lives for each account that would be most appropriate for the Company's systems, consideration was given to each of the comparables, including whether the average service lives were based on actuarial studies, geographical location in relation to Arizona, existing average service lives in Arizona

[1] These average service lives were calculated on the basis of the existing depreciation rates being used for each system because the basis for the depreciation rates is unknown as to the ASL's and net salvage values.

(including those provided by the ACC Staff), observations with respect to visible assets during inspections and discussions with Company employees.

For the most part, the recommended average service lives are longer than the average of the existing Arizona average service lives, and most are closer to or even higher than the longest Arizona average service lives. On the basis of our inspections and discussions with Company engineers and operators, the systems are very well maintained and in good to excellent condition. Significant weight was given to the average service lives based on actuarial studies that support those in the Northeast and Midwest regions, and to the NARUC recommended average service lives which seem to balance the average service lives based on actuarial studies and those for small systems. On the other hand, little weight was given to the Southeast region (Florida) because although more similar to Arizona with respect to atmospheric temperature and depth of mains, the average service lives published by the Florida Public Service Commission were based on surveys that included utility personnel and their outside accountants who may have been influence by cost recovery considerations other than the engineering definition of depreciation in terms of the loss in value of depreciable property.

The selection of the average service lives for the wastewater systems are based on assets similar to those used in providing water service, but taking into consideration the more adverse consistency of the wastewater being collected and treated. It is noted that we are not aware of actuarial studies with respect to the primary assets of wastewater utilities.

The recommended average service lives are shown in Schedules A-1 and A-2 for water and wastewater, respectively.

Net Salvage Value

Having selected the average service lives, the next step was to assign net salvage values to each account. Under the required accounting treatment, it is necessary to determine the net salvage value with respect to an item of property being retired. The calculation of depreciation rates also requires the inclusion of net salvage values. Estimates of positive salvage values, such as trade-in payments or discounts, or resale values on meters and transportation equipment are fairly consistent. On the other hand, determining the cost of removal is more challenging for assets being retired as part of a replacement during a common project and, therefore, requiring an allocation of costs.

There has been less consideration given to salvage values, particularly cost of removal, until relatively recently. It is assumed that some 80 years ago the original development of actuarial studies for utility assets was focused on establishing average service lives, during the relatively early years of utility rate regulation. In addition, it is also apparent cost of removal was not perceived as a major issue that until long after the 1960's when utility rates for service were in many cases declining, due to customer growth and increasing utility demands for service, combined with low inflation. It has also been the prevailing practice to effectively include cost of removal in the cost of the new replacement plant, so that it was being recovered -- although not as effectively in terms of intergenerational equity. In any event, establishing the most appropriate depreciation rates requires a meaningful analysis of cost of removal and consideration of intergenerational equity, and the advantages previously discussed attributable to appropriate depreciation rates and cost recovery.

Section C contains schedules showing comparable net salvage values and the relationships of current construction costs compared to historical original costs. Schedule C-1 provides a comparison of salvage values for specific utilities, NARUC guidelines for small water utilities and the Illinois Commerce Commission ("ICC"). The ICC seems to have made the most progress with respect to cost of removal. An analysis of the dramatic increase in construction costs with respect to utility assets supports the ICC's initiative. It is obvious that the current cost of dismantling and removing such assets is structures, storage facilities, pumps, etc., is significant in terms of the absolute costs, and particularly in relation to their original cost. With respect to such assets as mains and service laterals, the cost of removal is also significant, even if only a small portion of the costs associated with trenching for the replacement and installation of a new section of main or replacement of a service lateral is allocated to the cost of removal.

Schedule C-2 contains a calculation of the multiples of current construction costs over original costs. The calculation determines, for each respective account, the ratio of the current year Handy-Whitman Construction Cost Index to the vintage year index, with the vintage year determined by the number of years of the respective average service life. For example, Account 304.1 Structures & Improvements has an average service life of 40 years, which is equivalent to the vintage year 1970, or 40 years back from 2010, and the 2010 index of 506 is divided by the 1970 index of 304 producing a ratio or multiple of 5.33 -- meaning that the current cost is more than 5 times greater than the original cost. Clearly, the current cost to remove or replace structures would be a significant percentage of the original cost. With respect to mains for which current cots are about 20 times the original cost 70 years ago, if only 5% of the cost of installing new mains is the cost to replace the old mains, the relationship of cost of removal to the original cost would be over 100%.

The Company has also initiated a preliminary analysis of retirement and replacement projects in order to estimate cost of removal. The analysis allocates labor time (in minutes) for various activities spent removing an asset being retired and relating that time to total time for the removal and replacement with the new asset. The analysis is only for a few examples and is still subject to review and likely refinement, but it does show that significant time is reasonably allocable to the removal of assets. Specifically, the estimates for the percentages of total time allocated to the removal of assets being replace are: mains – 51%, service laterals – 42%, hydrants – 47%, valves – 48%, meters – 44% to 46% depending on size. While these estimates do not represent the total cost of the replacement, and it is recognized that not all assets within a particular account will be removed when retired, they are a reasonable indication that the cost of removal is significant.

In selecting percentages for cost of removal, consideration was given to the comparables shown in Schedule C-2, the dramatic differences between current and original construction costs and the Company's sample study. A conservative approach was taken to allow for retirements for which there may not be replacements or removal of the retired assets. Another reason for a conservative approach is that this recognition of cost of removal in calculating depreciation rates is the first such effort for the Company's systems in Arizona.

The recommended cost of removal percentages are shown on Schedules A-1 and A-2 for water and wastewater, respectively. They are less than the ICC percentages shown on Schedule C-1 and also less than the cost multiples would indicate as shown on Schedule C-2, but they reflect the intended conservative approach.

Depreciation Rates

Having selected average service lives and net salvage values, the determination of depreciation rates is simply a matter of arithmetic: the percent depreciation is 1.0 minus percentage net salvage value divided by the average service life. Accordingly, where the net salvage value is negative, indicating cost of removal exceed the salvage value, the depreciation rate is higher -- because it must recover both the original cost and cost of removal.

Section D contains a comparison of depreciation rates for the same regions and entities as provided in the comparison of the average service lives in Section B. These comparisons are primarily provided for information purposes.

Impact of Recommended Depreciation Rates

Section E provides a comparison of the annual depreciation expense under existing and recommended depreciation rates for each of the Company's water and wastewater systems. The existing and recommended depreciation rates were applied to the utility plant balances as of June 30, 2010, per books, with the exception of Agua Fria, Havasu, Mohave and Paradise Valley water systems for which the proforma plant balances are used in order to be consistent with the Company's anticipated rate filing with the ACC.

DISCUSSION

The recommended depreciation rates are based on our best judgment at this time with respect to the average service lives and net salvage values for the Company's systems. Although judgment of others, who have similar experiences, may differ for any particular asset, it is likely that the potential variances would not be significant. As has always been the case, individual assets will be retired earlier or later than the selected average service lives for a multitude of reasons, but that retirement experience is exactly what is expected and reflected in the determination of average service lives according to statistical methods that take such variances into account.

For the most part, water and wastewater assets have relatively long lives. As retirement experience increases with time, the depreciation rates can of course be adjusted, but any refinements or adjustments will likely be gradual and can be made on a prospective basis without the need to make adjustments to the reserve for depreciation.

In an informal meeting with the ACC Staff in order to obtain input from the perspective of the Company's economic regulator, various matters were raised by Staff, essentially to assure that the depreciation study would consider all aspects affecting depreciation. It is noted that, as Staff observed, certain items may be subject to earlier retirement because of quality of materials used in construction or for other unanticipated causes. Although we have applied judgment to each account, there may be such items that will require special treatment. It is suggested that the best way to deal with unusual circumstances would be to establish additional sub-accounts in order to segregate special items and adjust the depreciation rates to better meet those conditions if and when they occur. It is also understood that Staff necessarily reserved its opinion regarding all aspects of depreciation until it had an opportunity to examine the study.

The recommended depreciation rates are applicable to all of the Company's water and wastewater systems. The systems are all maintained on a consistent basis and in accordance to with standard operating procedures. The use of common depreciation rates, by primary plant account, for all systems will facilitate record keeping, reduce opportunity for errors and establish a consistent basis for future examination and study. As previously mentioned, any unusual items or circumstances can be addressed by establishing appropriate sub-accounts. Except for regulatory procedural requirements, there is no reason to delay implementing the recommended depreciation rates if approved upon review and acceptance by the Company and the ACC.

RECOMMENDATIONS

It is recommended that the Company:

1. Implement the depreciation rates as set forth in Schedules A-1 and A-2, for all of its water and wastewater systems, respectively.
2. Establish a consistent method with which to determine and book the cost of removal for all future retirements.
3. Seek approval of the recommended depreciation rates by the ACC for its Agua Fria, Havasu, Mohave and Paradise Valley water systems in the context of the anticipated rate filings for those systems.
4. Explore with the ACC the feasibility of obtaining approval of the same depreciation rates for its other systems -- and establish an accounting mechanism to defer any increase or decrease in depreciation expense for adjustment to the revenue requirement at the time of the next rate filing for each system.
5. Continue its effort to monitor and record the cost of removal and salvage values.

CERTIFICATION

The opinions and recommendations contained in this study have been independently prepared by Guastella Associates without any direction by the Company to reach a specific result. We have examined the data provided by the Company with the understanding that it reasonably reflects the Company's books and records. We have inspected a sample of the Company's water and wastewater systems. Our compensation is not contingent on the results of our study.

We very much acknowledge and appreciate the excellent cooperation and assistance provided by the Company employees. We also appreciate the opportunity to meet with the ACC Staff members informally and receive their suggestions. We are available to respond to any inquiries regarding this study.

Respectfully submitted,
GUASTELLA ASSOCIATES, LLC

John F. Guastella
President

Section A

Arizona American Water Schedule A-1

Recommended Depreciation Rates
Water

A/C No.	Description	Average Service Lives	Net Salvage Value	Annual Depreciation Rates
	Source of Supply & Pumping:			
304.1	Structures & Improvements	40	-20%	3.00%
305.0	Coll. & Impdg. Reservoirs	60	-20%	2.00%
306.0	Lake & River Intakes	60	-20%	2.00%
307.0	Wells & Springs	40		2.50%
308.0	Infiltration Galleries	40		2.50%
309.0	Supply Mains	60	-50%	2.50%
304.2	Structures & Improvements	50	-20%	2.40%
310.0	Power Generation Equipment	30		3.33%
311.2	Electric Pumping Equipment	25	-15%	4.60%
311.3	Diesel Pumping Equipment	25	-15%	4.60%
311.4	Pumping Equipment-Hydraulic	25	-15%	4.60%
311.6	Other Pumping Equipment	25	-15%	4.60%
	Water Treatment Equipment:			
304.3	Structures & Improvements	50	-20%	2.40%
320.0	Purification System Equipment	20	-15%	5.75%
320.1	Water Treatment Equipment Non-Media	20	-15%	5.75%
320.2	Water Treatment Equipment Filter Media	10	-15%	11.50%
	Transmission & Distribution Plant:			
304.4	Structures & Improvements	50	-20%	2.40%
311.54	Pumping Equipment-TD	25	-15%	4.60%
330.0	Distr. Reserv. & Standpipes	65	-20%	1.85%
330.1	Elevated Tanks & Standpipes	65	-20%	1.85%
330.2	Ground Level Tanks	65	-20%	1.85%
330.3	Below Ground Tanks	65	-20%	1.85%
330.4	Clearwell	50	-20%	2.40%
331.0	Transmission and Distribution Mains	70	-50%	2.14%
331.1	Transmission and Distribution Mains 4" <	50	-50%	3.00%
331.2	Transmission and Distribution Mains 6" - 8"	70	-50%	2.14%
331.3	Transmission and Distribution Mains 10" - 16"	70	-50%	2.14%
331.4	Transmission and Distribution Mains >16"	70	-50%	2.14%
332.0	Fire Mains	70	-50%	2.14%
333.1	Services	40	-50%	3.75%
334.1	Meters & Installations	15	10%	6.00%
334.2	Meter Installations	40		2.50%
334.3	Meter Vaults	40		2.51%
335.0	Hydrants	50	-50%	2.99%
339.0	Other Plant & Misc. Equipment	30		3.33%
	General Plant:			
304.5	Structures & Improvements	40	-20%	3.00%
304.6	Structures & Improvements Offices	40	-20%	3.00%
304.62	Structures & Improvements Leasehold	40	-20%	3.00%
304.7	Structures & Improvements Store, Shop & Garage	40	-20%	3.00%
304.8	Structures & Improvements Misc.	40	-20%	3.00%
340.0	Office Furn. & Equipment	20	10%	4.50%
340.2	Comp & Periph Equipment	10		10.00%
340.3	Computer Software	5		20.00%
340.31	Computer Software	5		20.00%
340.325	Computer Software	5		20.00%
340.33	Computer Software	5		20.00%
340.4	Date Handling Equipment	5		20.00%
340.5	Other Office Equipment	15	5%	6.33%
341.0	Transportation Equipment	5	20%	16.00%
341.1	Trans Equip Lt Duty Trucks	5	20%	16.00%
341.2	Trans Equip Hvy Duty Trucks	7	20%	11.43%
341.3	TransEquip Autos	6	20%	13.12%
341.4	Trans Equip Other	6	20%	13.33%
342.0	Stores Equipment	25		4.00%
343.0	Tools, Shop & Garage Equipment	25		4.00%
344.0	Laboratory Equipment	25		4.00%
345.0	Power Operated Equipment	20	20%	4.00%
346.0	Communications Equipment	10		10.00%
346.1	Comm Equipment - Non Telephone	10		10.00%
346.2	Remote Control & Instrument	10		10.00%
346.2	Comm Equipment - Telephone	10		10.00%
346.3	Comm Equip other	10		10.00%
348.0	Other Miscellaneous Equipment	16		6.25%

Arizona American Water

Schedule A-2

Recommended Depreciation Rates
Wastewater

A/C No.	Description	Average Service Lives	Net Salvage Value	Annual Depreciation Rates
	Collection Plant			
354.2	Structures and Improvements	30	-20%	4.00%
355.0	Power Generation Equipment	30		3.33%
355.5	Power Generation Equipment - RWTP	30		3.33%
360.0	Collection Sewers - Force	70	-50%	2.14%
361.0	Collection Sewers - Gravity	70	-50%	2.14%
362.0	Special Collecting Structures	30	-20%	4.00%
363.0	Service to Customers	50	-50%	3.00%
364.0	Flow Measuring Devices	15		6.67%
	Pumping Plant			
354.3	Structures and Improvements	30	-20%	4.00%
355.3	Power Generation Equipment	30		3.33%
370.0	Receiving Wells	30	-20%	4.00%
371.0	Pumping Equipment	20	-15%	5.75%
371.1	Pumping Equipment - Electric	20	-15%	5.75%
371.2	Pumping Equipment - Other Power	20	-15%	5.75%
	Treatment Plant			
354.4	Structures and Improvements	50	-20%	2.40%
355.5	Power Generation Equipment	30		3.33%
380.0	Treatment & Disposal Equip.	20	-15%	5.75%
380.1	Treatment & Disposal Equip.	20	-15%	5.75%
380.2	Treatment & Disposal Equip.	20	-15%	5.75%
380.3	Treatment & Disposal Equip.	20	-15%	5.75%
380.4	Treatment & Disposal Equip.	20	-15%	5.75%
380.5	Treatment & Disposal Equip.	20	-15%	5.75%
380.6	Treatment & Disposal Equip.	20	-15%	5.75%
380.65	Treatment & Disposal Equip.	20	-15%	5.75%
381.0	Plant Sewers	50	-20%	2.40%
382.0	Outfall Sewer Lines	60		1.67%
389.1	WW Other Plt & Misc. Equip. Intangible	20		5.00%
389.6	Other P/E - CPS	30		3.33%
	General Plant			
354.5	Structures and Improvements	40	-20%	3.00%
390.0	Office Furniture & Equipment	20	10%	4.50%
390.2	Computers & Peripheral	10		12.00%
390.3	Computer Software	5		20.00%
391.0	Transportation Equipment	5	20%	16.00%
392.0	Stores Equipment	25		4.00%
393.0	Tools, Shop and Garage Equip.	25		4.00%
394.0	Laboratory Equipment	25		4.00%
395.0	Power Operated Equipment	20	20%	4.00%
396.0	Communication Equipment	10		10.00%
397.0	Miscellaneous Equipment	15		6.67%
398.0	Other Tangible Plant	10		10.00%

Section B

Average Service Lives
Water

Acct. No.	DESCRIPTION	Paradise Valley	Agua Fria	Sun City	Sun City West	Mohave	Havasu	Anthem (Dist Co)	Tubac Valley	All Systems Low	All Systems High	All Systems Average
301	Organization											
302	Franchises											
303	Land and Land Rights											
304.1	Structures and Improvements Source Supply	7	40	40	40	35	36	40	42	7	42	25
304.2	Structures and Improvements Pumping	25	60	60	60	42	49	60	52	25	60	47
304.3	Structures and Improvements WT	50	60	60	60	40	49	60		40	60	53
304.4	Structures and Improvements TD	67	60	50		55		60	52	50	67	57
304.5	Structures and Improvements AG	22	60	22		49				22	60	31
304.51	Structures and Improvements-Cap Lease	22								22	22	22
304.6	Structures and Improvements-Offices	22	49	22	60	49	49	60	35	22	60	37
304.62	Structures and Improvements-Leasehold	7		7						7	7	7
304.7	Structures and Improvements Store shop, garage	22				22				22	22	22
304.8	Structures and Improvements Source Misc	22		60	40					22	60	34
305	Collecting and Impounding		40	40		39	39	40		39	40	40
306	Lake, River & Other Intake		40					40		40	40	40
307	Wells and Springs	40	40	40	40	37	39	40	32	32	40	38
308	Infiltration Galleries & Tunne							15		15	15	15
309	Supply Mains	50	90	50		50				50	90	56
310	Power Production Equipment	30	30	23	30		20		30	20	30	26
311	Pumping Equipment											
311.2	Pumping Equipment-Electric	23	23	23	23	20	27	23	24	20	27	23
311.3	Pumping Equipment-Diesel	23	23	20	23				20	20	23	22
311.4	Pumping Equipment-Hydraulic		23	20	23					20	23	22
311.5	Pumping Equipment-Other		23	50	23	20		23	24	20	50	24
311.53	Pumping Equipment-WT		23		23		27			23	27	24
311.54	Pumping Equipment-TD				23					23	23	23
320.1	Water Treatment Equipment	14	25	25	25	8	8	25	25	8	25	16
320.2	WT Equip Filter Media	25	25		25		25	25	25	25	25	25
330	Distribution Reservoirs and Standpipes	32	60	60	60	55	43	60	62	32	62	51
330.1	Elevated Tanks and Standpipes		60			55				55	60	57
330.2	Ground Level Tanks		60	60						60	60	60
330.3	Below Ground Tanks		60							60	60	60
330.4	Clearwell		60							60	60	60
331	Transmission and Distribution Mains	65	65	65	65	38	48	65	51	38	65	56
331.1	Transmission and Distribution Mains 4" <	24	65	65	65	38	48	65	51	24	65	47
331.2	Transmission and Distribution Mains 6" - 8"	40	65	65	65	38	48	65	51	38	65	52
331.3	Transmission and Distribution Mains 10" - 16"	43	65	65	65	38	48	65	51	38	65	53
331.4	Transmission and Distribution Mains >16"	43	43	65	43	38	48	65	43	38	65	47
332	Fire Mains											
333	Services	21	40	40	40	18	35	40	41	18	41	32
334	Meters and Meter Installations									0	0	
334.1	Meters and Meter Installations	15	15	40	15	15	15	40	15	15	40	18
334.2	Meter Installations	66	40	40	40	15	28	40	41	15	66	33
334.3	Meter Vaults		40	40	40			40		40	40	40
335	Hydrants	48	50	50	50	53	50	50	51	48	53	50
339	Other Plant and Misc. Equipment	30	30	50		30	30			30	50	33
340	Office Furniture and Equipment											
340.1	Office Furniture and Equipment	25	25	22	22	25	24	22	30	22	30	24
340.2	Comp & Periph Equipment	6	25	22	22	25	24	22	5	5	25	13
340.3	Computer Software	3	3	3	3	3	3	3		3	3	3
340.31	Computer Software			22						22	22	22
340.325	Computer Software			22						22	22	22
340.33	Computer Software	3		3	22					3	22	4
340.4	Date Handling Equipment	3								3	3	3
340.5	Other Office Equipment	14		22						14	22	17
341	Transportation Equipment											
341.1	Trans Equip Lt Duty Trucks	5	5	4	5	5	5	4	5	4	5	5
341.2	Trans Equip Hvy Duty Trucks	7	7	4	7	7	7	4		4	7	6
341.3	TransEquip Autos	13						4		4	13	6
341.4	Trans Equip Other	6	4	4		4		4		4	6	4
342	Stores Equipment	26		26	26	25			25	25	26	25
343	Tools, Shop and Garage Equipment	28	25	25	25	9	13	24	29	9	29	19
344	Laboratory Equipment	27	27	27	27	30		27		27	30	27
345	Power Operated Equipment	22	19	19	20	7	11	19	22	7	22	15
346	Communication Equipment											
346.1	Comm Equipment - Non Telephone	10	10	10	10	27	12	10	20	10	27	12
346.19	Remote Control & Instrument	10	10	10	10	27	12	10		10	27	11
346.2	Comm Equipment - Telephone	10	10	10	10	10		10		10	10	10
346.3	Comm Equip other	13	20	20	20	16	16	10	20	10	20	16
347	Miscellaneous Equipment	20	20	16	18			16		16	20	17
	TOTALS											

Arizona American Water

Schedule B-2

Average Service Lives
Wastewater

Acct. No.	DESCRIPTION	Sun City	Sun City West	Mohave	Northwest Valley	Anthem (Dist Co)	Agua Fria	All Systems Low	High	Average
351	Organization									
352	Franchises									
353	Land and Land Rights									
354.2	Structures and Improvements	40	20	36	20	60	60	20	60	32
354.3	Structures and Improvements-Pumping		20		20			20	20	20
354.4	Structures and Improvements-Treatment			36		60	60	36	60	49
354.5	Structures and Improvements-General	50	60		60	60	60	50	60	57
355	Power Generation Equipment	30	30	30	30		20	20	30	27
355.5	Power Generation Equipment-RWTP						20	20	20	20
360	Collection Sewers - Force	48	48	50	48	48	48	48	50	49
361	Collection Sewers - Gravity	49	49	50	49	49	49	49	50	49
362	*Special Collecting Structures*	12	12	50	12	12		12	50	14
363	Services to Customers	49	49	49	49	49	49	49	49	49
364	Flow Measuring Devices	20	10	18	10	18	18	10	20	15
370	Receiving Wells					18	18	18	18	18
371	Pumping Equipment	18	18	18	18	18	18	18	18	18
380	Treatment and Disposal Equip.	50	20	20	20	20	20	20	50	22
380.1	Treatment and Disposal Equip.	50	20	28	20	20	20	20	50	23
380.2	Treatment and Disposal Equip.	50	20		20	20	20	20	50	23
380.3	Treatment and Disposal Equip.		20	20	20	20		20	20	20
380.4	Treatment and Disposal Equip.		20	20	20		20	20	20	20
380.5	Treatment and Disposal Equip.		20	20	20	20	20	20	20	20
380.6	Treatment and Disposal Equip.	50	20	20	20	12	12	12	50	18
380.65	Treatment and Disposal Equip.	50	20		20	12		12	50	20
381	Plant Sewer		20		20	20	20	20	20	20
382	Outfall Sewer Lines	50	20		20	20	20	20	50	23
389.1	WW Oth Plt & Misc Eqp Intang	20	20		20	20	20	20	20	20
389.6	Other P/E - CPS	30	30		30	30		30	30	30
390	Office Furniture and Equipment	22	22		22	22		22	22	22
390.2	Computers & Peripheral		22	25	22			22	25	23
390.3	Computer Software		4		4	4	4	4	4	4
391	Transportation Equipment	4	4		4			4	4	4
392	Stores Equipment		26		26			26	26	26
393	Tools, Shop and Garage Equipment	22	22	22	22	22		22	22	22
394	Laboratory Equipment	27	27	27	27	27	27	27	27	27
395	Power Operated Equipment		20	20	20	20	20	20	20	20
396	Communication Equipment	10	10	10	10	10	10	10	10	10
397	Miscellaneous Equipment	20	20	20	20	20		20	20	20
398	Other Tangible Plant	10						10	10	10

Arizona American Water

Schedule B-3

Comparative Average Service Lives
Northeast Region

A/C No.	Description	N.J. E'town	Del. Artesian	N.H. Pennichuck	New York Util. & Ind. Merrick	New York Long Island	All Examples Low	All Examples High	All Examples Average	Arizona Low	Arizona High	Arizona Average
	Source of Supply & Pumping:											
304.1	Structures & Improvements	65		48			48	65	57	7	42	25
305.0	Coll. & Impdg. Reservoirs	60		67			60	67	64	39	40	40
306.0	Lake & River Intakes	50		50			50	50	50	40	40	40
307.0	Wells & Springs	45	45	30	35	50	30	50	41	32	40	38
308.0	Infiltration Galleries	80		45			45	80	63	15	15	15
309.0	Supply Mains	85	85	70			70	85	80	50	90	56
304.2	Structures & Improvements	45	65	45	40	50	40	65	49	25	60	47
310.0	Power Generation Equipment	25		22	30	40	22	40	29	20	30	26
311.2	Electric Pumping Equipment	35	35	25	20	40	20	40	31	20	27	23
311.3	*Diesel Pumping Equipment*	35		70	30	40	30	70	44	20	23	22
311.4	Pumping Equipment-Hydraulic									20	23	22
311.6	Other Pumping Equipment	35		30	30		30	35	32	20	50	24
	Water Treatment Equipment:											
304.3	Structures & Improvements	35	55	51	40	50	35	55	46	40	60	53
311 53	Pumping Equipment-WT									23	27	24
320.0	Purification System Equipment			15	15	25	15	25	18	8	25	16
320.2	Water Treatment Equipment	35	45	36	25	25	25	45	33	8	25	16
	Transmission & Distribution Plant:											
304.4	Structures & Improvements	50		35			35	50	43	50	67	57
311.54	Pumping Equipment-TD									23	23	23
330.0	Distr. Reserv. & Standpipes	75	80	50	55	75	50.41	80	67	32	62	51
330.1	Elevated Tanks and Standpipes									55	60	57
330.2	Ground Level Tanks									60	60	60
330.3	Below Ground Tanks									60	60	60
330.4	Clearwell									60	60	60
331	Transmission and Distribution Mains									38	65	56
331.1	*Mains - 6" & Larger*	95	85	70	100	100	70	100	90			
331.1	Transmission and Distribution Mains 4" <			40			40	40	40	24	65	47
331.2	Transmission and Distribution Mains 6" - 8"									38	65	52
331.3	Transmission and Distribution Mains 10" - 16"									38	65	53
331.4	Transmission and Distribution Mains >16"									38	65	47
332	Fire Mains									0	0	0
339.0	Other Plant & Misc. Equipment			40						30	50	33
333.1	Services	45	35	45	45	65	35	65	47	18	41	32
334.1	Meters & Installations	25	25	23	50	40	23	50	33	15	40	18
334.2	Meter Installations									15	66	33
334.3	Meter Vaults									40	40	40
335.0	Hydrants	65	60	49	70	65	49	70	62	48	53	50
	General Plant:											
304.5	Structures & Improvements	25	25	35	50	60	25	60	39	22	60	31
304.6	Structures and Improvements-Offices									22	60	37
340.0	Office Furn. & Equipment	15	30	12	30	30	12	30	23	22	30	24
340.2	Comp & Periph Equipment									5	25	13
340.3	*Computer Software*									3	3	3
340.31	Computer Software									22	22	22
340.325	Computer Software									22	22	22
340 33	Computer Software									3	22	4
340	Date Handling Equipment									3	3	3
341	Other Office Equipment									14	22	17
341:0	Transportaton Equipment	7	10	9		3	3	10	7	0	0	0
341.1	Trans Equip Lt Duty Trucks									4	5	5
341.2	Trans Equip Hvy Duty Trucks									4	7	6
341.3	TransEquip Autos									4	13	6
341.4	Trans Equip Other									4	6	4
342.0	Stores Equipment	20	30			45	20	45	32	25	26	25
343.0	Tools, Shop & Garage Equipment	15	30	15	25	25	15	30	22	9	29	19
344.0	Laboratory Equipment	30	9	20	20	30	9	30	22	27	30	27
345.0	Power Operated Equipment	10	15	15	8	7	7	15	11	7	22	15
346.0	Communications Equipment	15	15	19	15	10	10	19	15	0	0	0
346.1	Comm Equipment - Non Telephone									10	27	12
346 19	*Remote Control & Instrument*									10	27	11
346.2	Comm Equipment - Telephone									10	10	10
346.3	Comm Equip other									10	20	16
347.0	Computer Equipment		8	7			7	8	8			
348.0	Other Miscellaneous Equipment	25	20	10	25	25	10	25	21	16	20	17

Arizona American Water Schedule B-4

Comparative Average Service Lives
Midwest Region - Illinois

A/C No.	Description	Illinois – Illinois American – Company	Illinois – Illinois American – ICC Staff	All Examples – Low	All Examples – High	All Examples – Average	Arizona – Low	Arizona – High	Arizona – Average
	Source of Supply & Pumping:								
304.1	Structures & Improvements	30	30	30	30	30	7	42	25
305.0	Coll. & Impdg. Reservoirs	50	50	50	50	50	39	40	40
306.0	Lake & River Intakes	60	75	60	75	68	40	40	40
307.0	Wells & Springs	35	60	35	60	48	32	40	38
308.0	Infiltration Galleries						15	15	15
309.0	Supply Mains	75	90	75	90	83	50	90	56
304.2	Structures & Improvements	50	55	50	55	53	25	60	47
310.0	Power Generation Equipment	25	30	25	30	28	20	30	26
311.2	Electric Pumping Equipment	35	40	35	40	38	20	27	23
311.3	Diesel Pumping Equipment	22	30	22	30	26	20	23	22
311.4	Pumping Equipment-Hydraulic						20	23	22
311.6	Other Pumping Equipment	20	20	20	20	20	20	50	24
	Water Treatment Equipment:								
304.3	Structures & Improvements	40	45	40	45	43	40	60	53
311.53	Pumping Equipment-WT						23	27	24
320.0	Purification System Equipment	35	35	35	35	35	8	25	16
320.2	Water Treatment Equipment	35	35	35	35	35	8	25	16
	Transmission & Distribution Plant:								
304.4	Structures & Improvements						50	67	57
311.54	Pumping Equipment-TD						23	23	23
330.0	Distr. Reserv. & Standpipes	50	60	50	60	55	32	62	51
330.1	Elevated Tanks and Standpipes						55	60	57
330.2	Ground Level Tanks						60	60	60
330.3	Below Ground Tanks						60	60	60
330.4	Clearwell						60	60	60
331	Transmission and Distribution Mains	90	90	90	90	90	38	65	56
331.1	Mains - 6" & Larger	90	90	90	90	90			
331.1	Transmission and Distribution Mains 4" <						24	65	47
331.2	Transmission and Distribution Mains 6" - 8"						38	65	52
331.3	Transmission and Distribution Mains 10" - 16"						38	65	53
331.4	Transmission and Distribution Mains >16"						38	65	47
332	Fire Mains						0	0	0
339.0	Other Plant & Misc. Equipment						30	50	33
333.1	Services	60	60	60	60	60	18	41	32
334.1	Meters & Installations	30	30	30	30	30	15	40	18
334.2	Meter Installations	40	45	40	45	43	15	66	33
334.3	Meter Vaults						40	40	40
335.0	Hydrants	40	43	40	43	42	48	53	50
	General Plant:								
304.5	Structures & Improvements	25	25	25	25	25	22	60	31
304.6	Structures and Improvements-Offices						22	60	37
340.0	Office Furn. & Equipment	20	19	19	20	20	22	30	24
340.2	Comp & Periph Equipment						5	25	13
340.3	Computer Software						3	3	3
340.31	Computer Software						22	22	22
340.325	Computer Software						22	22	22
340.33	Computer Software						3	22	4
340	Date Handling Equipment	5	5	5	5	5	3	3	3
341	Other Office Equipment						14	22	17
341.0	Transportaton Equipment	5	5	5	5	5	0	0	0
341.1	Trans Equip Lt Duty Trucks						4	5	5
341.2	Trans Equip Hvy Duty Trucks						4	7	6
341.3	TransEquip Autos						4	13	6
341.4	Trans Equip Other						4	6	4
342.0	Stores Equipment	20	29	20	29	25	25	26	25
343.0	Tools, Shop & Garage Equipment	12	13	12	13	13	9	29	19
344.0	Laboratory Equipment	15	20	15	20	18	27	30	27
345.0	Power Operated Equipment	10	10	10	10	10	7	22	15
346.0	Communications Equipment	8	8	8	8	8	0	0	0
346.1	Comm Equipment - Non Telephone						10	27	12
346.19	Remote Control & Instrument						10	27	11
346.2	Comm Equipment - Telephone						10	10	10
346.3	Comm Equip other						10	20	16
347.0	Computer Equipment	5	5	5	5	5			
348.0	Other Miscellaneous Equipment	15	15	15	15	15	16	20	17

Arizona American Water　　Schedule B-5

Comparative Average Service Lives
American Water

A/C No.	Description	American Water Low	American Water High	American Water Average	Arizona Low	Arizona High	Arizona Average
	Source of Supply & Pumping:						
304.1	Structures & Improvements	17	102	42	7	42	25
305.0	Coll. & Impdg. Reservoirs	17	110	65	39	40	40
306.0	Lake & River Intakes	28	127	55	40	40	40
307.0	Wells & Springs	23	69	42	32	40	38
308.0	Infiltration Galleries	15	84	45	15	15	15
309.0	Supply Mains	40	97	66	50	90	56
304.2	Structures & Improvements	31	78	47	25	60	47
310.0	Power Generation Equipment	9	60	35	20	30	26
311.2	Electric Pumping Equipment				20	27	23
311.3	Diesel Pumping Equipment				20	23	22
311.4	Pumping Equipment-Hydraulic				20	23	22
311.6	Other Pumping Equipment				20	50	24
	Water Treatment Equipment:						
304.3	Structures & Improvements	31	78	47	40	60	53
311.53	Pumping Equipment-WT	10	57	34	23	27	24
320.0	Purification System Equipment	10	57	34	8	25	16
320.2	Water Treatment Equipment	10	57	34	8	25	16
	Transmission & Distribution Plant:						
304.4	Structures & Improvements	15	58	38	50	67	57
311.54	Pumping Equipment-TD	17	55	34	23	23	23
330.0	Distr. Reserv. & Standpipes	33	98	52	32	62	51
330.1	Elevated Tanks and Standpipes	33	98	52	55	60	57
330.2	Ground Level Tanks	33	98	52	60	60	60
330.3	Below Ground Tanks	33	98	52	60	60	60
330.4	Clearwell	33	98	52	60	60	60
331	Transmission and Distribution Mains	33	115	74	38	65	56
331.1	Mains - 6" & Larger						
331.1	Transmission and Distribution Mains 4" <				24	65	47
331.2	Transmission and Distribution Mains 6" - 8"				38	65	52
331.3	Transmission and Distribution Mains 10" - 16"				38	65	53
331.4	Transmission and Distribution Mains >16"				38	65	47
332	Fire Mains	45	98	71	0	0	0
339.0	Other Plant & Misc. Equipment				30	50	33
333.1	Services	19	90	53	18	41	32
334.1	Meters & Installations	15	51	33	15	40	18
334.2	Meter Installations	15	51	33	15	66	33
334.3	Meter Vaults	15	51	33	40	40	40
335.0	Hydrants	33	72	54	48	53	50
	General Plant:						
304.5	Structures & Improvements	17	102	42	22	60	31
304.6	Structures and Improvements-Offices				22	60	37
340.0	Office Furn. & Equipment	8	51	21	22	30	24
340.2	Comp & Periph Equipment				5	25	13
340.3	Computer Software				3	3	3
340.31	Computer Software				22	22	22
340.325	Computer Software				22	22	22
340.33	Computer Software				3	22	4
340	Date Handling Equipment				3	3	3
341	Other Office Equipment				14	22	17
341.0	Transportaton Equipment	4	51	17	0	0	0
341.1	Trans Equip Lt Duty Trucks				4	5	5
341.2	Trans Equip Hvy Duty Trucks				4	7	6
341.3	TransEquip Autos				4	13	6
341.4	Trans Equip Other				4	6	4
342.0	Stores Equipment	18	69	32	25	26	25
343.0	Tools, Shop & Garage Equipment	14	45	25	9	29	19
344.0	Laboratory Equipment	10	99	26	27	30	27
345.0	Power Operated Equipment	10	45	20	7	22	15
346.0	Communications Equipment	9	51	18	0	0	0
346.1	Comm Equipment - Non Telephone				10	27	12
346.19	Remote Control & Instrument				10	27	11
346.2	Comm Equipment - Telephone				10	10	10
346.3	Comm Equip other				10	20	16
347.0	Computer Equipment	14	50	26			
348.0	Other Miscellaneous Equipment	14	50	26	16	20	17

Arizona American Water

Schedule B-6

Comparative Average Service Lives
Southeast Region - Florida

A/C No.	Description	Florida PSC Low	Florida PSC High	Florida PSC Average	Arizona Low	Arizona High	Arizona Average
	Source of Supply & Pumping:						
304.1	Structures & Improvements	28	33	31	7	42	25
305.0	Coll. & Impdg. Reservoirs	40	50	45	39	40	40
306.0	Lake & River Intakes	40	40	40	40	40	40
307.0	Wells & Springs	27	30	29	32	40	38
308.0	Infiltration Galleries	N/A	40	40	15	15	15
309.0	Supply Mains	32	35	34	50	90	56
304.2	Structures & Improvements	28	33	31	25	60	47
310.0	Power Generation Equipment	17	20	19	20	30	26
311.2	Electric Pumping Equipment	15	20	18	20	27	23
311.3	Diesel Pumping Equipment				20	23	22
311.4	Pumping Equipment-Hydraulic				20	23	22
311.6	Other Pumping Equipment				20	50	24
	Water Treatment Equipment:						
304.3	Structures & Improvements	28	33	31	40	60	53
311.53	Pumping Equipment-WT				23	27	24
320.0	Purification System Equipment				8	25	16
320.2	Water Treatment Equipment	17	22	20	8	25	16
	Transmission & Distribution Plant:						
304.4	Structures & Improvements	28	33	31	50	67	57
311.54	Pumping Equipment-TD				23	23	23
330.0	Distr. Reserv. & Standpipes	33	37	35	32	62	51
330.1	Elevated Tanks and Standpipes				55	60	57
330.2	Ground Level Tanks				60	60	60
330.3	Below Ground Tanks				60	60	60
330.4	Clearwell				60	60	60
331	Transmission and Distribution Mains	38	43	41	38	65	56
331.1	Mains - 6" & Larger						
331.1	Transmission and Distribution Mains 4" <				24	65	47
331.2	Transmission and Distribution Mains 6" - 8"				38	65	52
331.3	Transmission and Distribution Mains 10" - 16"				38	65	53
331.4	Transmission and Distribution Mains >16"				38	65	47
332	Fire Mains	30	33	32	0	0	0
339.0	Other Plant & Misc. Equipment				30	50	33
333.1	Services	35	40	38	18	41	32
334.1	Meters & Installations	17	20	19	15	40	18
334.2	Meter Installations				15	66	33
334.3	Meter Vaults				40	40	40
335.0	Hydrants	40	45	43	48	53	50
	General Plant:						
304.5	Structures & Improvements	35	40	38	22	60	31
304.6	Structures and Improvements-Offices				22	60	37
340.0	Office Furn. & Equipment	15	15	15	22	30	24
340.2	Comp & Periph Equipment				5	25	13
340.3	Computer Software				3	3	3
340.31	Computer Software				22	22	22
340.325	Computer Software				22	22	22
340.33	Computer Software				3	22	4
340	Date Handling Equipment	6	6	6	3	3	3
341	Other Office Equipment				14	22	17
341.0	Transportaton Equipment	6	6	6	0	0	0
341.1	Trans Equip Lt Duty Trucks				4	5	5
341.2	Trans Equip Hvy Duty Trucks				4	7	6
341.3	TransEquip Autos				4	13	6
341.4	Trans Equip Other				4	6	4
342.0	Stores Equipment	N/A	18	18	25	26	25
343.0	Tools, Shop & Garage Equipment	15	16	16	9	29	19
344.0	Laboratory Equipment	N/A	15	15	27	30	27
345.0	Power Operated Equipment	10	12	11	7	22	15
346.0	Communications Equipment	N/A	10	10	0	0	0
346.1	Comm Equipment - Non Telephone				10	27	12
346.19	Remote Control & Instrument				10	27	11
346.2	Comm Equipment - Telephone				10	10	10
346.3	Comm Equip other				10	20	16
347.0	Computer Equipment						
348.0	Other Miscellaneous Equipment	N/A	15	15	16	20	17

Comparative Average Service Lives
West Coast Region - California

A/C No.	Description	California Low	California High	California Average	Arizona Low	Arizona High	Arizona Average
	Source of Supply & Pumping:						
304.1	Structures & Improvements	20	60	40	7	42	25
305.0	Coll. & Impdg. Reservoirs	40	100	70	39	40	40
306.0	Lake & River Intakes	30	70	50	40	40	40
307.0	Wells & Springs	20	40	30	32	40	38
308.0	Infiltration Galleries				15	15	15
309.0	Supply Mains	25	100	63	50	90	56
304.2	Structures & Improvements	20	60	40	25	60	47
310.0	Power Generation Equipment				20	30	26
311.2	Electric Pumping Equipment	15	35	25	20	27	23
311.3	Diesel Pumping Equipment	15	35	25	20	23	22
311.4	Pumping Equipment-Hydraulic				20	23	22
311.6	Other Pumping Equipment	15	25	20	20	50	24
	Water Treatment Equipment:						
304.3	Structures & Improvements	20	60	40	40	60	53
311.53	Pumping Equipment-WT				23	27	24
320.0	Purification System Equipment				8	25	16
320.2	Water Treatment Equipment	15	40	28	8	25	16
	Transmission & Distribution Plant:						
304.4	Structures & Improvements	20	60	40	50	67	57
311.54	Pumping Equipment-TD				23	23	23
330.0	Distr. Reserv. & Standpipes	25	100	63	32	62	51
330.1	Elevated Tanks and Standpipes				55	60	57
330.2	Ground Level Tanks				60	60	60
330.3	Below Ground Tanks				60	60	60
330.4	Clearwell				60	60	60
331	Transmission and Distribution Mains				38	65	56
331.1	Mains - 6" & Larger						
331.1	Transmission and Distribution Mains 4" <	25	50	38	24	65	47
331.2	Transmission and Distribution Mains 6" - 8"	25	50	38	38	65	52
331.3	Transmission and Distribution Mains 10" - 16"	25	50	38	38	65	53
331.4	Transmission and Distribution Mains >16"	25	50	38	38	65	47
332	Fire Mains				0	0	0
339.0	Other Plant & Misc. Equipment				30	50	33
333.1	Services	20	40	30	18	41	32
334.1	Meters & Installations	25	40	33	15	40	18
334.2	Meter Installations	25	40	33	15	66	33
334.3	Meter Vaults				40	40	40
335.0	Hydrants	25	40	33	48	53	50
	General Plant:						
304.5	Structures & Improvements	20	60	40	22	60	31
304.6	Structures and Improvements-Offices				22	60	37
340.0	Office Furn. & Equipment	5	20	13	22	30	24
340.2	Comp & Periph Equipment				5	25	13
340.3	Computer Software				3	3	3
340.31	Computer Software				22	22	22
340.325	Computer Software				22	22	22
340.33	Computer Software				3	22	4
340	Date Handling Equipment				3	3	3
341	Other Office Equipment				14	22	17
341.0	Transportaton Equipment	5	20	13	0	0	0
341.1	Trans Equip Lt Duty Trucks				4	5	5
341.2	Trans Equip Hvy Duty Trucks				4	7	6
341.3	TransEquip Autos				4	13	6
341.4	Trans Equip Other				4	6	4
342.0	Stores Equipment	5	25	15	25	26	25
343.0	Tools, Shop & Garage Equipment	5	35	20	9	29	19
344.0	Laboratory Equipment	5	25	15	27	30	27
345.0	Power Operated Equipment	5	25	15	7	22	15
346.0	Communications Equipment				0	0	0
346.1	Comm Equipment - Non Telephone				10	27	12
346.19	Remote Control & Instrument				10	27	11
346.2	Comm Equipment - Telephone				10	10	10
346.3	Comm Equip other				10	20	16
347.0	Computer Equipment						
348.0	Other Miscellaneous Equipment				16	20	17

Arizona American Water

Schedule B-8

Comparative Depreciation Rates
NARUC

A/C No.	Description	NARUC Low	NARUC High	NARUC Average	Arizona Low	Arizona High	Arizona Average
	Source of Supply & Pumping:						
304.1	Structures & Improvements	35	40	38	7	42	25
305.0	Coll. & Impdg. Reservoirs	50	75	63	39	40	40
306.0	Lake & River Intakes	35	45	40	40	40	40
307.0	Wells & Springs	25	35	30	32	40	38
308.0	Infiltration Galleries	25	50	38	15	15	15
309.0	Supply Mains	50	75	63	50	90	56
304.2	Structures & Improvements	35	40	38	25	60	47
310.0	Power Generation Equipment				20	30	26
311.2	Electric Pumping Equipment	20	20	20	20	27	23
311.3	Diesel Pumping Equipment	25	25	25	20	23	22
311.4	Pumping Equipment-Hydraulic				20	23	22
311.6	Other Pumping Equipment	25	25	25	20	50	24
	Water Treatment Equipment:						
304.3	Structures & Improvements	35	40	38	40	60	53
311.53	Pumping Equipment-WT				23	27	24
320.0	Purification System Equipment	20	35	28	8	25	16
320.2	Water Treatment Equipment	20	35	28	8	25	16
	Transmission & Distribution Plant:						
304.4	Structures & Improvements	35	40	38	50	67	57
311.54	Pumping Equipment-TD				23	23	23
330.0	Distr. Reserv. & Standpipes	30	60	45	32	62	51
330.1	Elevated Tanks and Standpipes				55	60	57
330.2	Ground Level Tanks				60	60	60
330.3	Below Ground Tanks				60	60	60
330.4	Clearwell				60	60	60
331	Transmission and Distribution Mains				38	65	56
331.1	Mains - 6" & Larger	50	75	63			
331.1	Transmission and Distribution Mains 4" <				24	65	47
331.2	Transmission and Distribution Mains 6" - 8"				38	65	52
331.3	Transmission and Distribution Mains 10" - 16"				38	65	53
331.4	Transmission and Distribution Mains >16"				38	65	47
332	Fire Mains	50	75	63	0	0	0
339.0	Other Plant & Misc. Equipment				30	50	33
333.1	Services	30	50	40	18	41	32
334.1	Meters & Installations	35	45	40	15	40	18
334.2	Meter Installations	40	50	45	15	66	33
334.3	Meter Vaults				40	40	40
335.0	Hydrants	40	60	50	48	53	50
	General Plant:						
304.5	Structures & Improvements	35	40	38	22	60	31
304.6	Structures and Improvements-Offices				22	60	37
340.0	Office Furn. & Equipment	20	25	23	22	30	24
340.2	Comp & Periph Equipment				5	25	13
340.3	Computer Software				3	3	3
340.31	Computer Software				22	22	22
340.325	Computer Software				22	22	22
340.33	Computer Software				3	22	4
340	Date Handling Equipment				3	3	3
341	Other Office Equipment				14	22	17
341.0	Transportaton Equipment	7	7	7	0	0	0
341.1	Trans Equip Lt Duty Trucks				4	5	5
341.2	Trans Equip Hvy Duty Trucks				4	7	6
341.3	TransEquip Autos				4	13	6
341.4	Trans Equip Other				4	6	4
342.0	Stores Equipment	20	20	20	25	26	25
343.0	Tools, Shop & Garage Equipment	15	20	18	9	29	19
344.0	Laboratory Equipment	15	20	18	27	30	27
345.0	Power Operated Equipment	10	15	13	7	22	15
346.0	Communications Equipment	10	10	10	0	0	0
346.1	Comm Equipment - Non Telephone				10	27	12
346.19	Remote Control & Instrument				10	27	11
346.2	Comm Equipment - Telephone				10	10	10
346.3	Comm Equip other				10	20	16
347.0	Computer Equipment						
348.0	Other Miscellaneous Equipment				16	20	17

Section C

Arizona American Water Schedule C-1

Salvage Values - Comparisons

A/C No.	Description	E'Town	Artesian	Long Island Water Corp. Historical	PWW	NARUC	Illinois Company	Illinois ICC Staff
311	Structures & Improvements	0			-10		-25	-25
312	Coll. & Impdg. Reservoirs	0			-20		0	0
313	Lake & River Intakes	0			-10		-25	-10
314	Wells & Springs	0	0	-15.56	0		0	0
315	Infiltration Galleries	0			-10			
316	Supply Mains	0	0				-10	-10
317	Other Source of Water Supply Plant				-10		0	0
321	Structures & Improvements	-10	-5	-10.46	-10		-25	-25
323	Other Power Production Equipment	0		-2.79	0		-5	0
324	Pumping Equipment				-10			
325	Electric Pumping Equipment	0	0	-22.01	-10		-25	-25
326	Diesel Pumping Equipment	0		1.77	-10		0	0
328	Other Pumping Equipment	0			-10		0	0
328	Meters-Measuring Devices							
331	Structures & Improvements	-10	-10	-75.22	-10		-25	-25
332	Water Treatment Equipment	-10	0	-17.19	-20		-50	-25
341	Structures & Improvements	-10			-10			
342	Distr. Reserv. & Standpipes	-10	-5	-30.42	-10		0	0
342	T&D Plant Main							
343	Transmission & Distibution Mains	-5	-5	-5.71	-10		-70	-70
	6" & Larger				-10			
	4" & Under				-10			
	Cast Iron and Absbestos Cement				-10			
	All Other Pipes				-10			
344	Fire Mains	-5		-25.68				
345	Services	-50	-10	-286	-10		-200	-100
346	Meters & Installations	7	4	43.22	-10	10	20	20
347	Installations Only	0					-200	-100
348	Hydrants	5	0		-10	5	-100	-70
349	Other Transmission and Dist. Plant							
390	Structures & Improvements	-10	-10	-53.32	-10		0	0
391	Office Furn. & Equipment	0	0	-0.53	3	5	10	10
391	Data Processing Equipment		0		0		10	10
392	Transportaton Equipment	10	10	36.14	15	10	40	40
393	Stores Equipment	0	0	-3	0			
394	Tools, Shop & Garage Equipment	0	0		0	5	5	5
395	Laboratory Equipment	0	0	0	0		0	0
396	Power Operated Equipment	10	10	10.63-36.21	10	10	50	50
397	Communications Equipment	0	0	6.85	0	10	0	0
398	Miscellaneous Equipment	0	0	0	0		0	0
399	Other Tangible Equipment	0	0		0			

Arizona American Water

Schedule C-2

Construction Cost Increase
Water

A/C No.	Description	Average Service Lives	H-W NARUC Acct.	2010 Cost Index	Vintage Year	Vintage Cost Index	Current as Multiple of Original Cost
	Source of Supply & Pumping:						
304.1	Structures & Improvements	40	304	506	1970	80	5.33
305.0	Coll. & Impdg. Reservoirs	60	305	424	1950	38	10.16
306.0	Lake & River Intakes	60	305	424	1950	38	10.16
307.0	Wells & Springs	40	305	424	1970	81	4.23
308.0	Infiltration Galleries	40	305	424	1970	81	4.23
309.0	Supply Mains	60	305	424	1950	38	10.16
304.2	Structures & Improvements	50	304	506	1960	59	7.58
310.0	Power Generation Equipment	30	311	707	1980	222	2.18
311.2	Electric Pumping Equipment	25	311	707	1985	282	1.51
311.3	Diesel Pumping Equipment	25	311	707	1985	282	1.51
311.4	Pumping Equipment-Hydraulic	25	311	707	1985	282	1.51
311.6	Other Pumping Equipment	25	311	707	1985	282	1.51
	Water Treatment Equipment:						
304.3	Structures & Improvements	50	304	506	1960	59	7.58
320.0	Purification System Equipment	20	320	557	1990	295	0.89
320.1	Water Treatment Equipment Non-Media	20	320	557	1990	295	0.89
320.2	Water Treatment Equipment Filter Media	10	320	557	2000	376	0.48
	Transmission & Distribution Plant:						
304.4	Structures & Improvements	50	304	506	1960	59	7.58
311.54	Pumping Equipment-TD	25	311	707	1985	282	1.51
330.0	Distr. Reserv. & Standpipes	65	330	722	1945	16	44.13
330.1	Elevated Tanks & Standpipes	65	330.1	866	1945	14	60.86
330.2	Ground Level Tanks	65	330	722	1945	16	44.13
330.3	Below Ground Tanks	65	330	722	1945	16	44.13
330.4	Clearwell	50	330	722	1960	35	19.63
331.0	Transmission and Distribution Mains	70	331	541	1940	25	20.64
331.1	Transmission and Distribution Mains 4" <	50	331	541	1960	25	20.64
331.2	Transmission and Distribution Mains 6" - 8"	70	331	541	1940	25	20.64
331.3	Transmission and Distribution Mains 10" - 16"	70	331	541	1940	25	20.64
331.4	Transmission and Distribution Mains >16"	70	331	541	1940	25	20.64
332.0	Fire Mains	70	331	541	1940	25	20.64
333.1	Services	40	333	435	1970	83	4.24
334.1	Meters & Installations	15	334.1	374	1995	200	0.87
334.2	Meter Installations	40	334.2	502	1970	85	4.91
334.3	Meter Vaults	40	334.2	502	1970	85	4.91
335.0	Hydrants	50	335	683	1960	58	10.78
339.0	Other Plant & Misc. Equipment	30	331	541	1980	209	1.59
	General Plant:						
304.5	Structures & Improvements	40	304	506	1970	80	5.33
304.6	Structures & Improvements Offices	40	304	506	1970	80	5.33
304.62	Structures & Improvements Leasehold	40	304	506	1970	80	5.33
304.7	Structures & Improvements Store, Shop & Garage	40	304	506	1970	80	5.33
304.8	Structures & Improvements Misc.	40	304	506	1970	80	5.33

Arizona American Water

Schedule C-3

Construction Cost Increase
Wastewater

A/C No.	Description	Average Service Lives	H-W NARUC Acct.	2010 Cost Index	Vintage Year	Vintage Cost Index	Current as Multiple of Original Cost
	Collection Plant						
354.2	Structures and Improvements	30	304	506	1980	207	1.44
355.0	Power Generation Equipment	30	311	707	1980	222	2.18
355.5	Power Generation Equipment - RWTP	30	311	707	1980	222	2.18
360.0	Collection Sewers - Force	70	331	541	1940	25	20.64
361.0	Collection Sewers - Gravity	70	331	541	1940	25	20.64
362.0	Special Collecting Structures	30	331	541	1980	209	1.59
363.0	Service to Customers	50	333	435	1960	50	7.70
364.0	Flow Measuring Devices	15	320.1	624	1995	337	0.85
	Pumping Plant						
354.3	Structures and Improvements	30	304	506	1980	207	1.44
370.0	Receiving Wells	30	330	722	1980	191	2.78
371.0	Pumping Equipment	20	311	707	1990	349	1.03
	Treatment Plant						
354.4	Structures and Improvements	50	304	506	1960	59	7.58
380.0	Treatment & Disposal Equip.	20	320	557	1990	295	0.89
380.1	Treatment & Disposal Equip.	20	320	557	1990	295	0.89
380.2	Treatment & Disposal Equip.	20	320	557	1990	295	0.89
380.3	Treatment & Disposal Equip.	20	320	557	1990	295	0.89
380.4	Treatment & Disposal Equip.	20	320	557	1990	295	0.89
380.5	Treatment & Disposal Equip.	20	320	557	1990	295	0.89
380.6	Treatment & Disposal Equip.	20	320	557	1990	295	0.89
380.65	Treatment & Disposal Equip.	20	320	557	1990	295	0.89
381.0	Plant Sewers	50	331	541	1960	71	6.62
382.0	Outfall Sewer Lines	60	331	541	1950	47	10.51
389.1	WW Other Plt & Misc. Equip. Intangible	20	320.1	624	1990	313	0.99
389.6	Other P/E - CPS	30	320.1	624	1980	219	1.85
	General Plant						
354.5	Structures and Improvements	40	304	506	1970	80	5.33

Section D

Arizona American Water Schedule D-1

Depreciation Rates - Water
Arizona Systems

Acct. No.	DESCRIPTION	Paradise Valley	Agua Fria	Sun City	Sun City West	Mohave	Havasu	Anthem (Distco)	Tubac Valley	System Average Dep Rate
301	Organization	-	-	-	-	-	-	-	-	
302	Franchises	-	-	-	-	-	-	-	-	
303	Land and Land Rights	-	-	-	-	-	-	-	-	
304.1	Structures and Improvements Source Supply	14.59%	2.50%	2.50%	2.50%	2.83%	2.79%	2.50%	2.40%	4.08%
304.2	Structures and Improvements Pumping	3.99%	1.67%	1.67%	1.67%	2.39%	2.03%	1.67%	1.94%	2.13%
304.3	Structures and Improvements WT	2.00%	1.67%	1.67%	1.67%	2.50%	2.03%	1.67%		1.89%
304.4	Structures and Improvements TD	1.50%	1.67%	2.00%		1.81%		1.67%	1.92%	1.76%
304.5	Structures and Improvements AG	4.63%	1.67%	4.63%		2.03%				3.24%
304.51	Structures and Improvements-Cap Lease	4.63%								4.63%
304.6	Structures and Improvements-Offices	4.63%	2.03%	4.63%	1.67%	2.03%	2.03%	1.68%	2.89%	2.70%
304.62	Structures and Improvements-Leasehold	14.28%		14.280%						14.28%
304.7	Structures and Improvements Store shop,gar	4.63%				4.63%				4.63%
304.8	Structures and Improvements Source Misc	4.63%		1.67%	2.50%					2.93%
305	Collecting and Impounding		2.50%	2.50%		2.54%	2.54%	2.50%		2.52%
306	Lake, River & Other Intake		2.50%					2.50%		2.50%
307	Wells and Springs	2.48%	2.52%	2.52%	2.52%	2.70%	2.54%	2.52%	3.08%	2.61%
308	Infiltration Galleries & Tunne							6.67%		6.67%
309	Supply Mains	2.00%	1.11%	2.00%		2.00%				1.78%
310	Power Production Equipment	3.33%	3.330%	4.42%	3.33%		5.12%		3.33%	3.81%
311	Pumping Equipment									
311.2	Pumping Equipment-Electric	4.39%	4.42%	4.42%	4.42%	5.12%	3.71%	4.42%	4.24%	4.39%
311.3	Pumping Equipment-Diesel	4.39%	4.42%	5.00%	4.42%				5.00%	4.65%
311.4	Pumping Equipment-Hydraulic		4.42%	5.00%	4.42%					4.61%
311.5	Pumping Equipment-Other		4.42%	2.01%	4.42%	5.12%		4.42%	4.24%	4.11%
311.53	Pumping Equipment-WT		4.42%		4.42%		3.71%			4.18%
311.54	Pumping Equipment-TD				4.42%					4.42%
320.1	Water Treatment Equipment	7.06%	4.00%	4.00%	4.00%	12.00%	12.00%	4.00%	4.00%	6.38%
320.2	WT Equip Filter Media	4.00%	4.00%		4.00%		4.00%	4.00%	4.00%	4.00%
330	Distribution Reservoirs and Standpipes	3.15%	1.67%	1.67%	1.67%	1.81%	2.33%	1.67%	1.62%	1.95%
330.1	Elevated Tanks and Standpipes		1.67%			1.81%				1.74%
330.2	Ground Level Tanks		1.67%	1.67%						1.67%
330.3	Below Ground Tanks		1.67%.							1.67%
330.4	Clearwell		1.67%							1.67%
331	Transmission and Distribution Mains	1.53%	1.530%	1.530%	1.530%	2.61%	2.10%	1.53%	1.97%	1.79%
331.1	Transmission and Distribution Mains 4" <	4.17%	1.53%	1.53%	1.53%	2.61%	2.10%	1.53%	1.97%	2.12%
331.2	Transmission and Distribution Mains 6" - 8"	2.52%	1.53%	1.53%	1.53%	2.61%	2.10%	1.53%	1.97%	1.92%
331.3	Transmission and Distribution Mains 10" - 16"	2.34%	1.53%	1.53%	1.53%	2.61%	2.10%	1.53%	1.97%	1.89%
331.4	Transmission and Distribution Mains >16"	2.34%	2.34%	1.53%	2.34%	2.61%	2.10%	1.53%	2.34%	2.14%
332	Fire Mains									
333	Services	4.72%	2.48%	2.48%	2.48%	5.41%	2.89%	2.48%	2.45%	3.17%
334	Meters and Meter Installations							-	-	
334.1	Meters and Meter Installations	6.67%	6.67%	2.51%	6.67%	6.67%	6.67%	2.51%	6.67%	5.63%
334.2	Meter Installations	1.51%	2.51%	2.51%	2.51%	6.53%	3.52%	2.51%	2.42%	3.00%
334.3	Meter Vaults		2.51%	2.51%	2.51%			2.51%		2.51%
335	Hydrants	2.10%	2.00%	2.00%	2.00%	1.90%	1.99%	2.00%	1.97%	2.00%
339	Other Plant and Misc. Equipment	3.31%	3.31%	2.00%		3.31%	3.31%			3.05%
340	Office Furniture and Equipment									
340.1	Office Furniture and Equipment	4.04%	4.04%	4.59%	4.59%	4.04%	4.10%	4.55%	3.28%	4.15%
340.2	Comp & Periph Equipment	15.89%	4.04%	4.59%	4.59%	4.04%	4.10%	4.55%	20.00%	7.73%
340.3	Computer Software	37.71%	37.71%	37.71%	37.71%	37.71%	37.71%	37.71%		37.71%
340.31	Computer Software			4.59%						4.59%
340.325	Computer Software			4.59%						4.59%
340.33	Computer Software	37.71%		37.71%	4.59%					26.67%
340.4	Date Handling Equipment	37.71%								37.71%
340.5	Other Office Equipment	7.13%		4.59%						5.86%
341	Transportation Equipment									
341.1	Trans Equip Lt Duty Trucks	20.00%	20.00%	25.00%	20.00%	20.00%	20.00%	25.00%	20.00%	21.25%
341.2	Trans Equip Hvy Duty Trucks	15.00%	15.00%	25.00%	15.00%	15.00%	15.00%	25.00%		17.86%
341.3	TransEquip Autos	7.80%						25.00%		16.40%
341.4	Trans Equip Other	16.67%	25.00%	25.00%		25.00%		25.00%		23.33%
342	Stores Equipment	3.92%		3.91%	3.91%	3.93%			4.00%	3.93%
343	Tools, Shop and Garage Equipment	3.61%	4.02%	4.02%	4.02%	11.70%	7.55%	4.14%	3.42%	5.31%
344	Laboratory Equipment	3.71%	3.71%	3.71%	3.71%	3.30%		3.71%		3.64%
345	Power Operated Equipment	4.64%	5.20%	5.20%	5.02%	13.90%	9.23%	5.14%	4.64%	6.62%
346	Communication Equipment									
346.1	Comm Equipment - Non Telephone	9.76%	10.30%	10.30%	10.30%	3.66%	8.37%	10.28%	5.03%	8.50%
346.19	Remote Control & Instrument	9.76%	10.30%	10.30%	10.30%	3.66%	8.37%	10.28%		9.00%
346.2	Comm Equipment - Telephone	9.76%	10.30%	10.30%	10.30%	9.76%		10.28%		10.12%
346.3	Comm Equip other	7.91%	4.93%	4.93%	4.93%	6.19%	6.19%	10.28%	4.93%	6.29%
347	Miscellaneous Equipment	5.10%	4.98%	6.19%	6.19%			6.19%		5.73%
		-	-	-	-	-	-	-	-	

Arizona American Water Schedule D-2

Depreciation Rates - Wastewater
Arizona Systems

Acct. No.	DESCRIPTION	Sun City	Sun City West	Mohave	Northwest Valley	Anthem (Dist Co)	Agua Fria	System Average Dep Rate
351	Organization							
352	Franchises							
353	Land and Land Rights							
354.2	Structures and Improvements	2.50%	5.00%	2.80%	5.00%	1.67%	1.67%	3.11%
354.3	Structures and Improvements-Pumping		5.00%		5.00%			5.00%
354.4	Structures and Improvements-Treatment			2.80%		1.67%	1.67%	2.05%
354.5	Structures and Improvements-General	2.00%	1.67%		1.67%	1.68%	1.68%	1.74%
355	Power Generation Equipment	3.33%	3.33%	3.33%	3.33%		5.00%	3.66%
355.3	Power Generation Equipment - Pumping							
355.4	Power Generation Equipment - Treatment							
355.5	Power Generation Equipment-RWTP						5.00%	5.00%
360	Collection Sewers - Force	2.07%	2.07%	2.00%	2.07%	2.07%	2.07%	2.06%
361	Collection Sewers - Gravity	2.03%	2.04%	2.00%	2.04%	2.04%	2.04%	2.03%
362	Special Collecting Structures	8.40%	8.40%	2.00%	8.40%	8.40%		7.12%
363	Services to Customers	2.04%	2.04%	2.04%	2.04%	2.04%	2.04%	2.04%
364	Flow Measuring Devices	5.00%	10.00%	5.42%	10.00%	5.42%	5.42%	6.88%
370	Receiving Wells					5.42%	5.42%	5.42%
371	Pumping Equipment	5.42%	5.42%	5.42%	5.42%	5.42%	5.42%	5.42%
371.1	Pumping Equipment - Electric							
371.2	Pumping Equipment - Other							
380	Treatment and Disposal Equip.	2.00%	5.00%	5.00%	5.00%	5.00%	5.00%	4.50%
380.1	Treatment and Disposal Equip.	2.00%	5.00%	3.60%	5.00%	5.00%	5.00%	4.27%
380.2	Treatment and Disposal Equip.	2.00%	5.00%		5.00%	5.00%	5.00%	4.40%
380.3	Treatment and Disposal Equip.		5.00%	5.00%	5.00%	5.00%		5.00%
380.4	Treatment and Disposal Equip.		5.00%	5.00%	5.00%		5.00%	5.00%
380.5	Treatment and Disposal Equip.		5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
380.6	Treatment and Disposal Equip.	2.00%	5.00%	5.00%	5.00%	8.40%	8.40%	5.63%
380.65	Treatment and Disposal Equip.	2.00%	5.00%		5.00%	8.40%		5.10%
381	Plant Sewer		5.00%		5.00%	5.00%	5.00%	5.00%
382	Outfall Sewer Lines	2.00%	5.00%		5.00%	5.00%	5.00%	4.40%
389.1	WW Oth Plt & Misc Eqp Intang	4.98%	4.98%		4.98%	4.98%	4.98%	4.98%
389.6	Other P/E - CPS	3.31%	3.31%		3.31%	3.31%		3.31%
390	Office Furniture and Equipment	4.59%	4.59%		4.59%	4.59%		4.59%
390.2	Computers & Peripheral		4.59%	4.04%	4.59%			4.41%
390.3	Computer Software		25.00%		25.00%	25.00%	25.00%	25.00%
391	Transportation Equipment	25.00%	25.00%		25.00%			25.00%
392	Stores Equipment		3.91%		3.91%			3.91%
393	Tools, Shop and Garage Equipment	4.47%	4.47%	4.47%	4.47%	4.47%		4.47%
394	Laboratory Equipment	3.71%	3.71%	3.71%	3.71%	3.71%	3.71%	3.71%
395	Power Operated Equipment		5.02%	5.02%	5.02%	5.02%	5.02%	5.02%
396	Communication Equipment	10.28%	10.30%	10.30%	10.30%	10.30%	10.30%	10.30%
397	Miscellaneous Equipment	5.10%	5.10%	5.10%	5.10%	5.10%		5.10%
398	Other Tangible Plant	10.30%						10.30%

Arizona American Water

Schedule D-3

Comparative Depreciation Rates
Northeast Region

A/C No.	Description	N.J. E'town	Del. Artesian	N.H. Pennichuck	New York Util. & Ind. Merrick	New York Long Island	Average	Arizona High	Arizona Low	Arizona Average
	Source of Supply & Pumping:									
304.1	Structures & Improvements	1.54%		2.30%			1.92%	14.59%	2.40%	4.08%
305.0	Coll. & Impdg. Reservoirs	1.67%		1.79%			1.73%	2.54%	2.50%	2.52%
306.0	Lake & River Intakes	2.00%		2.20%			2.10%	2.50%	2.50%	2.50%
307.0	Wells & Springs	2.22%	2.10%	3.33%	2.86%	2.89%	2.68%	3.08%	2.48%	2.61%
308.0	Infiltration Galleries	1.25%					1.25%	6.67%	6.67%	6.67%
309.0	Supply Mains	1.18%	1.11%	1.57%			1.29%	2.00%	1.11%	1.78%
304.2	Structures & Improvements	2.44%	1.53%	2.44%	2.50%	2.21%	2.22%	3.99%	1.67%	2.13%
310.0	Power Generation Equipment	4.00%		4.55%	3.33%	2.50%	3.59%	5.12%	3.33%	3.81%
311.2	Electric Pumping Equipment	2.86%	2.70%	4.40%	4.50%	4.88%	3.87%	5.12%	3.71%	4.39%
311.3	Diesel Pumping Equipment	2.86%		1.57%	3.33%	2.81%	2.64%	5.00%	4.39%	4.65%
311.4	Pumping Equipment-Hydraulic							5.00%	4.42%	4.61%
311.6	Other Pumping Equipment	2.86%		3.33%	3.33%		3.17%	5.12%	2.01%	4.11%
	Water Treatment Equipment:									
304.3	Structures & Improvements	3.14%	1.89%	2.14%	2.50%	3.50%	2.63%	2.50%	1.67%	1.89%
311.53	Pumping Equipment-WT							4.42%	3.71%	4.18%
320.0	Purification System Equipment			6.67%	6.67%	4.00%	5.78%	12.00%	4.00%	6.38%
320.2	Water Treatment Equipment	3.14%	2.10%	3.31%	6.33%	4.00%	3.78%	12.00%	4.00%	6.38%
	Transmission & Distribution Plant:									
304.4	Structures & Improvements	2.20%		3.14%			2.67%	2.00%	1.50%	1.76%
311.54	Pumping Equipment-TD							4.42%	4.42%	4.42%
330.0	Distr. Reserv. & Standpipes	1.47%	1.24%	2.18%	1.82%	2.01%	1.74%	3.15%	1.62%	1.95%
330.1	Elevated Tanks and Standpipes							1.81%	1.67%	1.74%
330.2	Ground Level Tanks							1.67%	1.67%	1.67%
330.3	Below Ground Tanks							1.67%	1.67%	1.67%
330.4	Clearwell							1.67%	1.67%	1.67%
331	Transmission and Distribution Mains							2.61%	1.53%	1.79%
331.1	Mains - 6" & Larger	1.11%	1.17%	1.57%	1.00%	1.10%	1.19%			
331.1	Transmission and Distribution Mains 4" <			2.75%			2.75%	4.17%	1.53%	2.12%
331.2	Transmission and Distribution Mains 6" - 8"							2.61%	1.53%	1.92%
331.3	Transmission and Distribution Mains 10" - 16"							2.61%	1.53%	1.89%
331.4	Transmission and Distribution Mains >16"							2.61%	1.53%	2.14%
332	Fire Mains	1.11%					1.11%			
339.0	Other Plant & Misc. Equipment			2.50%			2.50%	3.31%	2.00%	3.05%
333.1	Services	3.33%	2.97%	2.44%	2.22%	7.72%	3.74%	5.41%	2.45%	3.17%
334.1	Meters & Installations	3.72%	3.63%	4.78%	1.80%	1.42%	3.07%	6.67%	2.51%	5.63%
334.2	Meter Installations	4.00%					4.00%	6.53%	1.51%	3.00%
334.3	Meter Vaults							2.51%	2.51%	2.51%
335.0	Hydrants	1.46%	1.58%	2.24%	1.43%	1.43%	1.63%	2.10%	1.90%	2.00%
	General Plant:									
304.5	Structures & Improvements	4.40%	4.16%	3.14%	2.00%	3.23%	3.39%	4.63%	1.67%	3.24%
304.6	Structures and Improvements-Offices							4.63%	1.67%	2.70%
340.0	Office Furn. & Equipment	6.67%	3.15%	8.08%	3.17%	4.47%	5.11%	4.59%	3.28%	4.15%
340.2	Comp & Periph Equipment							20.00%	4.04%	7.73%
340.3	Computer Software							37.71%	#####	37.71%
340.31	Computer Software							4.59%	4.59%	4.59%
340.325	Computer Software							4.59%	4.59%	4.59%
340.33	Computer Software							37.71%	4.59%	26.67%
340	Date Handling Equipment							37.71%	#####	37.71%
341	Other Office Equipment							7.13%	4.59%	5.86%
341.0	Transportaton Equipment	12.86%	8.51%	9.44%		21.29%	13.03%			
341.1	Trans Equip Lt Duty Trucks							25.00%	#####	21.25%
341.2	Trans Equip Hvy Duty Trucks							25.00%	#####	17.86%
341.3	TransEquip Autos							25.00%	7.80%	16.40%
341.4	Trans Equip Other							25.00%	#####	23.33%
342.0	Stores Equipment	5.00%	3.15%	4.00%		4.12%	4.07%	4.00%	3.91%	3.93%
343.0	Tools, Shop & Garage Equipment	6.67%	3.15%	6.67%	3.60%	4.44%	4.90%	11.70%	3.42%	5.31%
344.0	Laboratory Equipment	3.33%	10.50%	5.00%	5.00%	4.00%	5.57%	3.71%	3.30%	3.64%
345.0	Power Operated Equipment	9.00%	5.67%	6.00%	10.00%	14.29%	8.99%	13.90%	4.64%	6.62%
346.0	Communications Equipment	6.67%	6.30%	5.26%	6.33%	9.32%	6.78%			
346.1	Comm Equipment - Non Telephone							10.30%	3.66%	8.50%
346.19	Remote Control & Instrument							10.30%	3.66%	9.00%
346.2	Comm Equipment - Telephone							10.30%	9.76%	10.12%
346.3	Comm Equip other							10.28%	4.93%	6.29%
347.0	Computer Equipment		12.50%	14.29%			13.39%			
348.0	Other Miscellaneous Equipment	4.00%	4.73%	10.00%	3.60%	6.67%	5.80%	6.19%	4.98%	5.73%

Arizona American Water

Schedule D-4

Comparative Depreciation Rates
Midwest Region - Illinois

A/C No.	Description	Illinois – Illinois American – Company	Illinois – Illinois American – ICC Staff	Illinois – Average	Arizona – High	Arizona – Low	Arizona – Average
	Source of Supply & Pumping:						
304.1	Structures & Improvements	4.17%	4.17%	4.17%	14.59%	2.40%	4.08%
305.0	Coll. & Impdg. Reservoirs	2.00%	2.00%	2.00%	2.54%	2.50%	2.52%
306.0	Lake & River Intakes	2.08%	1.67%	1.88%	2.50%	2.50%	2.50%
307.0	Wells & Springs	2.86%	1.22%	2.04%	3.08%	2.48%	2.61%
308.0	Infiltration Galleries				6.67%	6.67%	6.67%
309.0	Supply Mains	1.47%	1.22%	1.35%	2.00%	1.11%	1.78%
304.2	Structures & Improvements	2.50%	2.27%	2.39%	3.99%	1.67%	2.13%
310.0	Power Generation Equipment	4.20%	3.30%	3.75%	5.12%	3.33%	3.81%
311.2	Electric Pumping Equipment	3.57%	3.13%	3.35%	5.12%	3.71%	4.39%
311.3	Diesel Pumping Equipment	4.55%	3.33%	3.94%	5.00%	4.39%	4.65%
311.4	Pumping Equipment-Hydraulic				5.00%	4.42%	4.61%
311.6	Other Pumping Equipment	5.00%	5.00%	5.00%	5.12%	2.01%	4.11%
	Water Treatment Equipment:						
304.3	Structures & Improvements	3.13%	2.78%	2.96%	2.50%	1.67%	1.89%
311.53	Pumping Equipment-WT				4.42%	3.71%	4.18%
320.0	Purification System Equipment	4.29%	3.57%	3.93%	12.00%	4.00%	6.38%
320.2	Water Treatment Equipment	4.29%	3.57%	3.93%	12.00%	4.00%	6.38%
	Transmission & Distribution Plant:						
304.4	Structures & Improvements				2.00%	1.50%	1.76%
311.54	Pumping Equipment-TD				4.42%	4.42%	4.42%
330.0	Distr. Reserv. & Standpipes	2.00%	1.67%	1.83%	3.15%	1.62%	1.95%
330.1	Elevated Tanks and Standpipes				1.81%	1.67%	1.74%
330.2	Ground Level Tanks				1.67%	1.67%	1.67%
330.3	Below Ground Tanks				1.67%	1.67%	1.67%
330.4	Clearwell				1.67%	1.67%	1.67%
331	Transmission and Distribution Mains	1.89%	1.89%	1.89%	2.61%	1.53%	1.79%
331.1	Mains - 6" & Larger	1.89%	1.89%	1.89%			
331.1	Transmission and Distribution Mains 4" <				4.17%	1.53%	2.12%
331.2	Transmission and Distribution Mains 6" - 8"				2.61%	1.53%	1.92%
331.3	Transmission and Distribution Mains 10" - 16"				2.61%	1.53%	1.89%
331.4	Transmission and Distribution Mains >16"				2.61%	1.53%	2.14%
332	Fire Mains						
339.0	Other Plant & Misc. Equipment				3.31%	2.00%	3.05%
333.1	Services	5.00%	3.33%	4.17%	5.41%	2.45%	3.17%
334.1	Meters & Installations	2.67%	2.67%	2.67%	6.67%	2.51%	5.63%
334.2	Meter Installations	7.50%	4.44%	5.97%	6.53%	1.51%	3.00%
334.3	Meter Vaults				2.51%	2.51%	2.51%
335.0	Hydrants	5.00%	3.95%	4.48%	2.10%	1.90%	2.00%
	General Plant:						
304.5	Structures & Improvements	4.00%	4.00%	4.00%	4.63%	1.67%	3.24%
304.6	Structures and Improvements-Offices				4.63%	1.67%	2.70%
340.0	Office Furn. & Equipment	4.50%	4.74%	4.62%	4.59%	3.28%	4.15%
340.2	Comp & Periph Equipment				20.00%	4.04%	7.73%
340.3	Computer Software				37.71%	37.71%	37.71%
340.31	Computer Software				4.59%	4.59%	4.59%
340.325	Computer Software				4.59%	4.59%	4.59%
340.33	Computer Software				37.71%	4.59%	26.67%
340	Date Handling Equipment	18.00%	18.00%	18.00%	37.71%	37.71%	37.71%
341	Other Office Equipment				7.13%	4.59%	5.86%
341.0	Transportaton Equipment	12.00%	12.00%	12.00%			
341.1	Trans Equip Lt Duty Trucks				25.00%	20.00%	21.25%
341.2	Trans Equip Hvy Duty Trucks				25.00%	15.00%	17.86%
341.3	TransEquip Autos				25.00%	7.80%	16.40%
341.4	Trans Equip Other				25.00%	16.67%	23.33%
342.0	Stores Equipment	5.00%	3.28%	4.14%	4.00%	3.91%	3.93%
343.0	Tools, Shop & Garage Equipment	7.92%	7.31%	7.62%	11.70%	3.42%	5.31%
344.0	Laboratory Equipment	6.67%	5.00%	5.83%	3.71%	3.30%	3.64%
345.0	Power Operated Equipment	5.00%	5.00%	5.00%	13.90%	4.64%	6.62%
346.0	Communications Equipment	12.50%	12.50%	12.50%			
346.1	Comm Equipment - Non Telephone				10.30%	3.66%	8.50%
346.19	Remote Control & Instrument				10.30%	3.66%	9.00%
346.2	Comm Equipment - Telephone				10.30%	9.76%	10.12%
346.3	Comm Equip other				10.28%	4.93%	6.29%
347.0	Computer Equipment	20.00%	20.00%	20.00%			
348.0	Other Miscellaneous Equipment	6.67%	6.67%	6.67%	6.19%	4.98%	5.73%

Arizona American Water Schedule D-5

Comparative Depreciation Rates
American Water

A/C No.	Description	American Water			Arizona		
		High	Low	Average	High	Low	Average
	Source of Supply & Pumping:						
304.1	Structures & Improvements	6.00%	0.98%	2.40%	14.59%	2.40%	4.08%
305.0	Coll. & Impdg. Reservoirs	5.75%	0.91%	1.55%	2.54%	2.50%	2.52%
306.0	Lake & River Intakes	3.51%	0.79%	1.80%	2.50%	2.50%	2.50%
307.0	Wells & Springs	4.29%	1.46%	2.36%	3.08%	2.48%	2.61%
308.0	Infiltration Galleries	6.67%	1.19%	2.23%	6.67%	6.67%	6.67%
309.0	Supply Mains	2.47%	1.03%	1.51%	2.00%	1.11%	1.78%
304.2	Structures & Improvements	3.18%	1.28%	2.12%	3.99%	1.67%	2.13%
310.0	Power Generation Equipment	11.74%	1.66%	2.88%	5.12%	3.33%	3.81%
311.2	Electric Pumping Equipment				5.12%	3.71%	4.39%
311.3	Diesel Pumping Equipment				5.00%	4.39%	4.65%
311.4	Pumping Equipment-Hydraulic				5.00%	4.42%	4.61%
311.6	Other Pumping Equipment				5.12%	2.01%	4.11%
	Water Treatment Equipment:						
304.3	Structures & Improvements	3.18%	1.28%	2.12%	2.50%	1.67%	1.89%
311.53	Pumping Equipment-WT	10.00%	1.75%	2.95%	4.42%	3.71%	4.18%
320.0	Purification System Equipment	10.00%	1.75%	2.95%	12.00%	4.00%	6.38%
320.2	Water Treatment Equipment	10.00%	1.75%	2.95%	12.00%	4.00%	6.38%
	Transmission & Distribution Plant:						
304.4	Structures & Improvements	6.81%	1.73%	2.60%	2.00%	1.50%	1.76%
311.54	Pumping Equipment-TD	5.74%	1.81%	2.92%	4.42%	4.42%	4.42%
330.0	Distr. Reserv. & Standpipes	3.00%	1.02%	1.93%	3.15%	1.62%	1.95%
330.1	Elevated Tanks and Standpipes	3.00%	1.02%	1.93%	1.81%	1.67%	1.74%
330.2	Ground Level Tanks	3.00%	1.02%	1.93%	1.67%	1.67%	1.67%
330.3	Below Ground Tanks	3.00%	1.02%	1.93%	1.67%	1.67%	1.67%
330.4	Clearwell	3.00%	1.02%	1.93%	1.67%	1.67%	1.67%
331	Transmission and Distribution Mains	3.00%	0.87%	1.35%	2.61%	1.53%	1.79%
331.1	Mains - 6" & Larger						
331.1	Transmission and Distribution Mains 4" <				4.17%	1.53%	2.12%
331.2	Transmission and Distribution Mains 6" - 8"				2.61%	1.53%	1.92%
331.3	Transmission and Distribution Mains 10" - 16"				2.61%	1.53%	1.89%
331.4	Transmission and Distribution Mains >16"				2.61%	1.53%	2.14%
332	Fire Mains	2.20%	1.02%	1.41%			
339.0	Other Plant & Misc. Equipment				3.31%	2.00%	3.05%
333.1	Services	5.20%	1.11%	1.89%	5.41%	2.45%	3.17%
334.1	Meters & Installations	6.57%	1.95%	3.07%	6.67%	2.51%	5.63%
334.2	Meter Installations	6.57%	1.95%	3.07%	6.53%	1.51%	3.00%
334.3	Meter Vaults	6.57%	1.95%	3.07%	2.51%	2.51%	2.51%
335.0	Hydrants	3.00%	1.38%	1.86%	2.10%	1.90%	2.00%
	General Plant:						
304.5	Structures & Improvements	6.00%	0.98%	2.40%	4.63%	1.67%	3.24%
304.6	Structures and Improvements-Offices				4.63%	1.67%	2.70%
340.0	Office Furn. & Equipment	12.58%	1.95%	4.81%	4.59%	3.28%	4.15%
340.2	Comp & Periph Equipment				20.00%	4.04%	7.73%
340.3	Computer Software				37.71%	37.71%	37.71%
340.31	Computer Software				4.59%	4.59%	4.59%
340.325	Computer Software				4.59%	4.59%	4.59%
340.33	Computer Software				37.71%	4.59%	26.67%
340	Date Handling Equipment				37.71%	37.71%	37.71%
341	Other Office Equipment				7.13%	4.59%	5.86%
341.0	Transportaton Equipment	28.41%	1.95%	5.94%			
341.1	Trans Equip Lt Duty Trucks				25.00%	20.00%	21.25%
341.2	Trans Equip Hvy Duty Trucks				25.00%	15.00%	17.86%
341.3	TransEquip Autos				25.00%	7.80%	16.40%
341.4	Trans Equip Other				25.00%	16.67%	23.33%
342.0	Stores Equipment	5.41%	1.44%	3.17%	4.00%	3.91%	3.93%
343.0	Tools, Shop & Garage Equipment	7.30%	2.20%	4.07%	11.70%	3.42%	5.31%
344.0	Laboratory Equipment	10.00%	1.01%	3.81%	3.71%	3.30%	3.64%
345.0	Power Operated Equipment	10.00%	2.20%	4.88%	13.90%	4.64%	6.62%
346.0	Communications Equipment	11.59%	1.95%	5.58%			
346.1	Comm Equipment - Non Telephone				10.30%	3.66%	8.50%
346.19	Remote Control & Instrument				10.30%	3.66%	9.00%
346.2	Comm Equipment - Telephone				10.30%	9.76%	10.12%
346.3	Comm Equip other				10.28%	4.93%	6.29%
347.0	Computer Equipment	7.39%	2.00%	3.87%			
348.0	Other Miscellaneous Equipment	7.39%	2.00%	3.87%	6.19%	4.98%	5.73%

Arizona American Water | Schedule D-6

Comparative Depreciation Rates
Southeast Region - Florida

A/C No.	Description	Florida PSC High	Florida PSC Low	Florida PSC Average	Arizona High	Arizona Low	Arizona Average
	Source of Supply & Pumping:						
304.1	Structures & Improvements	3.57%	3.03%	3.28%	14.59%	2.40%	4.08%
305.0	Coll. & Impdg. Reservoirs	2.50%	2.00%	2.22%	2.54%	2.50%	2.52%
306.0	Lake & River Intakes	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%
307.0	Wells & Springs	3.70%	3.33%	3.51%	3.08%	2.48%	2.61%
308.0	Infiltration Galleries		2.50%	2.50%	6.67%	6.67%	6.67%
309.0	Supply Mains	3.13%	2.86%	2.99%	2.00%	1.11%	1.78%
304.2	Structures & Improvements	3.57%	3.03%	3.28%	3.99%	1.67%	2.13%
310.0	Power Generation Equipment	5.88%	5.00%	5.41%	5.12%	3.33%	3.81%
311.2	Electric Pumping Equipment	6.67%	5.00%	5.71%	5.12%	3.71%	4.39%
311.3	Diesel Pumping Equipment				5.00%	4.39%	4.65%
311.4	Pumping Equipment-Hydraulic				5.00%	4.42%	4.61%
311.6	Other Pumping Equipment				5.12%	2.01%	4.11%
	Water Treatment Equipment:						
304.3	Structures & Improvements	3.57%	3.03%	3.28%	2.50%	1.67%	1.89%
311.53	Pumping Equipment-WT				4.42%	3.71%	4.18%
320.0	Purification System Equipment				12.00%	4.00%	6.38%
320.2	Water Treatment Equipment	5.88%	4.55%	5.13%	12.00%	4.00%	6.38%
	Transmission & Distribution Plant:						
304.4	Structures & Improvements	3.57%	3.03%	3.28%	2.00%	1.50%	1.76%
311.54	Pumping Equipment-TD				4.42%	4.42%	4.42%
330.0	Distr. Reserv. & Standpipes	3.03%	2.70%	2.86%	3.15%	1.62%	1.95%
330.1	Elevated Tanks and Standpipes				1.81%	1.67%	1.74%
330.2	Ground Level Tanks				1.67%	1.67%	1.67%
330.3	Below Ground Tanks				1.67%	1.67%	1.67%
330.4	Clearwell				1.67%	1.67%	1.67%
331	Transmission and Distribution Mains	2.63%	2.33%	2.47%	2.61%	1.53%	1.79%
331.1	Mains - 6" & Larger						
331.1	Transmission and Distribution Mains 4" <				4.17%	1.53%	2.12%
331.2	Transmission and Distribution Mains 6" - 8"				2.61%	1.53%	1.92%
331.3	Transmission and Distribution Mains 10" - 16"				2.61%	1.53%	1.89%
331.4	Transmission and Distribution Mains >16"				2.61%	1.53%	2.14%
332	Fire Mains	3.33%	3.03%	3.17%			
339.0	Other Plant & Misc. Equipment				3.31%	2.00%	3.05%
333.1	Services	2.86%	2.50%	2.67%	5.41%	2.45%	3.17%
334.1	Meters & Installations	5.88%	5.00%	5.41%	6.67%	2.51%	5.63%
334.2	Meter Installations				6.53%	1.51%	3.00%
334.3	Meter Vaults				2.51%	2.51%	2.51%
335.0	Hydrants	2.50%	2.22%	2.35%	2.10%	1.90%	2.00%
	General Plant:						
304.5	Structures & Improvements	2.86%	2.50%	2.67%	4.63%	1.67%	3.24%
304.6	Structures and Improvements-Offices				4.63%	1.67%	2.70%
340.0	Office Furn. & Equipment	6.67%	6.67%	6.67%	4.59%	3.28%	4.15%
340.2	Comp & Periph Equipment				20.00%	4.04%	7.73%
340.3	Computer Software				37.71%	37.71%	37.71%
340.31	Computer Software				4.59%	4.59%	4.59%
340.325	Computer Software				4.59%	4.59%	4.59%
340.33	Computer Software				37.71%	4.59%	26.67%
340	Date Handling Equipment	16.67%	16.67%	16.67%	37.71%	37.71%	37.71%
341	Other Office Equipment				7.13%	4.59%	5.86%
341.0	Transportaton Equipment	16.67%	16.67%	16.67%			
341.1	Trans Equip Lt Duty Trucks				25.00%	20.00%	21.25%
341.2	Trans Equip Hvy Duty Trucks				25.00%	15.00%	17.86%
341.3	TransEquip Autos				25.00%	7.80%	16.40%
341.4	Trans Equip Other				25.00%	16.67%	23.33%
342.0	Stores Equipment		5.56%	5.56%	4.00%	3.91%	3.93%
343.0	Tools, Shop & Garage Equipment	6.67%	6.25%	6.45%	11.70%	3.42%	5.31%
344.0	Laboratory Equipment		6.67%	6.67%	3.71%	3.30%	3.64%
345.0	Power Operated Equipment	10.00%	8.33%	9.09%	13.90%	4.64%	6.62%
346.0	Communications Equipment		10.00%	10.00%			
346.1	Comm Equipment - Non Telephone				10.30%	3.66%	8.50%
346.19	Remote Control & Instrument				10.30%	3.66%	9.00%
346.2	Comm Equipment - Telephone				10.30%	9.76%	10.12%
346.3	Comm Equip other				10.28%	4.93%	6.29%
347.0	Computer Equipment						
348.0	Other Miscellaneous Equipment		6.67%	6.67%	6.19%	4.98%	5.73%

Arizona American Water

Schedule D-7

Comparative Depreciation Rates
West Coast Region - California

A/C No.	Description	California High	California Low	California Average	Arizona High	Arizona Low	Arizona Average
	Source of Supply & Pumping:						
304.1	Structures & Improvements	5.00%	1.67%	2.50%	14.59%	2.40%	4.08%
305.0	Coll. & Impdg. Reservoirs	2.50%	1.00%	1.43%	2.54%	2.50%	2.52%
306.0	Lake & River Intakes	3.33%	1.43%	2.00%	2.50%	2.50%	2.50%
307.0	Wells & Springs	5.00%	2.50%	3.33%	3.08%	2.48%	2.61%
308.0	Infiltration Galleries				6.67%	6.67%	6.67%
309.0	Supply Mains	4.00%	1.00%	1.60%	2.00%	1.11%	1.78%
304.2	Structures & Improvements	5.00%	1.67%	2.50%	3.99%	1.67%	2.13%
310.0	Power Generation Equipment				5.12%	3.33%	3.81%
311.2	Electric Pumping Equipment	6.67%	2.86%	4.00%	5.12%	3.71%	4.39%
311.3	Diesel Pumping Equipment	6.67%	2.86%	4.00%	5.00%	4.39%	4.65%
311.4	Pumping Equipment-Hydraulic				5.00%	4.42%	4.61%
311.6	Other Pumping Equipment	6.67%	4.00%	5.00%	5.12%	2.01%	4.11%
	Water Treatment Equipment:						
304.3	Structures & Improvements	5.00%	1.67%	2.50%	2.50%	1.67%	1.89%
311.53	Pumping Equipment-WT				4.42%	3.71%	4.18%
320.0	Purification System Equipment				12.00%	4.00%	6.38%
320.2	Water Treatment Equipment	6.67%	2.50%	3.64%	12.00%	4.00%	6.38%
	Transmission & Distribution Plant:						
304.4	Structures & Improvements	5.00%	1.67%	2.50%	2.00%	1.50%	1.76%
311.54	Pumping Equipment-TD				4.42%	4.42%	4.42%
330.0	Distr. Reserv. & Standpipes	4.00%	1.00%	1.60%	3.15%	1.62%	1.95%
330.1	Elevated Tanks and Standpipes				1.81%	1.67%	1.74%
330.2	Ground Level Tanks				1.67%	1.67%	1.67%
330.3	Below Ground Tanks				1.67%	1.67%	1.67%
330.4	Clearwell				1.67%	1.67%	1.67%
331	Transmission and Distribution Mains				2.61%	1.53%	1.79%
331.1	Mains - 6" & Larger						
331.1	Transmission and Distribution Mains 4" <	4.00%	2.00%	2.67%	4.17%	1.53%	2.12%
331.2	Transmission and Distribution Mains 6" - 8"	4.00%	2.00%	2.67%	2.61%	1.53%	1.92%
331.3	Transmission and Distribution Mains 10" - 16"	4.00%	2.00%	2.67%	2.61%	1.53%	1.89%
331.4	Transmission and Distribution Mains >16"	4.00%	2.00%	2.67%	2.61%	1.53%	2.14%
332	Fire Mains						
339.0	Other Plant & Misc. Equipment				3.31%	2.00%	3.05%
333.1	Services	5.00%	2.50%	3.33%	5.41%	2.45%	3.17%
334.1	Meters & Installations	4.00%	2.50%	3.08%	6.67%	2.51%	5.63%
334.2	Meter Installations	4.00%	2.50%	3.08%	6.53%	1.51%	3.00%
334.3	Meter Vaults				2.51%	2.51%	2.51%
335.0	Hydrants	4.00%	2.50%	3.08%	2.10%	1.90%	2.00%
	General Plant:						
304.5	Structures & Improvements	5.00%	1.67%	2.50%	4.63%	1.67%	3.24%
304.6	Structures and Improvements-Offices				4.63%	1.67%	2.70%
340.0	Office Furn. & Equipment	20.00%	5.00%	8.00%	4.59%	3.28%	4.15%
340.2	Comp & Periph Equipment				20.00%	4.04%	7.73%
340.3	Computer Software				37.71%	37.71%	37.71%
340.31	Computer Software				4.59%	4.59%	4.59%
340.325	Computer Software				4.59%	4.59%	4.59%
340.33	Computer Software				37.71%	4.59%	26.67%
340	Date Handling Equipment				37.71%	37.71%	37.71%
341	Other Office Equipment				7.13%	4.59%	5.86%
341.0	Transportaton Equipment	20.00%	5.00%	8.00%			
341.1	Trans Equip Lt Duty Trucks				25.00%	20.00%	21.25%
341.2	Trans Equip Hvy Duty Trucks				25.00%	15.00%	17.86%
341.3	TransEquip Autos				25.00%	7.80%	16.40%
341.4	Trans Equip Other				25.00%	16.67%	23.33%
342.0	Stores Equipment	20.00%	4.00%	6.67%	4.00%	3.91%	3.93%
343.0	Tools, Shop & Garage Equipment	20.00%	2.86%	5.00%	11.70%	3.42%	5.31%
344.0	Laboratory Equipment	20.00%	4.00%	6.67%	3.71%	3.30%	3.64%
345.0	Power Operated Equipment	20.00%	4.00%	6.67%	13.90%	4.64%	6.62%
346.0	Communications Equipment						
346.1	Comm Equipment - Non Telephone				10.30%	3.66%	8.50%
346.19	Remote Control & Instrument				10.30%	3.66%	9.00%
346.2	Comm Equipment - Telephone				10.30%	9.76%	10.12%
346.3	Comm Equip other				10.28%	4.93%	6.29%
347.0	Computer Equipment						
348.0	Other Miscellaneous Equipment				6.19%	4.98%	5.73%

Arizona American Water

Schedule D-8

Comparative Depreciation Rates
NARUC

A/C No.	Description	NARUC High	NARUC Low	NARUC Average	Arizona High	Arizona Low	Arizona Average
	Source of Supply & Pumping:						
304.1	Structures & Improvements	2.90%	2.50%	2.70%	14.59%	2.40%	4.08%
305.0	Coll. & Impdg. Reservoirs	2.00%	1.30%	1.65%	2.54%	2.50%	2.52%
306.0	Lake & River Intakes	2.90%	2.20%	2.55%	2.50%	2.50%	2.50%
307.0	Wells & Springs	4.00%	2.90%	3.45%	3.08%	2.48%	2.61%
308.0	Infiltration Galleries	4.00%	2.00%	3.00%	6.67%	6.67%	6.67%
309.0	Supply Mains	2.00%	1.30%	1.65%	2.00%	1.11%	1.78%
304.2	Structures & Improvements	2.90%	2.50%	2.70%	3.99%	1.67%	2.13%
310.0	Power Generation Equipment				5.12%	3.33%	3.81%
311.2	Electric Pumping Equipment	5.00%	5.00%	5.00%	5.12%	3.71%	4.39%
311.3	Diesel Pumping Equipment	4.00%	4.00%	4.00%	5.00%	4.39%	4.65%
311.4	Pumping Equipment-Hydraulic				5.00%	4.42%	4.61%
311.6	Other Pumping Equipment	4.00%	4.00%	4.00%	5.12%	2.01%	4.11%
	Water Treatment Equipment:						
304.3	Structures & Improvements	2.90%	2.50%	2.70%	2.50%	1.67%	1.89%
311.53	Pumping Equipment-WT				4.42%	3.71%	4.18%
320.0	Purification System Equipment	5.00%	2.90%	3.95%	12.00%	4.00%	6.38%
320.2	Water Treatment Equipment	5.00%	2.90%	3.95%	12.00%	4.00%	6.38%
	Transmission & Distribution Plant:						
304.4	Structures & Improvements	2.90%	2.50%	2.70%	2.00%	1.50%	1.76%
311.54	Pumping Equipment-TD				4.42%	4.42%	4.42%
330.0	Distr. Reserv. & Standpipes	3.30%	1.70%	2.50%	3.15%	1.62%	1.95%
330.1	Elevated Tanks and Standpipes				1.81%	1.67%	1.74%
330.2	Ground Level Tanks				1.67%	1.67%	1.67%
330.3	Below Ground Tanks				1.67%	1.67%	1.67%
330.4	Clearwell				1.67%	1.67%	1.67%
331	Transmission and Distribution Mains				2.61%	1.53%	1.79%
331.1	Mains - 6" & Larger	2.00%	1.33%	1.67%			
331.1	Transmission and Distribution Mains 4" <				4.17%	1.53%	2.12%
331.2	Transmission and Distribution Mains 6" - 8"				2.61%	1.53%	1.92%
331.3	Transmission and Distribution Mains 10" - 16"				2.61%	1.53%	1.89%
331.4	Transmission and Distribution Mains >16"				2.61%	1.53%	2.14%
332	Fire Mains	2.00%	1.30%	1.65%			
339.0	Other Plant & Misc. Equipment				3.31%	2.00%	3.05%
333.1	Services	3.30%	2.00%	2.65%	5.41%	2.45%	3.17%
334.1	Meters & Installations	2.60%	2.00%	2.30%	6.67%	2.51%	5.63%
334.2	Meter Installations	2.50%	2.00%	2.25%	6.53%	1.51%	3.00%
334.3	Meter Vaults				2.51%	2.51%	2.51%
335.0	Hydrants	2.40%	1.60%	2.00%	2.10%	1.90%	2.00%
	General Plant:						
304.5	Structures & Improvements	2.90%	2.50%	2.70%	4.63%	1.67%	3.24%
304.6	Structures and Improvements-Offices				4.63%	1.67%	2.70%
340.0	Office Furn. & Equipment	4.80%	3.80%	4.30%	4.59%	3.28%	4.15%
340.2	Comp & Periph Equipment				20.00%	4.04%	7.73%
340.3	Computer Software				37.71%	37.71%	37.71%
340.31	Computer Software				4.59%	4.59%	4.59%
340.325	Computer Software				4.59%	4.59%	4.59%
340.33	Computer Software				37.71%	4.59%	26.67%
340	Date Handling Equipment				37.71%	37.71%	37.71%
341	Other Office Equipment				7.13%	4.59%	5.86%
341.0	Transportaton Equipment	12.90%	12.90%	12.90%			
341.1	Trans Equip Lt Duty Trucks				25.00%	20.00%	21.25%
341.2	Trans Equip Hvy Duty Trucks				25.00%	15.00%	17.86%
341.3	TransEquip Autos				25.00%	7.80%	16.40%
341.4	Trans Equip Other				25.00%	16.67%	23.33%
342.0	Stores Equipment	5.00%	5.00%	5.00%	4.00%	3.91%	3.93%
343.0	Tools, Shop & Garage Equipment	6.30%	4.80%	5.55%	11.70%	3.42%	5.31%
344.0	Laboratory Equipment	6.70%	5.00%	5.85%	3.71%	3.30%	3.64%
345.0	Power Operated Equipment	9.00%	6.00%	7.50%	13.90%	4.64%	6.62%
346.0	Communications Equipment	9.00%	9.00%	9.00%			
346.1	Comm Equipment - Non Telephone				10.30%	3.66%	8.50%
346.19	Remote Control & Instrument				10.30%	3.66%	9.00%
346.2	Comm Equipment - Telephone				10.30%	9.76%	10.12%
346.3	Comm Equip other				10.28%	4.93%	6.29%
347.0	Computer Equipment						
348.0	Other Miscellaneous Equipment				6.19%	4.98%	5.73%

Section E

Arizona American Water | Schedule E-1

Comparison of Depreciation Expense
Under Present and Recommended Depreciation Rates
Agua Fria Water System

A/C No.	Description	Adjusted Balances at June 2010	Annual Depreciation Present Rate	Present Amount	Recommended Rate	Recommended Amount	Difference
	Source of Supply & Pumping:						
304.1	Structures & Improvements	$ 9,965,456	2.50%	$ 249,136	3.00%	$ 298,964	$ 49,827
305.0	Coll. & Impdg. Reservoirs	748,276	2.50%	18,707	2.00%	14,966	(3,741)
306.0	Lake & River Intakes	1,190,866	2.50%	29,772	2.00%	23,817	(5,954)
307.0	Wells & Springs	14,953,147	2.52%	376,819	2.50%	373,829	(2,991)
308.0	Infiltration Galleries		0.00%		2.50%		
309.0	Supply Mains	2,044,995	1.11%	22,699	2.50%	51,125	28,425
304.2	Structures & Improvements	7,091,340	1.67%	118,425	2.40%	170,192	51,767
310.0	Power Generation Equipment	3,000,913	3.33%	99,930	3.33%	100,030	100
311.2	Electric Pumping Equipment	30,159,165	4.42%	1,333,035	4.60%	1,387,322	54,286
311.3	Diesel Pumping Equipment	11,824	4.42%	523	4.60%	544	21
311.4	Hydraulic Pumping Equipment		4.42%		4.60%		
311.6	Other Pumping Equipment	1,252,897	4.42%	55,378	4.60%	57,633	2,255
	Water Treatment Equipment:						
304.3	Structures & Improvements	10,746,814	1.67%	179,472	2.40%	257,924	78,452
311.53	Pumping Equipment WT	18,328	4.42%	810	5.75%	1,054	244
320.0	WT Equip Non-Media	35,515,424	4.00%	1,420,617	5.75%	2,042,137	621,520
320.2	WT Equip Filter Media	1,872,107	4.00%	74,884	11.50%	215,292	140,408
	Transmission & Distribution Plant:						
304.4	Structures & Improvements	3,639,459	1.67%	60,779	2.40%	87,347	26,568
311.54	Pumping Equipment TD		0.00%		4.60%		
330.0	Distr. Reserv. & Standpipes	12,860,977	1.67%	214,778	1.85%	237,433	22,655
330.1	Elevated Tanks & Standpipes	35,344	1.67%	590	1.85%	653	62
330.2	Ground Level Facilities	1,029	1.67%	17	1.85%	19	2
330.3	Below Ground Tanks		1.67%		1.85%		
330.4	Clearwell	4,375,415	1.67%	73,069	2.40%	105,010	31,941
331.0	TD Mains Not Classified by Size	6,839,905	1.53%	104,651	2.14%	146,569	41,919
331.1	TD Mains 4in & Less	21,613,186	1.53%	330,682	3.00%	648,396	317,714
331.2	TD Mains 6in to 8in	38,504,649	1.53%	589,121	2.14%	825,100	235,978
331.3	TD Mains 10in to 16in	31,759,087	1.53%	485,914	2.14%	680,552	194,638
331.4	TD Mains 18in & Grtr	20,743,785	2.34%	485,405	2.14%	444,510	(40,895)
332.0	Fire Mains	-	0.00%	-	2.14%	-	-
333.1	Services	13,234,519	2.48%	328,216	3.75%	496,294	168,078
334.1	Meters	5,707,843	6.67%	380,713	6.00%	342,471	(38,243)
334.2	Meter Installations	1,596,037	2.51%	40,061	2.50%	39,901	(160)
334.3	Meter Vaults	68,062	2.51%	1,708	2.51%	1,708	-
335.0	Hydrants	13,647,122	2.00%	272,942	2.99%	408,390	135,448
339.3	Other P/E Misc	-	3.31%	-	3.33%	-	-
339.6	Other P/E CPS	748,089	3.31%	24,762	3.33%	24,936	175
	General Plant:						
304.5	Structures & Improvements	11,575,429	1.67%	193,310	3.00%	347,263	153,953
304.6	Struct & Imp Offices	173,284	2.03%	3,518	3.00%	5,199	1,681
340.1	Office Furniture & Equip	93,485	4.04%	3,777	4.50%	4,207	430
340.2	Comp & Periph Equip	71,779	4.04%	2,900	10.00%	7,178	4,278
340.3	Computer Software	5,508	37.71%	2,077	20.00%	1,102	(976)
340.3	Computer Software - Other	-	37.71%	-	20.00%	-	-
341.0	Trans Equip Lt Duty Trks	202,657	20.00%	40,531	16.00%	32,425	(8,106)
341.2	Trans Equip Hvy Duty Trks	20,311	15.00%	3,047	11.43%	2,321	(725)
341.4	Trans Equip Other	112,250	25.00%	28,062	13.33%	14,967	(13,096)
342.0	Stores Equipment		0.00%		4.00%	-	-
343.0	Tools, Shop & Garage Equipment	79,185	4.02%	3,183	4.00%	3,167	(16)
344.0	Laboratory Equipment	328,566	3.71%	12,190	4.00%	13,143	953
345.0	Power Operated Equipment	30,559	5.20%	1,589	4.00%	1,222	(367)
346.1	Comm Equip Non-Telephone	1,435,838	10.30%	147,891	10.00%	143,584	(4,308)
346.2	Remote Control & Instrumentati	3,731,689	10.30%	384,364	10.00%	373,169	(11,195)
346.2	Comm Equip Telephone	101,705	10.30%	10,476	10.00%	10,171	(305)
346.3	Comm Equip Other	385,785	4.93%	19,019	10.00%	38,579	19,559
347.0	Other Miscellaneous Equipment	25,855	4.98%	1,288	6.25%	1,616	328
	Total Depreciable Property	$ 312,319,946		$ 8,230,838		$ 10,483,428	$ 2,252,589
301.0	Organization	1,229					
302.0	Franchises	363,720					
303.2	Land & Land Rights SS	1,653,915					
303.3	Land & Land Rights P	1,448,137					
303.4	Land & Land Rights WT	639,523					
303.5	Land & Land Rights TD	299,442					
	Total Utility Plant in Service	$ 316,725,912		$ 8,230,838		$ 10,483,428	$ 2,252,589

Comparison of Depreciation Expense
Under Present and Recommended Depreciation Rates
Havasu Water System

A/C No.	Description	Adjusted Balances at June 2010	Annual Depreciation Present Rate	Present Amount	Recommended Rate	Recommended Amount	Difference
	Source of Supply & Pumping:						
304.1	Structures & Improvements	$ 26,433	2.79%	$ 737	3.00%	$ 793	$ 56
305.0	Coll. & Impdg. Reservoirs	148,253	2.54%	3,766	2.00%	2,965	(801)
306.0	Lake & River Intakes		0.00%	-	2.00%	-	-
307.0	Wells & Springs	313,607	2.54%	7,966	2.50%	7,840	(125)
308.0	Infiltration Galleries		0.00%	-	2.50%	-	-
309.0	Supply Mains		0.00%	-	2.50%	-	-
304.2	Structures & Improvements	99,968	2.03%	2,029	2.40%	2,399	370
310.0	Power Generation Equipment	(28,197)	5.12%	(1,444)	3.33%	(940)	504
310.1	Power Generation Equip Other	50,935		-	3.33%	1,698	1,698
311.2	Electric Pumping Equipment	1,298,763	3.71%	48,184	4.60%	59,743	11,559
311.3	Diesel Pumping Equipment		0.00%	-	4.60%	-	-
311.5	Other Pumping Equipment	4,202	0.00%	-	4.60%	193	193
	Water Treatment Equipment:						
304.3	Structures & Improvements	2,001,816	2.03%	40,637	2.40%	48,044	7,407
311.53	Pumping Equipment WT	(69)	3.71%	(3)	5.75%	(4)	(1)
320.0	WT Equip Non-Media	254,498	12.00%	30,540	5.75%	14,634	(15,906)
320.2	WT Equip Filter Media	29,719	4.00%	1,189	11.50%	3,418	2,229
	Transmission & Distribution Plant:						
304.4	Structures & Improvements		0.00%	-	2.40%	-	-
330.0	Distr. Reserv. & Standpipes	1,168,705	2.33%	27,231	1.85%	21,576	(5,655)
330.1	Elevated Tanks & Standpipes		0.00%	-	1.85%	-	-
330.2	Ground Level Facilities		0.00%	-	1.85%	-	-
330.4	Clearwell		0.00%	-	2.40%	-	-
331.0	TD Mains Not Classified by Size	695,099	2.10%	14,597	2.14%	14,895	298
331.1	TD Mains 4in & Less	464,363	2.10%	9,752	3.00%	13,931	4,179
331.2	TD Mains 6in to 8in	850,290	2.10%	17,856	2.14%	18,221	364
331.3	TD Mains 10in to 16in	730,673	2.10%	15,344	2.14%	15,657	313
331.4	TD Mains 18in & Grtr		2.10%	-	2.14%	-	-
332.0	Fire Mains		0.00%	-	2.14%	-	-
333.0	Services	327,573	2.89%	9,467	3.75%	12,284	2,817
334.1	Meters	185,081	6.67%	12,345	6.00%	11,105	(1,240)
334.2	Meter Installations	17,253	3.52%	607	2.50%	431	(176)
334.3	Meter Vaults		0.00%	-	2.51%	-	-
335.0	Hydrants		1.99%	-	2.99%	-	-
339.2	Other P/E SS	(44,614)	3.31%	(1,477)	3.33%	(1,487)	(10)
339.25	Other P/E SS	116,045	3.31%	3,841	3.33%	3,868	27
339.6	Other P/E CPS	33,593	3.31%	1,112	3.33%	1,120	8
	General Plant:						
304.5	Structures & Improvements		0.00%	-	3.00%	-	-
304.6	Struct & Imp Offices	20,698	2.03%	420	3.00%	621	201
304.62	Struct & Imp Leasehold	-	0.00%	-	3.00%	-	-
340.1	Office Furniture & Equip	3,254	4.10%	133	4.50%	146	13
340.2	Comp & Periph Equip	26,901	4.10%	1,103	10.00%	2,690	1,587
340.3	Computer Software	7,686	37.71%	2,899	20.00%	1,537	(1,361)
340.33	Computer Software - Other		0.00%	-	20.00%	-	-
341.1	Trans Equip Lt Duty Trks	44,018	20.00%	8,804	16.00%	7,043	(1,761)
341.2	Trans Equip Hvy Duty Trks		15.00%	-	11.43%	-	-
341.4	Trans Equip Other		0.00%	-	13.33%	-	-
342.0	Stores Equipment		0.00%	-	4.00%	-	-
343.0	Tools, Shop & Garage Equipment	17,808	7.55%	1,345	4.00%	712	(632)
344.0	Laboratory Equipment	460	0.00%	-	4.00%	18	18
345.0	Power Operated Equipment	33,093	9.23%	3,054	4.00%	1,324	(1,731)
346.1	Comm Equip Non-Telephone	7,789	8.37%	652	10.00%	779	127
346.2	Remote Control & Instrumentati	62,574	8.37%	5,237	10.00%	6,257	1,020
346.2	Comm Equip Telephone		0.00%	-	10.00%	-	-
346.3	Comm Equip Other	44,161	6.19%	2,734	10.00%	4,416	1,683
347.0	Other Miscellaneous Equipment		0.00%	-	6.25%	-	-
	Total Depreciable Property	$ 9,012,432		$ 270,657		$ 277,928	$ 7,271
301.0	Organization	10,144					
302.0	Franchises						
303.2	Land & Land Rights SS	41,597					
303.3	Land & Land Rights P						
303.4	Land & Land Rights WT						
303.5	Land & Land Rights TD						
	Total Utility Plant in Service	$ 9,064,173		$ 270,657		$ 277,928	$ 7,271

Arizona American Water

Schedule E-3

Comparison of Depreciation Expense
Under Present and Recommended Depreciation Rates
Mohave Water System

A/C No.	Description	Adjusted Balances at June 2010	Annual Depreciation Present Rate	Present Amount	Recommended Rate	Recommended Amount	Difference
	Source of Supply & Pumping:						
304.1	Structures & Improvements	$ 481,622	2.83%	$ 13,630	3.00%	$ 14,449	$ 819
305.0	Coll. & Impdg. Reservoirs	663,944	2.54%	16,864	2.00%	13,279	(3,585)
306.0	Lake & River Intakes	-	0.00%	-	2.00%	-	-
307.0	Wells & Springs	1,065,943	2.70%	28,780	2.50%	26,649	(2,132)
308.0	Infiltration Galleries	-	0.00%	-	2.50%	-	-
309.0	Supply Mains	100,426	2.00%	2,009	2.50%	2,511	502
304.2	Structures & Improvements	29,817	2.39%	713	2.40%	716	3
310.0	Power Generation Equipment	50,355	0.00%	-	3.33%	1,679	1,679
310.1	Power Generation Equip Other	-		-	3.33%	-	-
311.2	Electric Pumping Equipment	2,626,306	5.12%	134,467	4.60%	120,810	(13,657)
311.3	Diesel Pumping Equipment	-	0.00%	-	4.60%	-	-
311.6	Other Pumping Equipment	1,009	5.12%	52	4.60%	46	(5)
	Water Treatment Equipment:						
304.3	Structures & Improvements	47,846	2.50%	1,196	2.40%	1,148	(48)
311.53	Pumping Equipment WT		0.00%	-	5.75%	-	-
320.1	WT Equip Non-Media	97,220	12.00%	11,666	5.75%	5,590	(6,076)
320.2	WT Equip Filter Media-		0.00%	-	11.50%	-	-
	Transmission & Distribution Plant:						
304.4	Structures & Improvements	76,652	1.81%	1,387	2.40%	1,840	452
330.0	Distr. Reserv. & Standpipes	2,679,735	1.81%	48,503	1.85%	49,472	969
330.1	Elevated Tanks & Standpipes	68,703	1.81%	1,244	1.85%	1,268	25
330.2	Ground Level Facilities		0.00%	-	1.85%	-	-
330.4	Clearwell		0.00%	-	2.40%	-	-
331.0	TD Mains Not Classified by Size	54,847	2.61%	1,431	2.14%	1,175	(256)
331.1	TD Mains 4in & Less	11,784,507	2.61%	307,576	3.00%	353,535	45,960
331.2	TD Mains 6in to 8in	3,317,357	2.61%	86,583	2.14%	71,086	(15,497)
331.3	TD Mains 10in to 16in	252,041	2.61%	6,578	2.14%	5,401	(1,177)
331.4	TD Mains 18in & Grtr	76,265	2.61%	1,991	2.14%	1,634	(356)
332.0	Fire Mains		0.00%	-	2.14%	-	-
333.0	Services	4,208,639	5.41%	227,687	3.75%	157,824	(69,863)
334.1	Meters	1,749,550	6.67%	116,695	6.00%	104,973	(11,722)
334.2	Meter Installations	227,353	6.53%	14,846	2.50%	5,684	(9,162)
334.3	Meter Vaults	-	0.00%	-	2.51%	-	-
335.0	Hydrants	51,004	1.90%	969	2.99%	1,526	557
339.2	Other P/E SS	82,583	3.31%	2,733	3.33%	2,753	19
339.25	Other P/E SS	-	3.31%	-	3.33%	-	-
	General Plant:						
304.5	Structures & Improvements	7,829	2.03%	159	3.00%	235	76
304.6	Struct & Imp Offices	452,514	2.03%	9,186	3.00%	13,575	4,389
304.62	Struct & Imp Leashold	-	0.00%	-	3.00%	-	-
304.7	Struct & Imp Store, Shop and Garage	29,223	4.63%	1,353	3.00%	877	(476)
340.1	Office Furniture & Equip	110,243	4.04%	4,454	4.50%	4,961	507
340.2	Comp & Periph Equip	109,956	4.04%	4,442	10.00%	10,996	6,553
340.3	Computer Software	-	37.71%	-	20.00%	-	-
340.33	Computer Software - Other	-	0.00%	-	20.00%	-	-
341.0	Trans Equip Lt Duty Trks	134,741	20.00%	26,948	16.00%	21,559	(5,390)
341.2	Trans Equip Hvy Duty Trks	90,000	15.00%	13,500	11.43%	10,286	(3,214)
341.3	Transportation Equipment - Other	-	0.00%	-	13.12%	-	-
341.4	Trans Equip Other	14,312	25.00%	3,578	13.33%	1,908	(1,670)
342.0	Stores Equipment	2,400	3.93%	94	4.00%	96	2
343.0	Tools, Shop & Garage Equipment	130,699	11.70%	15,292	4.00%	5,228	(10,064)
344.0	Laboratory Equipment	7,623	3.30%	252	4.00%	305	53
345.0	Power Operated Equipment	172,529	13.90%	23,982	4.00%	6,901	(17,080)
346.1	Comm Equip Non-Telephone	180,533	3.66%	6,608	10.00%	18,053	11,446
346.2	Remote Control & Instrumentati	10,009	3.66%	366	10.00%	1,001	635
346.2	Comm Equip Telephone	49,678	9.76%	4,849	10.00%	4,968	119
346.3	Comm Equip Other	5,111	6.19%	316	10.00%	511	195
347.0	Other Miscellaneous Equipment	-	0.00%	-	6.25%	-	-
	Total Depreciable Property	$ 31,301,124		$ 1,142,979		$ 1,046,507	$ (96,472)
301.0	Organization	34,004					
302.0	Franchises	37,061					
303.2	Land & Land Rights SS	290,791					
303.3	Land & Land Rights P	2,351					
303.4	Land & Land Rights WT						
303.5	Land & Land Rights TD	9,609					
303.6	Land & Land Rights AG	31,052					
	Total Utility Plant in Service	$ 31,705,992		$ 1,142,979		$ 1,046,507	$ (96,472)

Arizona American Water | Schedule E-4

Comparison of Depreciation Expense
Under Present and Recommended Depreciation Rates
Paradise Valley Water System

		Adjusted	Annual Depreciation				
		Balances	Present		Recommended		
A/C No.	Description	at June 2010	Rate	Amount	Rate	Amount	Difference
	Source of Supply & Pumping						
304.1	Structures & Improvements	$ 24,500	14.59%	$ 3,575	3.00%	$ 735	$ (2,840)
305.0	Coll. & Impdg. Reservoirs0.00%			-	2.00%	-	-
306.0	Lake & River Intakes		0.00%	-	2.00%	-	-
307.0	Wells & Springs	1,505,514	2.48%	37,337	2.50%	37,638	301
308.0	Infiltration Galleries		0.00%	-	2.50%	-	-
309.0	Supply Mains	122,825	2.00%	2,457	2.50%	3,071	614
304.2	Structures & Improvements	3,581	3.99%	143	2.40%	86	(57)
310.0	Power Generation Equipment	559,101	3.33%	18,618	3.33%	18,637	19
311.2	Electric Pumping Equipment	3,577,173	4.39%	157,038	3.33%	119,239	(37,799)
311.3	Diesel Pumping Equipment	191	4.39%	8	4.60%	9	0
311.4	Hydraulic Pumping Equipment		0.00%	-	4.60%	-	-
311.6	Other Pumping Equipment	-	0.00%	-	4.60%	-	-
	Water Treatment Equipment						
304.3	Structures & Improvements	20,031,254	2.00%	400,625	2.40%	480,750	80,125
311.53	Pumping Equipment WT	94	0.00%	-	5.75%	5	5
320.0	WT Equip Non-Media	10,622,804	7.06%	749,970	5.75%	610,811	(139,159)
320.2	WT Equip Filter Media	1,884,847	4.00%	75,394	11.50%	216,757	141,364
	Transmission & Distribution Plant:						
304.4	Structures & Improvements	23,764	1.50%	356	2.40%	570	214
311.54	Pumping Equipment TD		0.00%	-	4.60%	-	-
330.0	Distr. Reserv. & Standpipes	2,117,869	3.15%	66,713	1.85%	39,099	(27,614)
330.1	Elevated Tanks & Standpipes		0.00%	-	1.85%	-	-
330.2	Ground Level Facilities		0.00%	-	1.85%	-	-
330.3	Below Ground Tanks		0.00%	-	1.85%	-	-
330.4	Clearwell		0.00%	-	2.40%	-	-
331.0	TD Mains Not Classified by Size	3,156,646	1.53%	48,297	2.14%	67,642	19,346
331.1	TD Mains 4in & Less	316,399	4.17%	13,194	3.00%	9,492	(3,702)
331.2	TD Mains 6in to 8in5,747,20	9	2.52%	144,830	2.14%	123,154	(21,675)
331.3	TD Mains 10in to 16in	8,660,242	2.34%	202,650	2.14%	185,577	(17,073)
331.4	TD Mains 18in & Grtr	1,282,719	2.34%	30,016	2.14%	27,487	(2,529)
332.0	Fire Mains	-	0.00%	-	2.14%	-	-
333.1	Services	3,072,977	4.72%	145,045	3.75%	115,237	(29,808)
334.1	Meters	592,099	6.67%	39,493	6.00%	35,526	(3,967)
334.2	Meter Installations	148,304	1.51%	2,239	2.50%	3,708	1,468
334.3	Meter Vaults		0.00%	-	2.51%	-	-
335.0	Hydrants	1,179,349	2.10%	24,766	2.99%	35,292	10,526
339.3	Other P/E Misc		3.31%	-	3.33%	-	-
339.6	Other P/E CPS	10,520	3.31%	348	3.33%	351	2
	General Plant:						
304.5	Structures & Improvements	20,972	4.63%	971	3.00%	629	(342)
304.6	Struct & Imp Offices	-	4.63%	-	3.00%	-	-
304.62	Struct & Imp Leasehold	-	14.28%	-	3.00%	-	-
304.7	Struct & Imp Store, Shop and Garage	4,629	4.63%	214	3.00%	139	(75)
304.8	Struct & Imp Misc	-	4.63%	-	3.00%	-	-
340.1	Office Furniture & Equip	54,224	4.04%	2,191	4.50%	2,440	249
340.2	Comp & Periph Equip	25,467	15.89%	4,047	10.00%	2,547	(1,500)
340.3	Computer Software	29,200	37.71%	11,011	20.00%	5,840	(5,171)
340.33	Computer Software - Other	-	37.71%	-	20.00%	-	-
340.5	Other Office Equipment	674	7.13%	48	6.33%	43	(5)
341.0	Trans Equip Lt Duty Trks		20.00%	-	16.00%	-	-
341.2	Trans Equip Hvy Duty Trks		15.00%	-	11.43%	-	-
341.3	Trans Equip Autos	-	7.80%	-	13.12%	-	-
341.4	Trans Equip Other (golf cart only)	111,589	16.67%	18,602	13.33%	14,878	(3,723)
342.0	Stores Equipment	9,229	3.92%	362	4.00%	369	7
343.0	Tools, Shop & Garage Equipment	128,323	3.61%	4,632	4.00%	5,133	500
344.0	Laboratory Equipment	17,620	3.71%	654	4.00%	705	51
345.0	Power Operated Equipment	32,228	4.64%	1,495	4.00%	1,289	(206)
346.1	Comm Equip Non-Telephone	465,590	9.76%	45,442	10.00%	46,559	1,117
346.2	Remote Control & Instrumentati	6,533	9.76%	638	10.00%	653	16
346.2	Comm Equip Telephone		9.76%	-	10.00%	-	-
346.3	Comm Equip Other	50,006	7.91%	3,955	10.00%	5,001	1,045
347.0	Other Miscellaneous Equipment		5.10%	-	6.25%	-	-
	Total Depreciable Property	$ 65,596,263		$ 2,257,372		$ 2,217,098	$ (40,274)
301.0	Organization	1,831					
302.0	Franchises						
303.2	Land & Land Rights SS						
303.3	Land & Land Rights P						
303.4	Land & Land Rights WT						
303.5	Land & Land Rights TD	8,324					
	Total Utility Plant in Service	$ 65,606,418		$ 2,257,372		$ 2,217,098	$ (40,274)

Arizona American Water

Schedule E-5

Comparison of Depreciation Expense
Under Present and Recommended Depreciation Rates
Anthem Water System

		Adjusted	Annual Depreciation				
		Balances	Present		Recommended		
A/C No.	Description	at June 2010	Rate	Amount	Rate	Amount	Difference
	Source of Supply & Pumping:						
304.1	Structures & Improvements	$ 4,724,837	2.50%	$ 118,121	3.00%	$ 141,745	$ 23,624
305.0	Coll. & Impdg. Reservoirs	305,278	2.50%	7,632	2.00%	6,106	(1,526)
306.0	Lake & River Intakes	405,221	2.50%	10,131	2.00%	8,104	(2,026)
307.0	Wells & Springs	92,902	2.52%	2,341	2.50%	2,323	(19)
308.0	Infiltration Galleries	245,768	6.67%	16,393	2.50%	6,144	(10,249)
309.0	Supply Mains		0.00%	-	2.50%	-	-
304.2	Structures & Improvements	2,827,189	1.67%	47,214	2.40%	67,853	20,638
310.0	Power Generation Equipment*	8,093	0.00%	-	3.33%	270	270
311.0	Pumping Equipment*	32,792			4.60%		
311.2	Electric Pumping Equipment	11,694,443	4.42%	516,894	4.60%	537,944	21,050
311.3	Diesel Pumping Equipment		4.42%	-	4.60%	-	-
311.6	Other Pumping Equipment	10,327	4.42%	456	4.60%	475	19
	Water Treatment Equipment:						
304.3	Structures & Improvements*	1,058,498	1.67%	17,677	2.40%	25,404	7,727
311.53	Pumping Equipment WT		4.42%	-	5.75%	-	-
320.0	WT Equip Non-Media*	11,219,787	4.00%	448,791	5.75%	645,138	196,346
320.2	WT Equip Filter Media*	829,836	4.00%	33,193	11.50%	95,431	62,238
	Transmission & Distribution Plant:						
304.4	Structures & Improvements	112,667	1.67%	1,882	2.40%	2,704	822
330.0	Distr. Reserv. & Standpipes*	6,560,827	1.67%	109,566	1.85%	121,123	11,557
330.1	Elevated Tanks & Standpipes		1.67%	-	1.85%	-	-
330.2	Ground Level Facilities		1.67%	-	1.85%	-	-
330.4	Clearwell		1.67%	-	2.40%	-	-
331.0	TD Mains Not Classified by Size*	31,354,927	1.53%	479,730	2.14%	671,891	192,161
331.1	TD Mains 4in & Less		1.53%	-	3.00%	-	-
331.2	TD Mains 6in to 8in		1.53%	-	2.14%	-	-
331.3	TD Mains 10in to 16in		1.53%	-	2.14%	-	-
331.4	TD Mains 18in & Grtr		2.34%	-	2.14%	-	-
332.0	Fire Mains		0.00%	-	2.14%	-	-
333.1	Services*	2,110,469	2.48%	52,340	3.75%	79,143	26,803
334.1	Meters*	837,289	6.67%	55,847	6.00%	50,237	(5,610)
334.2	Meter Installations*	353,074	2.51%	8,862	2.50%	8,827	(35)
334.3	Meter Vaults	14,599	2.51%	366	2.51%	366	-
335.0	Hydrants*	2,047,188	2.00%	40,944	2.99%	61,262	20,318
339.3	Other P/E Misc		3.31%	-	3.33%	-	-
339.6	Other P/E CPS		3.31%	-	3.33%	-	-
	General Plant:						
304.5	Structures & Improvements		1.67%	-	3.00%	-	-
304.6	Struct & Imp Offices	110,668	2.03%	2,247	3.00%	3,320	1,073
340.1	Office Furniture & Equip	154,510	4.04%	6,242	4.50%	6,953	711
340.2	Comp & Periph Equip	9,527	4.04%	385	10.00%	953	568
340.3	Computer Software	4,150	37.71%	1,565	20.00%	830	(735)
340.33	Computer Software - Other		37.71%	-	20.00%	-	-
341.0	Trans Equip Lt Duty Trks	84,822	20.00%	16,964	16.00%	13,571	(3,393)
341.2	Trans Equip Hvy Duty Trks	60,218	15.00%	9,033	11.43%	6,882	(2,151)
341.4	Trans Equip Other	17,286	25.00%	4,322	13.33%	2,305	(2,017)
342.0	Stores Equipment		0%	-	4.00%	-	-
343.0	Tools, Shop & Garage Equipment	33,521	4.02%	1,348	4.00%	1,341	(7)
344.0	Laboratory Equipment	118,788	3.71%	4,407	4.00%	4,752	344
345.0	Power Operated Equipment	4,719	5.20%	245	4.00%	189	(57)
346.1	Comm Equip Non-Telephone	137,719	10.30%	14,185	10.00%	13,772	(413)
346.2	Remote Control & Instrumentati	6,610	10.30%	681	10.00%	661	(20)
346.2	Comm Equip Telephone	22,846	10.30%	2,353	10.00%	2,285	(69)
346.3	Comm Equip Other	12,107	4.93%	597	10.00%	1,211	614
347.0	Other Miscellaneous Equipment	-	4.98%	-	6.25%	-	-
	Total Depreciable Property	$ 77,623,504		$ 2,032,954		$ 2,591,513	$ 558,559
301.0	Organization						
302.0	Franchises	4,719,239					
303.2	Land & Land Rights SS	6,014,990					
303.3	Land & Land Rights P	20,000					
303.4	Land & Land Rights WT						
303.5	Land & Land Rights TD						
	Total Utility Plant in Service	$ 88,377,733		$ 2,032,954		$ 2,591,513	$ 558,559

* Includes "unclassified" accounts totaling $2,705,725

Arizona American Water Schedule E-6

Comparison of Depreciation Expense
Under Present and Recommended Depreciation Rates
Sun City West Water System

A/C No.	Description	Adjusted Balances at June 2010	Annual Depreciation Present Rate	Present Amount	Recommended Rate	Recommended Amount	Difference
	Source of Supply & Pumping:						
304.1	Structures & Improvements	$ 317,824	2.50%	$ 7,946	3.00%	$ 9,535	$ 1,589
305.0	Coll. & Impdg. Reservoirs		0.00%	-	2.00%	-	-
306.0	Lake & River Intakes		0.00%	-	2.00%	-	-
307.0	Wells & Springs	2,587,202	2.52%	65,197	2.50%	64,680	(517)
308.0	Infiltration Galleries		0.00%		2.50%		
309.0	Supply Mains		0.00%	-	2.50%	-	-
304.2	Structures & Improvements	230,844	1.67%	3,855	2.40%	5,540	1,685
310.0	Power Generation Equipment	36,087	3.33%	1,202	3.33%	1,203	1
311.0	Pumping Equipment*	590,499	0.00%	-	4.60%	27,163	27,163
311.2	Electric Pumping Equipment	4,889,874	4.42%	216,132	4.60%	224,934	8,802
311.3	Diesel Pumping Equipment	4,505	4.42%	199	4.60%	207	8
311.4	Hydraulic Pumping Equipment		4.42%		4.60%		
311.6	Other Pumping Equipment	1,764	4.42%	78	4.60%	81	3
	Water Treatment Equipment:						
304.3	Structures & Improvements	7,416,286	1.67%	123,852	2.40%	177,991	54,139
311.53	Pumping Equipment WT	20,067	4.42%	887	5.75%	1,154	267
320.0	WT Equip Non-Media*	6,316,653	4.00%	252,666	5.75%	363,208	110,541
320.2	WT Equip Filter Media	51,812	4.00%	2,072	11.50%	5,958	3,886
	Transmission & Distribution Plant:						
304.4	Structures & Improvements		0.00%	-	2.40%	-	-
311.54	Pumping Equipment TD		4.42%		4.60%		
330.0	Distr. Reserv. & Standpipes	760,063	1.67%	12,693	1.85%	14,032	1,339
330.1	Elevated Tanks & Standpipes		0.00%	-	1.85%	-	-
330.2	Ground Level Facilities		0.00%	-	1.85%	-	-
330.3	Below Ground Tanks		0.00%		1.85%		
330.4	Clearwell		0.00%	-	2.40%	-	-
331.0	TD Mains Not Classified by Size*	14,362,613	1.53%	219,748	2.14%	307,770	88,022
331.1	TD Mains 4in & Less		1.53%	-	3.00%	-	-
331.2	TD Mains 6in to 8in		1.53%	-	2.14%	-	-
331.3	TD Mains 10in to 16in		1.53%	-	2.14%	-	-
331.4	TD Mains 18in & Grtr		2.34%	-	2.14%	-	-
332.0	Fire Mains	169	0.00%	-	2.14%	4	4
333.1	Services*	7,509,733	2.48%	186,241	3.75%	281,615	95,374
334.1	Meters	2,195,354	6.67%	146,430	6.00%	131,721	(14,709)
334.2	Meter Installations	148,392	2.51%	3,725	2.50%	3,710	(15)
334.3	Meter Vaults	3,213	2.51%	81	2.51%	81	-
335.0	Hydrants*	1,980,695	2.00%	39,614	2.99%	59,272	19,658
339.3	Other P/E Misc		0.00%	-	3.33%	-	-
339.6	Other P/E CPS		0.00%	-	3.33%	-	-
	General Plant:						
304.5	Structures & Improvements		0.00%	-	3.00%	-	-
304.6	Struct & Imp Offices	16,827	1.67%	281	3.00%	505	224
340.1	Office Furniture & Equip	18,973	4.59%	871	4.50%	854	(17)
340.2	Comp & Periph Equip	34,910	4.59%	1,602	10.00%	3,491	1,889
340.3	Computer Software	4,885	37.71%	1,842	20.00%	977	(865)
340.3	Computer Software - Other		37.71%	-	20.00%	-	-
341.0	Trans Equip Lt Duty Trks	206,537	20.00%	41,307	16.00%	33,046	(8,261)
341.2	Trans Equip Hvy Duty Trks	21,027	15.00%	3,154	11.43%	2,403	(751)
341.4	Trans Equip Other		0.00%	-	13.33%	-	-
342.0	Stores Equipment	-	3.91%		4.00%	-	-
343.0	Tools, Shop & Garage Equipment	19,372	4.02%	779	4.00%	775	(4)
344.0	Laboratory Equipment	1,606	3.71%	60	4.00%	64	5
345.0	Power Operated Equipment	223,817	5.02%	11,236	4.00%	8,953	(2,283)
346.1	Comm Equip Non-Telephone	165,055	10.30%	17,001	10.00%	16,506	(495)
346.2	Remote Control & Instrumentati	17,150	10.30%	1,766	10.00%	1,715	(51)
346.2	Comm Equip Telephone	(1,140)	10.30%	(117)	10.00%	(114)	3
346.3	Comm Equip Other	1,339	4.93%	66	10.00%	134	68
347.0	Other Miscellaneous Equipment*	22,834	6.19%	1,413	6.25%	1,427	14
	Total Depreciable Property	$ 50,176,842		$ 1,363,880		$ 1,750,594	$ 386,714
301.0	Organization	20,086					
302.0	Franchises	1,346					
303.2	Land & Land Rights SS	11,651					
303.3	Land & Land Rights P	44,957					
303.4	Land & Land Rights WT						
303.5	Land & Land Rights TD						
	Total Utility Plant in Service	$ 50,254,882		$ 1,363,880		$ 1,750,594	$ 386,714

* Includes "unclassified" accounts totaling $185,953

Arizona American Water

Schedule E-7

Comparison of Depreciation Expense
Under Present and Recommended Depreciation Rates
Sun City Water System

A/C No.	Description	Adjusted Balances at June 2010	Annual Depreciation: Present Rate	Present Amount	Recommended Rate	Recommended Amount	Difference
	Source of Supply & Pumping						
304.1	Structures & Improvements	$ 1,737,000	2.50%	$ 43,425	3.00%	$ 52,110	$ 8,685
305.0	Coll. & Impdg. Reservoirs	314	2.50%	8	2.00%	6	(2)
306.0	Lake & River Intakes		0.00%	-	2.00%	-	-
307.0	Wells & Springs*	5,119,662	2.52%	129,015	2.50%	127,992	(1,024)
308.0	Infiltration Galleries		0.00%		2.50%		
309.0	Supply Mains	346,397	2.00%	6,928	2.50%	8,660	1,732
304.2	Structures & Improvements	2,792,474	1.67%	46,634	2.40%	67,019	20,385
310.0	Power Generation Equipment	802,803	4.42%	35,484	3.33%	26,760	(8,724)
311.0	Pumping Equipment*	2,766,467	0.00%	-	4.60%	127,258	127,258
311.2	Electric Pumping Equipment	6,591,121	4.42%	291,328	4.60%	303,192	11,864
311.3	Diesel Pumping Equipment	36,032	5.00%	1,802	4.60%	1,657	(144)
311.4	Hydraulic Pumping Equipment		5.00%		4.60%		
311.6	Other Pumping Equipment	142,073	2.01%	2,856	4.60%	6,535	3,680
	Water Treatment Equipment						
304.3	Structures & Improvements	126,815	1.67%	2,118	2.40%	3,044	926
311.53	Pumping Equipment WT		0.00%	-	5.75%	-	-
320.0	WT Equip Non-Media*	760,663	4.00%	30,427	5.75%	43,738	13,312
320.2	WT Equip Filter Media		0.00%	-	11.50%	-	-
	Transmission & Distribution Plant:						
304.4	Structures & Improvements	34,162	2.00%	683	2.40%	820	137
311.54	Pumping Equipment TD		0.00%		4.60%		
330.0	Distr. Reserv. & Standpipes	3,555,083	1.67%	59,370	1.85%	65,632	6,262
330.1	Elevated Tanks & Standpipes		0.00%	-	1.85%	-	-
330.2	Ground Level Facilities	7,083	1.67%	118	1.85%	131	12
330.3	Below Ground Tanks		0.00%		1.85%		
330.4	Clearwell		0.00%	-	2.40%	-	-
331.0	TD Mains Not Classified by Size*	22,145,266	1.53%	338,823	2.14%	474,541	135,719
331.1	TD Mains 4in & Less		1.53%	-	3.00%	-	-
331.2	TD Mains 6in to 8in		1.53%	-	2.14%	-	-
331.3	TD Mains 10in to 16in		1.53%	-	2.14%	-	-
331.4	TD Mains 18in & Grtr		1.53%	-	2.14%	-	-
332.0	Fire Mains		0.00%	-	2.14%	-	-
333.1	Services*	5,977,534	2.48%	148,243	3.75%	224,158	75,915
334.1	Meters*	3,860,887	2.51%	96,908	6.00%	231,653	134,745
334.2	Meter Installations	595,560	2.51%	14,949	2.50%	14,889	(60)
334.3	Meter Vaults	35	2.51%	1	2.51%	1	-
335.0	Hydrants*	2,575,934	2.00%	51,519	2.99%	77,085	25,566
339.1	Other P/E Intangible	-	2.00%	-	3.33%	-	-
339.5	Other P/E TD	523	2.00%	10	3.33%	17	7
	General Plant:						
304.5	Structures & Improvements*	405,756	4.63%	18,787	3.00%	12,173	(6,614)
304.6	Struct & Imp Offices	47,528	4.63%	2,201	3.00%	1,426	(775)
304.8	Struct & Imp Misc	1,384,815	1.67%	23,126	3.00%	41,544	18,418
340.1	Office Furniture & Equip	804,237	4.59%	36,914	4.50%	36,191	(724)
340.2	Comp & Periph Equip	240,527	4.59%	11,040	10.00%	24,053	13,012
340.3	Computer Software	48,318	37.71%	18,221	20.00%	9,664	(8,557)
340.3	Computer Software - Other		37.71%	-	20.00%	-	-
340.5	Other Office Equipment	3,854	4.59%	177	6.33%	244	67
341.0	Trans Equip Lt Duty Trks	996,598	25.00%	249,149	16.00%	159,456	(89,694)
341.2	Trans Equip Hvy Duty Trks	23,777	25.00%	5,944	11.43%	2,717	(3,227)
341.4	Trans Equip Other*	14,010	25.00%	3,502	13.33%	1,868	(1,634)
342.0	Stores Equipment	20,135	3.91%		4.00%	805	805
343.0	Tools, Shop & Garage Equipment*	318,990	4.02%	12,823	4.00%	12,760	(64)
344.0	Laboratory Equipment	104,946	3.71%	3,894	4.00%	4,198	304
345.0	Power Operated Equipment	151,899	5.20%	7,899	4.00%	6,076	(1,823)
346.1	Comm Equip Non-Telephone	219,084	10.30%	22,566	10.00%	21,908	(657)
346.2	Remote Control & Instrumentati	27,765	10.30%	2,860	10.00%	2,777	(83)
346.2	Comm Equip Telephone	1,126	10.30%	116	10.00%	113	(3)
346.3	Comm Equip Other	174,797	4.93%	8,618	10.00%	17,480	8,862
347.0	Other Miscellaneous Equipment	6,669	6.19%	413	6.25%	417	4
	Total Depreciable Property	$ 64,968,719		$ 1,728,897		$ 2,212,766	$ 483,869
301.0	Organization	471					
302.0	Franchises						
303.2	Land & Land Rights SS	180,023					
303.3	Land & Land Rights P	8,456					
303.4	Land & Land Rights WT						
303.5	Land & Land Rights TD	10,493					
303.6	Land & Land Rights General	2,125					
	Total Utility Plant in Service	$ 65,170,286		$ 1,728,897		$ 2,212,766	$ 483,869

*I ncludes "unclassified" accounts totaling $1,485,396

Arizona American Water — Schedule E-8

Comparison of Depreciation Expense
Under Present and Recommended Depreciation Rates
Tubac Water System

A/C No.	Description	Adjusted Balances at June 2010	Annual Depreciation Present Rate	Present Amount	Recommended Rate	Recommended Amount	Difference
	Source of Supply & Pumping:						
304.1	Structures & Improvements	$ 25,292	2.40%	$ 607	3.00%	$ 759	$ 152
305.0	Coll. & Impdg. Reservoirs		0.00%	-	2.00%	-	-
306.0	Lake & River Intakes		0.00%	-	2.00%	-	-
307.0	Wells & Springs	239,322	3.08%	7,371	2.50%	5,983	(1,388)
308.0	Infiltration Galleries		0.00%		2.50%		
309.0	Supply Mains		0.00%	-	2.50%	-	-
304.2	Structures & Improvements	14,608	1.94%	283	2.40%	351	67
310.0	Power Generation Equipment	20,225	3.33%	673	3.33%	674	1
311.0	Pumping Equipment	6,944	0.00%	-	4.60%	319	319
311.2	Electric Pumping Equipment	271,625	4.24%	11,517	4.60%	12,495	978
311.3	Diesel Pumping Equipment	879	5.00%	44	4.60%	40	(4)
311.4	Hydraulic Pumping Equipment		0.00%	-	4.60%	-	-
311.6	Other Pumping Equipment	403,823	4.24%	17,122	4.60%	18,576	1,454
	Water Treatment Equipment:						
304.3	Structures & Improvements	302	0.00%	-	2.40%	7	7
311.53	Pumping Equipment WT		0.00%	-	5.75%	-	-
320.0	WT Equip Non-Media	1,703,508	4.00%	68,140	5.75%	97,952	29,811
320.2	WT Equip Filter Media	249,315	4.00%	9,973	11.50%	28,671	18,699
	Transmission & Distribution Plant:						
304.4	Structures & Improvements	156	1.92%	3	2.40%	4	1
311.54	Pumping Equipment TD		0.00%	-	4.60%	-	-
330.0	Distr. Reserv. & Standpipes	151,204	1.62%	2,449	1.85%	2,791	342
330.1	Elevated Tanks & Standpipes		0.00%	-	1.85%	-	-
330.2	Ground Level Facilities		0.00%	-	1.85%	-	-
330.3	Below Ground Tanks		0.00%		1.85%		
330.4	Clearwell		0.00%	-	2.40%	-	-
331.0	TD Mains Not Classified by Size*	1,992,414	1.97%	39,251	2.14%	42,695	3,444
331.1	TD Mains 4in & Less		1.97%	-	3.00%	-	-
331.2	TD Mains 6in to 8in		1.97%	-	2.14%	-	-
331.3	TD Mains 10in to 16in		1.97%	-	2.14%	-	-
331.4	TD Mains 18in & Grtr		2.34%	-	2.14%	-	-
332.0	Fire Mains		0.00%	-	2.14%	-	-
333.1	Services*	526,680	2.45%	12,904	3.75%	19,751	6,847
334.1	Meters*	119,993	6.67%	8,004	6.00%	7,200	(804)
334.2	Meter Installations	20,330	2.42%	492	2.50%	508	16
334.3	Meter Vaults		0.00%	-	2.51%	-	-
335.0	Hydrants*	128,444	1.97%	2,530	2.99%	3,844	1,313
339.3	Other P/E Misc		0.00%	-	3.33%	-	-
339.6	Other P/E CPS		0.00%	-	3.33%	-	-
	General Plant:						
304.5	Structures & Improvements		0.00%	-	3.00%	-	-
304.6	Struct & Imp Offices	498	2.89%	14	3.00%	15	1
304.7	Struct & Imp Store, Shop, Garage	37,407	0.00%	-	3.00%	1,122	1,122
340.1	Office Furniture & Equip	5,453	3.28%	179	4.50%	245	67
340.2	Comp & Periph Equip	1,336	20.00%	267	10.00%	134	(134)
340.3	Computer Software		0.00%	-	20.00%	-	-
340.3	Computer Software - Other		0.00%	-	20.00%	-	-
341.0	Trans Equip Lt Duty Trks	17,166	20.00%	3,433	16.00%	2,746	(687)
341.2	Trans Equip Hvy Duty Trks		0.00%	-	11.43%	-	-
341.4	Trans Equip Other		0.00%	-	13.33%	-	-
342.0	Stores Equipment	-	4.00%	-	4.00%	-	-
343.0	Tools, Shop & Garage Equipment	14,447	3.42%	494	4.00%	578	84
344.0	Laboratory Equipment		0.00%	-	4.00%	-	-
345.0	Power Operated Equipment		4.64%	-	4.00%	-	-
346.1	Comm Equip Non-Telephone	1,932	5.03%	97	10.00%	193	96
346.2	Remote Control & Instrumentati		0.00%	-	10.00%	-	-
346.2	Comm Equip Telephone		0.00%	-	10.00%	-	-
346.3	Comm Equip Other	659	4.93%	32	10.00%	66	33
347.0	Other Miscellaneous Equipment		0.00%	-	6.25%	-	-
	Total Depreciable Property	$ 5,953,961		$ 185,881		$ 247,719	$ 61,838
301.0	Organization	567					
302.0	Franchises	2,030					
303.2	Land & Land Rights SS	61,190					
303.3	Land & Land Rights P	50					
303.4	Land & Land Rights WT	50					
303.5	Land & Land Rights TD	422					
303.5	Land & Land Rights General	2,755					
	Total Utility Plant in Service	$ 6,021,025		$ 185,881		$ 247,719	$ 61,838

*In cludes "unclassified" accounts totaling $538,354

Arizona American Water

Schedule E-9

Comparison of Depreciation Expense
Under Present and Recommended Depreciation Rates
Agua Fria Wastewater System

A/C No.	Description	Adjusted Balances at June 2010	Present Rate	Present Amount	Recommended Rate	Recommended Amount	Difference
	Collection Plant						
354.2	Structures and Improvements	$ 619,777	1.67%	$ 10,350	4.00%	$ 24,791	$ 14,441
355.0	Power Generation Equipment		5.00%	-	3.33%	-	-
355.5	Power Generation Equipment - RWTP		5.00%	-	3.33%	-	-
360.0	Collection Sewers - Force	2,532,763	2.07%	52,428	2.14%	54,273	1,845
361.0	Collection Sewers - Gravity*	33,452,298	2.04%	682,427	2.14%	716,835	34,408
362.0	Special Collecting Structures		0.00%	-	4.00%	-	-
363.0	Service to Customers*	4,863,335	2.04%	99,212	3.00%	145,900	46,688
364.0	Flow Measuring Devices	73,548	5.42%	3,986	6.67%	4,903	917
	Pumping Plant						
354.3	Structures and Improvements		0.00%	-	4.00%	-	-
355.3	Power Generation Equip - Pumping		5.00%	-	3.33%	-	-
370.0	Receiving Wells	1,057,746	5.42%	57,330	4.00%	42,310	(15,020)
371.0	Pumping Equipment		5.42%	-	5.75%	-	-
371.1	Pumping Equipment - Electric	1,212,750	5.42%	65,731	5.75%	69,733	4,002
371.2	Pumping Equipment - Other Power		5.42%	-	5.75%	-	-
	Treatment Plant						
354.4	Structures and Improvements	4,666,386	1.67%	77,929	2.40%	111,993	34,065
355.4	Power Generation Equip - Treatment	158,648	0.00%	-	3.33%	5,288	5,288
380.0	Treatment & Disposal Equip.	12,290,010	5.00%	614,501	5.75%	706,676	92,175
380.1	Treatment & Disposal Equip.		5.00%	-	5.75%	-	-
380.2	Treatment & Disposal Equip.		5.00%	-	5.75%	-	-
380.3	Treatment & Disposal Equip.		0.00%	-	5.75%	-	-
380.4	Treatment & Disposal Equip.		5.00%	-	5.75%	-	-
380.5	Treatment & Disposal Equip.		5.00%	-	5.75%	-	-
380.6	Treatment & Disposal Equip.		8.40%	-	5.75%	-	-
380.65	Treatment & Disposal Equip.		0.00%	-	5.75%	-	-
381.0	Plant Sewers	696,115	5.00%	34,806	2.40%	16,707	(18,099)
382.0	Outfall Sewer Lines	170,000	5.00%	8,500	1.67%	2,833	(5,667)
389.1	WW Other Plt & Misc. Equip. Intangible	155,318	4.98%	7,735	5.00%	7,766	31
389.6	Other P/E - CPS		0.00%	-	3.33%	-	-
	General Plant						
354.5	Structures and Improvements	2,852,137	1.68%	47,916	3.00%	85,564	37,648
390.0	Office Furniture & Equipment		0.00%	-	4.50%	-	-
390.2	Computers & Peripheral		0.00%	-	12.00%	-	-
390.3	Computer Software	7,341	25.00%	1,835	20.00%	1,468	(367)
391.0	Transportation Equipment	3,033	0.00%	-	16.00%	485	485
392.0	Stores Equipment		0.00%	-	4.00%	-	-
393.0	Tools, Shop and Garage Equip.		0.00%	-	4.00%	-	-
394.0	Laboratory Equipment		3.71%	-	4.00%	-	-
395.0	Power Operated Equipment	157,993	5.02%	7,931	4.00%	6,320	(1,612)
396.0	Communication Equipment	1,492,751	10.30%	153,753	10.00%	149,275	(4,478)
397.0	Miscellaneous Equipment		0.00%	-	6.67%	-	-
398.0	Other Tangible Plant	-	0.00%	-	10.00%	-	-
	Total Depreciable Property	$ 66,461,949		########		########	$ 226,751
351.0	Organization						
352.0	Franchises	218,285					
353.2	Land & Land Rights Collection	16,810					
352.3	Land & Land Rights P						
353.4	Land & Land Rights TD						
353.5	Land & Land Rights General	143,036					
	Total Utility Collection Plant	$ 66,840,080		########		########	$ 226,751

* Includes "unclassified" accounts totaling $1,147,207

Arizona American Water

Schedule E-10

Comparison of Depreciation Expense
Under Present and Recommended Depreciation Rates
Mohave Wastewater System

		Adjusted	Annual Depreciation				
		Balances	Present		Recommended		
A/C No.	Description	at June 2010	Rate	Amount	Rate	Amount	Difference
	Collection Plant						
354.2	Structures and Improvements	$ 196,581	2.80%	$ 5,504	4.00%	$ 7,863	$ 2,359
355.0	Power Generation Equipment		3.33%	-	3.33%	-	-
355.5	Power Generation Equipment - RWTP		0.00%	-	3.33%	-	-
360.0	Collection Sewers - Force	5,379	2.00%	108	2.14%	115	8
361.0	Collection Sewers - Gravity*	2,090,374	2.00%	41,807	2.14%	44,794	2,986
362.0	Special Collecting Structures	138,063	2.00%	2,761	4.00%	5,523	2,761
363.0	Service to Customers*	343,739	2.04%	7,012	3.00%	10,312	3,300
364.0	Flow Measuring Devices	23,113	5.42%	1,253	6.67%	1,541	288
	Pumping Plant						
354.3	Structures and Improvements		0.00%	-	4.00%	-	-
355.3	Power Generation Equip - Pumping		3.33%	-	3.33%	-	-
370.0	Receiving Wells		0.00%	-	4.00%	-	-
371.0	Pumping Equipment		5.42%	-	5.75%	-	-
371.1	Pumping Equipment - Electric	47,384	5.42%	2,568	5.75%	2,725	156
371.2	Pumping Equipment - Other Power		5.42%	-	5.75%	-	-
	Treatment Plant						
354.4	Structures and Improvements*	1,011,333	2.80%	28,317	2.40%	24,272	(4,045)
355.4	Power Generation Equip - Treatment	186,434	0.00%	-	3.33%	6,214	6,214
380.0	Treatment & Disposal Equip.*	3,570,167	5.00%	178,508	5.75%	205,285	26,776
380.1	Treatment & Disposal Equip.		3.60%	-	5.75%	-	-
380.2	Treatment & Disposal Equip.		0.00%	-	5.75%	-	-
380.3	Treatment & Disposal Equip.		5.00%	-	5.75%	-	-
380.4	Treatment & Disposal Equip.		5.00%	-	5.75%	-	-
380.5	Treatment & Disposal Equip.		5.00%	-	5.75%	-	-
380.6	Treatment & Disposal Equip.		5.00%	-	5.75%	-	-
380.65	Treatment & Disposal Equip.		0.00%	-	5.75%	-	-
381.0	Plant Sewers		0.00%	-	2.40%	-	-
382.0	Outfall Sewer Lines		0.00%	-	1.67%	-	-
389.1	WW Other Plt & Misc. Equip. Intangible		0.00%	-	5.00%	-	-
389.6	Other P/E - CPS		0.00%	-	3.33%	-	-
	General Plant						
354.5	Structures and Improvements		0.00%	-	3.00%	-	-
390.0	Office Furniture & Equipment		0.00%	-	4.50%	-	-
390.2	Computers & Peripheral	10,496	4.04%	424	12.00%	1,260	836
390.3	Computer Software		0.00%	-	20.00%	-	-
391.0	Transportation Equipment		0.00%	-	16.00%	-	-
392.0	Stores Equipment		0.00%	-	4.00%	-	-
393.0	Tools, Shop and Garage Equip.	61,577	4.47%	2,752	4.00%	2,463	(289)
394.0	Laboratory Equipment	3,983	3.71%	148	4.00%	159	12
395.0	Power Operated Equipment	16,703	5.02%	838	4.00%	668	(170)
396.0	Communication Equipment	26,205	10.30%	2,699	10.00%	2,621	(79)
397.0	Miscellaneous Equipment	10,698	5.10%	546	6.67%	713	168
398.0	Other Tangible Plant		0.00%	-	10.00%	-	-
	Total Depreciable Property	$ 7,742,229		$ 275,247		$ 316,527	$ 41,280
351.0	Organization						
352.0	Franchises	364					
353.2	Land & Land Rights Collection						
352.3	Land & Land Rights P						
353.4	Land & Land Rights TD						
353.5	Land & Land Rights General						
	Total Utility Collection Plant	$ 7,742,593		$ 275,247		$ 316,527	$ 41,280

* Includes "unclassified" accounts totaling $593,291

Arizona American Water

Schedule E-11

Comparison of Depreciation Expense
Under Present and Recommended Depreciation Rates
Anthem Wastewater System

A/C No.	Description	Adjusted Balances at June 2010	Annual Depreciation Present Rate	Present Amount	Recommended Rate	Recommended Amount	Difference
	Collection Plant						
354.2	Structures and Improvements	$ 1,428,107	1.67%	$ 23,849	4.00%	$ 57,124	$ 33,275
355.0	Power Generation Equipment		0.00%	-	3.33%	-	-
355.5	Power Generation Equipment - RWTP		0.00%	-	3.33%	-	-
360.0	Collection Sewers - Force	199,642	2.07%	4,133	2.14%	4,278	145
361.0	Collection Sewers - Gravity*	12,639,539	2.04%	257,847	2.14%	270,847	13,001
362.0	Special Collecting Structures	181,571	8.40%	15,252	4.00%	7,263	(7,989)
363.0	Service to Customers	1,477,509	2.04%	30,141	3.00%	44,325	14,184
364.0	Flow Measuring Devices	416,950	5.42%	22,599	6.67%	27,797	5,198
	Pumping Plant						
354.3	Structures and Improvements		0.00%	-	4.00%	-	-
355.3	Power Generation Equip - Pumping		0.00%	-	3.33%	-	-
370.0	Receiving Wells	1,068,343	5.42%	57,904	4.00%	42,734	(15,170)
371.0	Pumping Equipment		5.42%	-	5.75%	-	-
371.1	Pumping Equipment - Electric	1,250,371	5.42%	67,770	5.75%	71,896	4,126
371.2	Pumping Equipment - Other Power	6,216	5.42%	337	5.75%	357	21
	Treatment Plant						
354.4	Structures and Improvements	1,233,512	1.67%	20,600	2.40%	29,604	9,005
355.4	Power Generation Equip - Treatment		0.00%	-	3.33%	-	-
380.0	Treatment & Disposal Equip.	23,874,620	5.00%	1,193,731	5.75%	1,372,791	179,060
380.1	Treatment & Disposal Equip.		5.00%	-	5.75%	-	-
380.2	Treatment & Disposal Equip.		5.00%	-	5.75%	-	-
380.3	Treatment & Disposal Equip.		5.00%	-	5.75%	-	-
380.4	Treatment & Disposal Equip.		0.00%	-	5.75%	-	-
380.5	Treatment & Disposal Equip.		5.00%	-	5.75%	-	-
380.6	Treatment & Disposal Equip.		8.40%	-	5.75%	-	-
380.65	Treatment & Disposal Equip.		8.40%	-	5.75%	-	-
381.0	Plant Sewers		5.00%	-	2.40%	-	-
382.0	Outfall Sewer Lines	555,499	5.00%	27,775	1.67%	9,258	(18,517)
389.1	WW Other Plt & Misc. Equip. Intangible	868,706	4.98%	43,262	5.00%	43,435	174
389.6	Other P/E - CPS		3.31%	-	3.33%	-	-
	General Plant						
354.5	Structures and Improvements*	7,776,747	1.68%	130,649	3.00%	233,302	102,653
390.0	Office Furniture & Equipment	31,682	4.59%	1,454	4.50%	1,426	(29)
390.2	Computers & Peripheral		0.00%	-	12.00%	-	-
390.3	Computer Software	3,506	25.00%	876	20.00%	701	(175)
391.0	Transportation Equipment		0.00%	-	16.00%	-	-
392.0	Stores Equipment		0.00%	-	4.00%	-	-
393.0	Tools, Shop and Garage Equip.	16,453	4.47%	735	4.00%	658	(77)
394.0	Laboratory Equipment	45,015	3.71%	1,670	4.00%	1,801	131
395.0	Power Operated Equipment	870,927	5.02%	43,721	4.00%	34,837	(8,883)
396.0	Communication Equipment	684,087	10.30%	70,461	10.00%	68,409	(2,052)
397.0	Miscellaneous Equipment	1,761	5.10%	90	6.67%	117	28
398.0	Other Tangible Plant	-	0.00%	-	10.00%	-	-
	Total Depreciable Property	$ 54,630,763		$ 2,014,856		$ 2,322,962	$ 308,106
351.0	Organization						
352.0	Franchises	276,772					
353.2	Land & Land Rights Collection	336,560					
352.3	Land & Land Rights P						
353.4	Land & Land Rights TD						
353.5	Land & Land Rights General						
	Total Utility Collection Plant	$ 55,244,095		$ 2,014,856		$ 2,322,962	$ 308,106

* Includes "unclassified" accounts totaling $55,186

Arizona American Water

Schedule E-12

Comparison of Depreciation Expense
Under Present and Recommended Depreciation Rates
Sun City West Wastewater System

A/C No.	Description	Adjusted Balances at June 2010	Annual Depreciation Present Rate	Present Amount	Recommended Rate	Recommended Amount	Difference
	Collection Plant						
354.2	Structures and Improvements	$ 144,607	5.00%	$ 7,230	4.00%	$ 5,784	$ (1,446)
355.0	Power Generation Equipment		3.33%	-	3.33%	-	-
355.5	Power Generation Equipment - RWTP		0.00%	-	3.33%	-	-
360.0	Collection Sewers - Force	752,939	2.07%	15,586	2.14%	16,134	549
361.0	Collection Sewers - Gravity*	13,106,855	2.04%	267,380	2.14%	280,861	13,481
362.0	Special Collecting Structures	949,015	8.40%	79,717	4.00%	37,961	(41,757)
363.0	Service to Customers*	2,669,470	2.04%	54,457	3.00%	80,084	25,627
364.0	Flow Measuring Devices		10.00%	-	6.67%	-	-
	Pumping Plant						
354.3	Structures and Improvements		5.00%	-	4.00%	-	-
355.3	Power Generation Equip - Pumping	48,879	3.33%	1,628	3.33%	1,629	2
370.0	Receiving Wells		0.00%	-	4.00%	-	-
371.0	Pumping Equipment		5.42%	-	5.75%	-	-
371.1	Pumping Equipment - Electric	27,605	5.42%	1,496	5.75%	1,587	91
371.2	Pumping Equipment - Other Power		5.42%	-	5.75%	-	-
	Treatment Plant						
354.4	Structures and Improvements		0.00%	-	2.40%	-	-
355.4	Power Generation Equip - Treatment		0.00%	-	3.33%	-	-
380.0	Treatment & Disposal Equip.	137,197	5.00%	6,860	5.75%	7,889	1,029
380.1	Treatment & Disposal Equip.		5.00%	-	5.75%	-	-
380.2	Treatment & Disposal Equip.		5.00%	-	5.75%	-	-
380.3	Treatment & Disposal Equip.		5.00%	-	5.75%	-	-
380.4	Treatment & Disposal Equip.		5.00%	-	5.75%	-	-
380.5	Treatment & Disposal Equip.		5.00%	-	5.75%	-	-
380.6	Treatment & Disposal Equip.		5.00%	-	5.75%	-	-
380.65	Treatment & Disposal Equip.		5.00%	-	5.75%	-	-
381.0	Plant Sewers		5.00%	-	2.40%	-	-
382.0	Outfall Sewer Lines	113,141	5.00%	5,657	1.67%	1,886	(3,771)
389.1	WW Other Plt & Misc. Equip. Intangible		4.98%	-	5.00%	-	-
389.6	Other P/E - CPS	4,239	3.31%	140	3.33%	141	1
	General Plant						
354.5	Structures and Improvements	85,771	1.67%	1,432	3.00%	2,573	1,141
390.0	Office Furniture & Equipment		4.59%	-	4.50%	-	-
390.2	Computers & Peripheral		4.59%	-	12.00%	-	-
390.3	Computer Software		25.00%	-	20.00%	-	-
391.0	Transportation Equipment		25.00%	-	16.00%	-	-
392.0	Stores Equipment		3.91%	-	4.00%	-	-
393.0	Tools, Shop and Garage Equip.		4.47%	-	4.00%	-	-
394.0	Laboratory Equipment		3.71%	-	4.00%	-	-
395.0	Power Operated Equipment	777	5.02%	39	4.00%	31	(8)
396.0	Communication Equipment	12,621	10.30%	1,300	10.00%	1,262	(38)
397.0	Miscellaneous Equipment	22,663	5.10%	1,156	6.67%	1,511	355
398.0	Other Tangible Plant		0.00%	-	10.00%	-	-
	Total Depreciable Property	$ 18,075,781		$ 444,079		$ 439,334	$ (4,745)
351.0	Organization	4,078					
352.0	Franchises	68					
353.2	Land & Land Rights Collection	-					
352.3	Land & Land Rights P						
353.4	Land & Land Rights TD						
353.5	Land & Land Rights General						
	Total Utility Collection Plant	$ 18,079,927		$ 444,079		$ 439,334	$ (4,745)

* Includes "unclassified" accounts totaling $4,428

Arizona American Water

Schedule E-13

Comparison of Depreciation Expense
Under Present and Recommended Depreciation Rates
Sun City Wastewater System

A/C No.	Description	Adjusted Balances at June 2010	Present Rate	Present Amount	Recommended Rate	Recommended Amount	Difference
	Collection Plant						
354.2	Structures and Improvements	$ 187,017	2.50%	$ 4,675	4.00%	$ 7,481	$ 2,805
355.0	Power Generation Equipment		3.33%	-	3.33%	-	-
355.5	Power Generation Equipment - RWTP		0.00%	-	3.33%	-	-
360.0	Collection Sewers - Force	2,397,611	2.07%	49,631	2.14%	51,377	1,747
361.0	Collection Sewers - Gravity*	16,070,011	2.03%	326,221	2.14%	344,357	18,136
362.0	Special Collecting Structures	1,218,147	8.40%	102,324	4.00%	48,726	(53,598)
363.0	Service to Customers*	2,687,688	2.04%	54,829	3.00%	80,631	25,802
364.0	Flow Measuring Devices	33,470	5.00%	1,674	6.67%	2,231	558
	Pumping Plant						
354.3	Structures and Improvements		0.00%	-	4.00%	-	-
355.3	Power Generation Equip - Pumping	10,101	3.33%	336	3.33%	337	0
370.0	Receiving Wells		0.00%	-	4.00%	-	-
371.0	Pumping Equipment		5.42%	-	5.75%	-	-
371.1	Pumping Equipment - Electric	495,398	5.42%	26,851	5.75%	28,485	1,635
371.2	Pumping Equipment - Other Power		5.42%	-	5.75%	-	-
	Treatment Plant						
354.4	Structures and Improvements		0.00%	-	2.40%	-	-
355.4	Power Generation Equip - Treatment	49,003	0.00%		3.33%		
380.0	Treatment & Disposal Equip.	119,911	2.00%	2,398	5.75%	6,895	4,497
380.1	Treatment & Disposal Equip.		2.00%	-	5.75%	-	-
380.2	Treatment & Disposal Equip.		2.00%	-	5.75%	-	-
380.3	Treatment & Disposal Equip.		0.00%	-	5.75%	-	-
380.4	Treatment & Disposal Equip.		0.00%	-	5.75%	-	-
380.5	Treatment & Disposal Equip.		0.00%	-	5.75%	-	-
380.6	Treatment & Disposal Equip.		2.00%	-	5.75%	-	-
380.65	Treatment & Disposal Equip.		2.00%	-	5.75%	-	-
381.0	Plant Sewers		0.00%	-	2.40%	-	-
382.0	Outfall Sewer Lines	291	2.00%	6	1.67%	5	(1)
389.1	WW Other Plt & Misc. Equip. Intangible	10,495	4.98%	523	5.00%	525	2
389.6	Other P/E - CPS	12,242	3.31%	405	3.33%	408	3
	General Plant						
354.5	Structures and Improvements	465,769	2.00%	9,315	3.00%	13,973	4,658
390.0	Office Furniture & Equipment	54,203	4.59%	2,488	4.50%	2,439	(49)
390.2	Computers & Peripheral		0.00%	-	12.00%	-	-
390.3	Computer Software		0.00%	-	20.00%	-	-
391.0	Transportation Equipment	2,312	25.00%	578	16.00%	370	(208)
392.0	Stores Equipment	58,644	0.00%	-	4.00%	2,346	2,346
393.0	Tools, Shop and Garage Equip.		4.47%	-	4.00%	-	-
394.0	Laboratory Equipment		3.71%	-	4.00%	-	-
395.0	Power Operated Equipment		0.00%	-	4.00%	-	-
396.0	Communication Equipment	23,222	10.28%	2,387	10.00%	2,322	(65)
397.0	Miscellaneous Equipment	8,321	5.10%	424	6.67%	555	130
398.0	Other Tangible Plant		10.30%	-	10.00%	-	-
	Total Depreciable Property	$ 23,903,855		$ 585,066		$ 593,463	$ 8,397
351.0	Organization	122,373					
352.0	Franchises	6,132					
353.2	Land & Land Rights Collection	6,565					
352.3	Land & Land Rights P						
353.4	Land & Land Rights TD						
353.5	Land & Land Rights General						
	Total Utility Collection Plant	$ 24,038,925		$ 585,066		$ 593,463	$ 8,397

* Includes "unclassified" accounts totaling $12,819

Comparison of Depreciation Expense
Under Present and Recommended Depreciation Rates
Northwest Valley Wastewater System

A/C No.	Description	Adjusted Balances at June 2010	Annual Depreciation Present Rate	Present Amount	Recommended Rate	Recommended Amount	Difference
	Collection Plant						
354.2	Structures and Improvements	$ 2,738,639	5.00%	$ 136,932	4.00%	$ 109,546	$ (27,386)
355.0	Power Generation Equipment	7,952	3.33%	265	3.33%	265	0
355.5	Power Generation Equipment - RWTP		0.00%	-	3.33%	-	-
360.0	Collection Sewers - Force		2.07%	-	2.14%	-	-
361.0	Collection Sewers - Gravity	109,750	2.04%	2,239	2.14%	2,352	113
362.0	Special Collecting Structures	516,459	8.40%	43,383	4.00%	20,658	(22,724)
363.0	Service to Customers	8,725	2.04%	178	3.00%	262	84
364.0	Flow Measuring Devices	5,498	10.00%	550	6.67%	367	(183)
	Pumping Plant						
354.3	Structures and Improvements	962,753	5.00%	48,138	4.00%	38,510	(9,628)
355.3	Power Generation Equip - Pumping*	7,233	0.00%	-	3.33%	241	241
370.0	Receiving Wells		0.00%	-	4.00%	-	-
371.0	Pumping Equipment		5.42%	-	5.75%	-	-
371.1	Pumping Equipment - Electric*	458,843	0.00%	-	5.75%	26,383	26,383
371.2	Pumping Equipment - Other Power	370	0.00%	-	5.75%	21	21
	Treatment Plant						
354.4	Structures and Improvements		0.00%	-	2.40%	-	-
380.0	Treatment & Disposal Equip.	17,876,279	5.00%	893,814	5.75%	1,027,886	134,072
380.1	Treatment & Disposal Equip.		5.00%	-	5.75%	-	-
380.2	Treatment & Disposal Equip.		5.00%	-	5.75%	-	-
380.3	Treatment & Disposal Equip.		5.00%	-	5.75%	-	-
380.4	Treatment & Disposal Equip.		5.00%	-	5.75%	-	-
380.5	Treatment & Disposal Equip.		5.00%	-	5.75%	-	-
380.6	Treatment & Disposal Equip.		5.00%	-	5.75%	-	-
380.65	Treatment & Disposal Equip.		5.00%	-	5.75%	-	-
381.0	Plant Sewers	16,410	5.00%	820	2.40%	394	(427)
382.0	Outfall Sewer Lines	4,259	5.00%	213	1.67%	71	(142)
389.1	WW Other Plt & Misc. Equip. Intangible	19,365	4.98%	964	5.00%	968	4
389.6	Other P/E - CPS		3.31%	-	3.33%	-	-
	General Plant						
354.5	Structures and Improvements	1,613,776	1.67%	26,950	3.00%	48,413	21,463
390.0	Office Furniture & Equipment	168,065	4.59%	7,714	4.50%	7,563	(151)
390.2	Computers & Peripheral	20,152	4.59%	925	12.00%	2,418	1,493
390.3	Computer Software	69,027	25.00%	17,257	20.00%	13,805	(3,451)
391.0	Transportation Equipment	239,504	25.00%	59,876	16.00%	38,321	(21,555)
392.0	Stores Equipment	11,072	3.91%	433	4.00%	443	10
393.0	Tools, Shop and Garage Equip.	124,230	4.47%	5,553	4.00%	4,969	(584)
394.0	Laboratory Equipment	98,142	3.71%	3,641	4.00%	3,926	285
395.0	Power Operated Equipment	12,955	5.02%	650	4.00%	518	(132)
396.0	Communication Equipment	240,333	10.30%	24,754	10.00%	24,033	(721)
397.0	Miscellaneous Equipment	72,385	5.10%	3,692	6.67%	4,826	1,134
398.0	Other Tangible Plant			-	10.00%	-	-
	Total Depreciable Property	$ 25,402,176		$ 1,278,941		$ 1,377,160	$ 98,219
351.0	Organization						
352.0	Franchises	1,304					
353.2	Land & Land Rights Collection	450,976					
352.3	Land & Land Rights P						
353.4	Land & Land Rights TD						
353.5	Land & Land Rights General	20,747					
	Total Utility Collection Plant	$ 25,875,203		$ 1,278,941		$ 1,377,160	$ 98,219

*I ncludes "unclassified" accounts totaling $10,978

EXHIBIT JFG-3

Arizona American Water

Schedule E-1

Comparison of Depreciation Expense
Under Present and Recommended Depreciation Rates
Agua Fria Water System

		Adjusted	Annual Depreciation				
		Balances	Present		Recommended		
A/C No.	Description	at June 2010	Rate	Amount	Rate	Amount	Difference
	Source of Supply & Pumping:						
304.1	Structures & Improvements	$ 9,965,456	2.50%	$ 249,136	3.00%	$ 293,964	$ 49,827
305 0	Coll. & Impdg. Reservoirs	748,276	2.50%	18,707	2.00%	14,966	(3,741)
306.0	Lake & River Intakes	1,190,866	2.50%	29,772	2.00%	23,817	(5,954)
307.0	Wells & Springs	14,953,147	2.52%	376,819	2.50%	373,829	(2,991)
308.0	Infiltration Galleries		0.00%		2.50%		
309.0	Supply Mains	2,044,995	1.11%	22,699	2.50%	51,125	28,425
)it JFG-3	Structures & Improvements	7,091,340	1.67%	118,425	2.40%	170,192	51,767
310.0	Power Generation Equipment	3,000,913	3.33%	99,930	3.33%	100,030	100
311.2	Electric Pumping Equipment	30,159,165	4.42%	1,333,035	4.60%	1,387,322	54,286
311.3	Diesel Pumping Equipment	11,824	4.42%	523	4.60%	544	21
311.4	Hydraulic Pumping Equipment		4.42%		4.60%		
311.6	Other Pumping Equipment	1,252,897	4.42%	55,378	4.60%	57,633	2,255
	Water Treatment Equipment:						
304.3	Structures & Improvements	10,746,814	1.67%	179,472	2.40%	257,924	78,452
311.53	Pumping Equipment WT	18,328	4.42%	810	5.75%	1,054	244
320.0	WT Equip Non-Media	35,515,424	4.00%	1,420,617	5.75%	2,042,137	621,520
320.2	WT Equip Filter Media	1,872,107	4.00%	74,884	11.50%	215,292	140,408
	Transmission & Distribution Plant:						
304.4	Structures & Improvements	3,639,459	1.67%	60,779	2.40%	87,347	26,568
311.54	Pumping Equipment TD		0.00%		4.60%		
330.0	Distr. Reserv. & Standpipes	12,860,977	1.67%	214,778	1.85%	237,433	22,655
330.1	Elevated Tanks & Standpipes	35,344	1.67%	590	1.85%	653	62
330.2	Ground Level Facilities	1,029	1.67%	17	1.85%	19	2
330.3	Below Ground Tanks		1.67%		1.85%		
330.4	Clearwell	4,375,415	1.67%	73,069	2.40%	105,010	31,941
331.0	TD Mains Not Classified by Size	6,839,905	1.53%	104,651	2.14%	146,569	41,919
331.1	TD Mains 4in & Less	21,613,186	1.53%	330,682	3.00%	648,396	317,714
331.2	TD Mains 6in to 8in	38,504,649	1.53%	589,121	2.14%	825,100	235,978
331.3	TD Mains 10in to 16in	31,759,087	1.53%	485,914	2.14%	680,552	194,638
331.4	TD Mains 18in & Grtr	20,743,785	2.34%	485,405	2.14%	444,510	(40,895)
332.0	Fire Mains	-	0.00%	-	2.14%	-	-
333.1	Services	13,234,519	2.48%	328,216	3.75%	496,294	168,078
334.1	Meters	5,707,843	6.67%	380,713	6.00%	342,471	(38,243)
334.2	Meter Installations	1,596,037	2.51%	40,061	2.50%	39,901	(160)
334.3	Meter Vaults	68,062	2.51%	1,708	2.51%	1,708	-
335.0	Hydrants	13,647,122	2.00%	272,942	2.99%	408,390	135,448
339.3	Other P/E Misc	-	3.31%	-	3.33%	-	-
339.6	Other P/E CPS	748,089	3.31%	24,762	3.33%	24,936	175
	General Plant:						
304.5	Structures & Improvements	11,575,429	1.67%	193,310	3.00%	347,263	153,953
304.6	Struct & Imp Offices	173,284	2.03%	3,518	3.00%	5,199	1,681
340.1	Office Furniture & Equip	93,485	4.04%	3,777	4.50%	4,207	430
340.2	Comp & Periph Equip	71,779	4.04%	2,900	10.00%	7,178	4,278
340.3	Computer Software	5,508	37.71%	2,077	20.00%	1,102	(976)
340.3	Computer Software - Other	-	37.71%	-	20.00%	-	-
341.0	Trans Equip Lt Duty Trks	202,657	20.00%	40,531	16.00%	32,425	(8,106)
341.2	Trans Equip Hvy Duty Trks	20,311	15.00%	3,047	11.43%	2,321	(725)
341.4	Trans Equip Other	112,250	25.00%	28,062	13.33%	14,967	(13,096)
342.0	Stores Equipment		0.00%		4.00%	-	-
343.0	Tools, Shop & Garage Equipment	79,185	4.02%	3,183	4.00%	3,167	(16)
344.0	Laboratory Equipment	328,566	3.71%	12,190	4.00%	13,143	953
345.0	Power Operated Equipment	30,559	5.20%	1,589	4.00%	1,222	(367)
346.1	Comm Equip Non-Telephone	1,435,838	10.30%	147,891	10.00%	143,584	(4,308)
346.2	Remote Control & Instrumentati	3,731,689	10.30%	384,364	10.00%	373,169	(11,195)
346.2	Comm Equip Telephone	101,705	10.30%	10,476	10.00%	10,171	(305)
346.3	Comm Equip Other	385,785	4.93%	19,019	10.00%	38,579	19,559
347.0	Other Miscellaneous Equipment	25,855	4.98%	1,288	6.25%	1,616	328
	Total Depreciable Property	$ 312,319,946		$ 8,230,838		$ 10,483,428	$ 2,252,589
301.0	Organization	1,229					
302.0	Franchises	363,720					
303.2	Land & Land Rights SS	1,653,915					
303.3	Land & Land Rights P	1,448,137					
303.4	Land & Land Rights WT	639,523					
303.5	Land & Land Rights TD	299,442					
	Total Utility Plant in Service	$ 316,725,912		$ 8,230,838		$ 10,483,428	$ 2,252,589

Arizona American Water

Schedule E-2

Comparison of Depreciation Expense
Under Present and Recommended Depreciation Rates
Havasu Water System

A/C No.	Description	Adjusted Balances at June 2010	Annual Depreciation Present Rate	Present Amount	Recommended Rate	Recommended Amount	Difference
	Source of Supply & Pumping:						
304.1	Structures & Improvements	$ 26,433	2.79%	$ 737	3.00%	$ 793	$ 56
305.0	Coll. & Impdg. Reservoirs	148,253	2.54%	3,766	2.00%	2,965	(801)
306.0	Lake & River Intakes		0.00%	-	2.00%	-	-
307.0	Wells & Springs	313,607	2.54%	7,966	2.50%	7,840	(125)
308.0	Infiltration Galleries		0.00%	-	2.50%	-	-
309.0	Supply Mains		0.00%	-	2.50%	-	-
)it JFG-3	Structures & Improvements	99,968	2.03%	2,029	2.40%	2,399	370
310.0	Power Generation Equipment	(28,197)	5.12%	(1,444)	3.33%	(940)	504
310.1	Power Generation Equip Other	50,935		-	3.33%	1,698	1,698
311.2	Electric Pumping Equipment	1,298,763	3.71%	48,184	4.60%	59,743	11,559
311.3	Diesel Pumping Equipment		0.00%	-	4.60%	-	-
311.5	Other Pumping Equipment	4,202	0.00%	-	4.60%	193	193
	Water Treatment Equipment:						
304.3	Structures & Improvements	2,001,816	2.03%	40,637	2.40%	48,044	7,407
311.53	Pumping Equipment WT	(69)	3.71%	(3)	5.75%	(4)	(1)
320.0	WT Equip Non-Media	254,498	12.00%	30,540	5.75%	14,634	(15,906)
320.2	WT Equip Filter Media	29,719	4.00%	1,189	11.50%	3,418	2,229
	Transmission & Distribution Plant:						
304.4	Structures & Improvements		0.00%	-	2.40%	-	-
330.0	Distr. Reserv. & Standpipes	1,168,705	2.33%	27,231	1.85%	21,576	(5,655)
330.1	Elevated Tanks & Standpipes		0.00%	-	1.85%	-	-
330.2	Ground Level Facilities		0.00%	-	1.85%	-	-
330.4	Clearwell		0.00%	-	2.40%	-	-
331.0	TD Mains Not Classified by Size	695,099	2.10%	14,597	2.14%	14,895	298
331.1	TD Mains 4in & Less	464,363	2.10%	9,752	3.00%	13,931	4,179
331.2	TD Mains 6in to 8in	850,290	2.10%	17,856	2.14%	18,221	364
331.3	TD Mains 10in to 16in	730,673	2.10%	15,344	2.14%	15,657	313
331.4	TD Mains 18in & Grtr		2.10%	-	2.14%	-	-
332.0	Fire Mains		0.00%	-	2.14%	-	-
333.0	Services	327,573	2.89%	9,467	3.75%	12,284	2,817
334.1	Meters	185,081	6.67%	12,345	6.00%	11,105	(1,240)
334.2	Meter Installations	17,253	3.52%	607	2.50%	431	(176)
334.3	Meter Vaults		0.00%	-	2.51%	-	-
335.0	Hydrants		1.99%	-	2.99%	-	-
339.2	Other P/E SS	(44,614)	3.31%	(1,477)	3.33%	(1,487)	(10)
339.25	Other P/E SS	116,045	3.31%	3,841	3.33%	3,868	27
339.6	Other P/E CPS	33,593	3.31%	1,112	3.33%	1,120	8
	General Plant:						
304.5	Structures & Improvements		0.00%	-	3.00%	-	-
304.6	Struct & Imp Offices	20,698	2.03%	420	3.00%	621	201
304.62	Struct & Imp Leasehold	-	0.00%	-	3.00%	-	-
340.1	Office Furniture & Equip	3,254	4.10%	133	4.50%	146	13
340.2	Comp & Periph Equip	26,901	4.10%	1,103	10.00%	2,690	1,587
340.3	Computer Software	7,686	37.71%	2,899	20.00%	1,537	(1,361)
340.33	Computer Software - Other		0.00%	-	20.00%	-	-
341.1	Trans Equip Lt Duty Trks	44,018	20.00%	8,804	16.00%	7,043	(1,761)
341.2	Trans Equip Hvy Duty Trks		15.00%	-	11.43%	-	-
341.4	Trans Equip Other		0.00%	-	13.33%	-	-
342.0	Stores Equipment		0.00%	-	4.00%	-	-
343.0	Tools, Shop & Garage Equipment	17,808	7.55%	1,345	4.00%	712	(632)
344.0	Laboratory Equipment	460	0.00%	-	4.00%	18	18
345.0	Power Operated Equipment	33,093	9.23%	3,054	4.00%	1,324	(1,731)
346.1	Comm Equip Non-Telephone	7,789	8.37%	652	10.00%	779	127
346.2	Remote Control & Instrumentati	62,574	8.37%	5,237	10.00%	6,257	1,020
346.2	Comm Equip Telephone		0.00%	-	10.00%	-	-
346.3	Comm Equip Other	44,161	6.19%	2,734	10.00%	4,416	1,683
347.0	Other Miscellaneous Equipment		0.00%	-	6.25%	-	-
	Total Depreciable Property	$ 9,012,432		$ 270,657		$ 277,928	$ 7,271
301.0	Organization	10,144					
302.0	Franchises						
303.2	Land & Land Rights SS	41,597					
303.3	Land & Land Rights P						
303.4	Land & Land Rights WT						
303.5	Land & Land Rights TD						
	Total Utility Plant in Service	$ 9,064,173		$ 270,657		$ 277,928	$ 7,271

Arizona American Water — Schedule E-3

Comparison of Depreciation Expense
Under Present and Recommended Depreciation Rates
Mohave Water System

A/C No.	Description	Adjusted Balances at June 2010	Annual Depreciation Present Rate	Present Amount	Recommended Rate	Recommended Amount	Difference
	Source of Supply & Pumping:						
304.1	Structures & Improvements	$ 481,622	2.83%	$ 13,630	3.00%	$ 14,449	$ 819
305.0	Coll. & Impdg. Reservoirs	663,944	2.54%	16,864	2.00%	13,279	(3,585)
306.0	Lake & River Intakes	-	0.00%	-	2.00%	-	-
307.0	Wells & Springs	1,065,943	2.70%	28,780	2.50%	26,649	(2,132)
308.0	Infiltration Galleries	-	0.00%	-	2.50%	-	-
309.0	Supply Mains	100,426	2.00%	2,009	2.50%	2,511	502
)it JFG-3	Structures & Improvements	29,817	2.39%	713	2.40%	716	3
310.0	Power Generation Equipment	50,355	0.00%	-	3.33%	1,679	1,679
310.1	Power Generation Equip Other	-		-	3.33%	-	-
311.2	Electric Pumping Equipment	2,626,306	5.12%	134,467	4.60%	120,810	(13,657)
311.3	Diesel Pumping Equipment	-	0.00%	-	4.60%	-	-
311.6	Other Pumping Equipment	1,009	5.12%	52	4.60%	46	(5)
	Water Treatment Equipment:						
304.3	Structures & Improvements	47,846	2.50%	1,196	2.40%	1,148	(48)
311.53	Pumping Equipment WT		0.00%	-	5.75%	-	-
320.1	WT Equip Non-Media	97,220	12.00%	11,666	5.75%	5,590	(6,076)
320.2	WT Equip Filter Media	-	0.00%	-	11.50%	-	-
	Transmission & Distribution Plant:						
304.4	Structures & Improvements	76,652	1.81%	1,387	2.40%	1,840	452
330.0	Distr. Reserv. & Standpipes	2,679,735	1.81%	48,503	1.85%	49,472	969
330.1	Elevated Tanks & Standpipes	68,703	1.81%	1,244	1.85%	1,268	25
330.2	Ground Level Facilities		0.00%	-	1.85%	-	-
330.4	Clearwell		0.00%	-	2.40%	-	-
331.0	TD Mains Not Classified by Size	54,847	2.61%	1,431	2.14%	1,175	(256)
331.1	TD Mains 4in & Less	11,784,507	2.61%	307,576	3.00%	353,535	45,960
331.2	TD Mains 6in to 8in	3,317,357	2.61%	86,583	2.14%	71,086	(15,497)
331.3	TD Mains 10in to 16in	252,041	2.61%	6,578	2.14%	5,401	(1,177)
331.4	TD Mains 18in & Grtr	76,265	2.61%	1,991	2.14%	1,634	(356)
332.0	Fire Mains		0.00%	-	2.14%	-	-
333.0	Services	4,208,639	5.41%	227,687	3.75%	157,824	(69,863)
334.1	Meters	1,749,550	6.67%	116,695	6.00%	104,973	(11,722)
334.2	Meter Installations	227,353	6.53%	14,846	2.50%	5,684	(9,162)
334.3	Meter Vaults	-	0.00%	-	2.51%	-	-
335.0	Hydrants	51,004	1.90%	969	2.99%	1,526	557
339.2	Other P/E SS	82,583	3.31%	2,733	3.33%	2,753	19
339.25	Other P/E SS	-	3.31%	-	3.33%	-	-
	General Plant:						
304.5	Structures & Improvements	7,829	2.03%	159	3.00%	235	76
304.6	Struct & Imp Offices	452,514	2.03%	9,186	3.00%	13,575	4,389
304.62	Struct & Imp Leashold	-	0.00%	-	3.00%	-	-
304.7	Struct & Imp Store, Shop and Garage	29,223	4.63%	1,353	3.00%	877	(476)
340.1	Office Furniture & Equip	110,243	4.04%	4,454	4.50%	4,961	507
340.2	Comp & Periph Equip	109,956	4.04%	4,442	10.00%	10,996	6,553
340.3	Computer Software	-	37.71%	-	20.00%	-	-
340.33	Computer Software - Other	-	0.00%	-	20.00%	-	-
341.0	Trans Equip Lt Duty Trks	134,741	20.00%	26,948	16.00%	21,559	(5,390)
341.2	Trans Equip Hvy Duty Trks	90,000	15.00%	13,500	11.43%	10,286	(3,214)
341.3	Transportation Equipment - Other	-	0.00%	-	13.12%	-	-
341.4	Trans Equip Other	14,312	25.00%	3,578	13.33%	1,908	(1,670)
342.0	Stores Equipment	2,400	3.93%	94	4.00%	96	2
343.0	Tools, Shop & Garage Equipment	130,699	11.70%	15,292	4.00%	5,228	(10,064)
344.0	Laboratory Equipment	7,623	3.30%	252	4.00%	305	53
345.0	Power Operated Equipment	172,529	13.90%	23,982	4.00%	6,901	(17,080)
346.1	Comm Equip Non-Telephone	180,533	3.66%	6,608	10.00%	18,053	11,446
346.2	Remote Control & Instrumentati	10,009	3.66%	366	10.00%	1,001	635
346.2	Comm Equip Telephone	49,678	9.76%	4,849	10.00%	4,968	119
346.3	Comm Equip Other	5,111	6.19%	316	10.00%	511	195
347.0	Other Miscellaneous Equipment	-	0.00%	-	6.25%	-	-
	Total Depreciable Property	$ 31,301,124		$ 1,142,979		$ 1,046,507	$ (96,472)
301.0	Organization	34,004					
302.0	Franchises	37,061					
303.2	Land & Land Rights SS	290,791					
303.3	Land & Land Rights P	2,351					
303.4	Land & Land Rights WT						
303.5	Land & Land Rights TD	9,609					
303.6	Land & Land Rights AG	31,052					
	Total Utility Plant in Service	$ 31,705,992		$ 1,142,979		$ 1,046,507	$ (95,472)

EXHIBIT
A-39

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

GARY PIERCE, Chairman
BOB STUMP
PAUL NEWMAN
SANDRA D. KENNEDY
BRENDA BURNS

IN THE MATTER OF THE APPLICATION OF ARIZONA-AMERICAN WATER COMPANY, AN ARIZONA CORPORATION, FOR A DETERMINATION OF THE CURRENT FAIR VALUE OF ITS UTILITY PLANT AND PROPERTY AND FOR INCREASES IN ITS RATES AND CHARGES BASED THEREON FOR UTILITY SERVICE BY ITS AGUA FRIA, HAVASU AND MOHAVE WATER DISTRICTS	DOCKET NO. W-01303A-10-0448

REBUTTAL TESTIMONY
OF
JOHN F. GUASTELLA
ON BEHALF OF
ARIZONA-AMERICAN WATER COMPANY
JULY 15, 2011

**REBUTTAL TESTIMONY
OF
JOHN F. GUASTELLA
ON BEHALF OF
ARIZONA-AMERICAN WATER COMPANY
JULY 15, 2011**

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EXECUTIVE SUMMARY

Mr. Guastella rebuts the testimony of Mr. Becker and Mr. Arndt relating to the Company's depreciation study.

I INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. John F. Guastella, Guastella Associates, LLC, 6 Beacon Street, Suite 410, Boston, MA 02108.

Q. HAVE YOU PREVIOUSLY PROVIDED DIRECT TESTIMONY IN THIS PROCEEDING REGARDING THE COMPANY'S PROPOSED DEPRECIATION RATES AND EXPENSE?

A. Yes.

Q. DID YOU ALSO SUBMIT YOUR STATEMENT OF QUALIFICATIONS AND EXPERIENCE AS EXHIBIT JFG-1, A COMPANY-WIDE DEPRECIATION STUDY AS EXHIBIT JFG-2 AND SPECIFIC SCHEDULES IN SUPPORT OF THE COMPANY'S PROPOSED DEPRECIATION WITH RESPECT TO AQUA FRIA, HAVASU AND MOHAVE, AS EXHIBIT JFG-3?

A. Yes.

Q. HAVE YOU REVIEWED THE TESTIMONY AND EXHIBITS SUBMITTED IN THIS CASE BY MR. GERALD BECKER ON BEHALF OF THE STAFF OF THE ARIZONA CORPORATION COMMISSION ON JUNE 29, 2011 AND BY MR. MICHAEL L. ARNDT ON BEHALF OF THE SUN CITY GRAND COMMUNITY ASSOCIATION ON JUNE 27, 2011?

A. Yes.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. My rebuttal testimony addresses the testimonies of Messrs. Becker and Arndt with respect to their statements and recommendations as to depreciation, and more specifically, their failure to recognize any cost of removal percentages and its impact on depreciation rates and expense.

II GENERAL RESPONSE TO MR. BECKER AND MR. ARNDT.

Q. DO YOU HAVE ANY GENERAL RESPONSE TO THE TESTIMONIES OF MESSRS. BECKER AND ARNDT?

A. Yes. The Company retained my firm in order to provide our independent depreciation study and recommend depreciation rates that would best recover the original cost of the Company's assets, taking into account all appropriate factors. In addition to proper cost recovery, the most important reason for establishing reasonable depreciation rates is to spread the cost over the average life of the assets in order to maintain intergenerational equity -- so that each vintage of customer pays its fair share of the assets as they are being used to serve them. Establishing the most appropriate level of depreciation expense does not increase or decrease the rate of return on investment, and because depreciation is reflected in accumulated depreciation, the amounts of depreciation expense recovered from the customers are offsets to the rate base. Accordingly, this is not a "stockholder" issue. It is a matter of establishing the best cost recovery from customers over time so that each vintage of customer pays its fair share. There is another potential benefit because adequate recovery of cost of removal increases the internally generated source of cash flow that is available to pay for new or replacement plant; reducing the need for outside financing and one of the factors associated with the cost of capital and, therefore, potentially improving the cost of new capital.

Although Mr. Becker agrees with the above principles, as stated on page 35 and 36 of his direct testimony, his recommendation essentially reflects no recognition of any level of cost of removal. Mr. Arndt is silent as to the applicable rate setting and depreciation principles, but also essentially recommends no allowance for cost of removal. Accordingly, they both are recommending in effect that the Commission pass up this opportunity to establish or even move toward more appropriate depreciation rates that would improve intergenerational equity that is in the best interests of existing and future customers.

III RESPONSE TO MR. BECKER

Q. ON PAGE 34 OF HIS TESTIMONY, MR. BECKER STATES THAT "ANY REVISION TO THE METHODOLOGY USED TO CALCULATE DEPRECIATION RATES THAT INCLUDES NET SALVAGE VALUES SHOULD BE PERFORMED ON A COMPANY-WIDE BASIS." DID YOU PERFORM YOUR DEPRECIATION STUDY ON A COMPANY-WIDE BASIS?

A. Yes. In response to the Company's data requests of Mr. Becker, he acknowledges that my study was performed on a Company-wide basis. In his response, to a related request, however, Mr. Becker maintains that "any revision to the method of calculation (including adding an additional component) alters the method."

Q. DID YOU ALTER THE METHOD OF CALCULATING DEPRECIATION RATES OR ADD A COMPONENT?

A. No. The average service life method of calculating depreciation rates is simply to subtract the average net salvage value from 100 and divide the result by the average service life. The net salvage value is either positive, or negative if the cost of removal exceeds any salvage. I used this text book formula without revision. Recognizing cost of removal and including a percentage for it does not change the method.

Q. DO YOU AGREE WITH MR. BECKER POSITION AS STATED ON PAGE 34 OF HIS TESTIMONY THAT IMPLEMENTATION OF DEPRECIATION RATES THAT TAKE INTO ACCOUNT NET SALVAGE BE MORE APPROPRIATELY CONSIDERED ON A COMPANY-WIDE BASIS AFTER CONSUMMATION OF THE PROPOSED SALE OF THE COMPANY TO EPCOR?

A. No. First, Mr. Becker has acknowledged that my depreciation study was performed on a Company-wide basis. Although acknowledging in response to data requests that average service lives, net salvage values and depreciation rates are a function of the characteristics of depreciable assets, Mr. Becker states that "the ownership of the entity may impact those amounts for such reasons as differing management philosophies, adherence to recommended maintenance schedules, the entity's replacement plans, etc." The NARUC Uniform System of Accounts recognizes in its definitions that among the causes of depreciation are wear and tear, decay, action of the elements, inadequacy, obsolescence, changes in the art, changes in demand and requirements of public authorities. In my experience, it is virtually inconceivable that any owner of a large utility would establish philosophies or significantly change maintenance schedules or replacement policies that would impact those causes of retirements. Even assuming for the sake of argument that those circumstances did have an impact, they could not specifically be incorporated into a determination of average service lives but would only be reflected over time as the rate of retirements are estimated in the future. More to the point, however, since Mr. Becker has accepted my recommended average service lives, the only aspect with which he takes issue is the cost of removal which is a factor that is simply not affected by philosophy, maintenance, replacement plans or the ownership of the Company.

Q. DO YOU AGREE THAT YOUR STUDY DOES NOT PROVIDE DIRECT ARITHMETIC SUPPORT FOR YOUR RECOMMENDED NET SALVAGE VALUES?

A. No. While acknowledging that my study provides an abundance of information, Mr. Becker does not offer any analysis of the information I provided with respect to net salvage values – he doesn't disagree with the comparative analysis or the calculation of the estimates of cost of removal or the sample analysis undertaken by the Company. My study contains schedules of comparative net salvage values and detailed estimates of anticipated cost of removal percentages, along with the following narrative:

> Having selected the average service lives, the next step was to assign net salvage values to each account. Under the required accounting treatment, it is necessary to determine the net salvage value with respect to an item of property being retired. The calculation of depreciation rates also requires the inclusion of net salvage values. Estimates of positive salvage values, such as trade-in payments or discounts, or resale values on meters and transportation equipment are fairly consistent. On the other hand, determining the cost of removal is more challenging for assets being retired as part of a replacement during a common project and, therefore, requiring an allocation of costs.
>
> There has been less consideration given to salvage values, particularly cost of removal, until relatively recently. It is <u>assumed</u> that some 80 years ago the original development of actuarial studies for utility assets was focused on establishing average service lives, during the relatively early years of utility rate regulation. In addition, it is also apparent cost of removal was not perceived as a major issue that until long after the 1960's when utility rates for service were in many cases declining, due to customer growth and increasing utility demands for service, combined with low inflation. It has also been the prevailing practice to effectively include cost of removal in the cost of the new replacement plant, so that it was being recovered -- although not as effectively in terms of intergenerational equity. In any event, establishing the most appropriate depreciation rates requires a meaningful analysis of cost of removal and consideration of intergenerational equity, and the advantages previously discussed attributable to appropriate depreciation rates and cost recovery.
>
> Section C contains schedules showing comparable net salvage values and the relationships of current construction costs compared to historical original costs. Schedule C-1 provides a comparison of salvage values for specific utilities, NARUC guidelines for small water utilities and the Illinois Commerce Commission ("ICC"). The ICC seems to have made the most progress with respect to cost of removal. An analysis of the dramatic

increase in construction costs with respect to utility assets supports the ICC's initiative. It is obvious that the current cost of dismantling and removing such assets is structures, storage facilities, pumps, etc., is significant in terms of the absolute costs, and particularly in relation to their original cost. With respect to such assets as mains and service laterals, the cost of removal is also significant, even if only a small portion of the costs associated with trenching for the replacement and installation of a new section of main or replacement of a service lateral is allocated to the cost of removal.

Schedule C-2 contains a calculation of the multiples of current construction costs over original costs. The calculation determines, for each respective account, the ratio of the current year Handy-Whitman Construction Cost Index to the vintage year index, with the vintage year determined by the number of years of the respective average service life. For example, Account 304.1 Structures & Improvements has an average service life of 40 years, which is equivalent to the vintage year 1970, or 40 years back from 2010, and the 2010 index of 506 is divided by the 1970 index of 304 producing a ratio or multiple of 5.33 -- meaning that the current cost is more than 5 times greater than the original cost. Clearly, the current cost to remove or replace structures would be a significant percentage of the original cost. With respect to mains for which current cots are about 20 times the original cost 70 years ago, if only 5% of the cost of installing new mains is the cost to replace the old mains, the relationship of cost of removal to the original cost would be over 100%.

The Company has also initiated a preliminary analysis of retirement and replacement projects in order to estimate cost of removal. The analysis allocates labor time (in minutes) for various activities spent removing an asset being retired and relating that time to total time for the removal and replacement with the new asset. The analysis is only for a few examples and is still subject to review and likely refinement, but it does show that significant time is reasonably allocable to the removal of assets. Specifically, the estimates for the percentages of total time allocated to the removal of assets being replace are: mains – 51%, service laterals – 42%, hydrants – 47%, valves – 48%, meters – 44% to 46% depending on size. While these estimates do not represent the total cost of the replacement, and it is recognized that not all assets within a particular account will be removed when retired, they are a reasonable indication that the cost of removal is significant.

In selecting percentages for cost of removal, consideration was given to the comparables shown in Schedule C-2, the dramatic differences between current and original construction costs and the Company's sample study. A conservative approach was taken to allow for retirements for which there may not be replacements or removal of the retired assets. Another reason for a conservative approach is that this recognition of cost of removal in calculating depreciation rates is the first such effort for the Company's systems in Arizona.

The recommended cost of removal percentages are shown on Schedules A-1 and A-2 for water and wastewater, respectively. They are less than the ICC

> percentages shown on Schedule C-1 and also less than the cost multiples would indicate as shown on Schedule C-2, but they reflect the intended conservative approach.

Mr. Becker ignores this analysis and the related schedules in my study. Instead, he claims there is no arithmetic support for my recommended net salvage values, apparently taking the position that if the Company's accounting records do not contain enough data with which to establish reasonable cost of removal amounts, then no other quantitative or conceptual analysis can even be considered. I disagree. Establishing appropriate depreciation rates on the basis of the best information available is in the best interest of the customers.

Q. ON APPENDIX B OF HIS TESTIMONY, MR. BECKER COMPARES THE NET SALVAGE VALUES THAT YOU RECOMMEND WITH THOSE HE DEVELOPED FROM HIS ANALYSIS OF THE COMPANY'S ACCOUNTING RECORDS WHICH HE SUMMARIZES IN ATTACHMENT A OF HIS TESTIMONY. DO YOU BELIEVE THAT HIS COMPARISON IS MEANINGFUL?

A. No. After Mr. Becker explains his analysis of the Company's accounting records, summarized in his Attachment A, Mr. Becker is asked, on page 34, lines 13-14, "Has Staff included the results of its analysis shown on Attachment A in its recommendations?" Mr. Becker responds "no" and goes on to explain why the results of his analysis are not usable. Mr. Becker is correct that the results of his analysis are not usable.

Q. HAVING REJECTED THE RESULTS OF HIS ANALYSIS AS TO COST OF REMOVAL, WHAT IS THE BASIS FOR HIS RECOMMENDED DEPRECIATION RATES?

A. On page 39, lines 13 to 16, Mr. Becker states:

Although the Company and Staff agree on estimated useful lives, Staff's calculation differs from the Company's due primarily to the use of Staff's recommended depreciation rates in this proceeding, which do not include consideration of net salvage values.

Q. IS MR. BECKER'S FAILURE TO INCLUDE CONSIDERATION OF NET SALVAGE VALUES REASONABLE IN YOUR OPINION?

A. No. Because Mr. Becker does not reflect any cost of removal or net salvage values in his calculation of depreciation rates, his estimate of cost of removal is 0%, which is not a reasonable result. In my opinion, the customers' best interests are better served -- having existing and future customers pay their fair share of the costs associated with the assets that will provide service to them over the years -- if decisions as to depreciation rates, including both average service lives and net salvage values, are based on the best information that is available.

Q. ASIDE FROM MR. BECKER'S CALCULATION OF DEPRECIATION RATES THAT INCLUDE NOTHING FOR COST OF REMOVAL, EVEN THOUGH CLEARLY THERE WILL BE COSTS ASSOCIATED WITH REMOVING RETIRED ASSETS, IN YOUR OPINION WAS IT REASONABLE FOR MR. BECKER TO NOT EVEN CONSIDER THE ANALYSIS YOU PROVIDED FOR NET SALVAGE VALUES AND COST OF REMOVAL?

A. No. Moreover, Mr. Becker's approach with respect to cost of removal is not consistent with his acceptance of my recommended average service lives. As is typical for virtually all small water and wastewater systems throughout the country, due to a lack of sufficient retirement data, average service lives have been based on analyses of comparable data, as I presented in my study and which Mr. Becker correctly and reasonably accepted. Because of a similar lack of sufficient historical data with respect to cost of removal, I prepared a comparative and qualitative analysis of cost of removal, as well as the Company's sample analysis, which provide a solid basis for estimating cost of removal. I then used a conservative level of net salvage values as previously explained and contained in my depreciation study. Mr. Becker's decision to ignore this information and instead allow nothing for cost of removal when clearly there will actually be significant levels of cost of removal, is neither reasonable nor logical.

Q. HAS THE COMPANY TAKEN STEPS TO MORE ACCURATELY ACCOUNT FOR COST OF REMOVAL?

A. Yes. On the basis of my communications and discussions with the Company, I understand that it has taken steps to more accurately estimate and record the cost of removal for assets being retired or replaced. Accordingly, the Company's proposed depreciation rates are designed to have existing and future customers pay a fair share of the costs associated with the use and retirement of the assets that are providing them with service, as best as can be determined at this time.

IV <u>RESPONSE TO MR. ARNDT</u>

Q. DO YOU HAVE ANY COMMENTS WITH RESPECT TO MR. ARNDT'S TESTIMONY REGARDING DEPRECIATION?

A. Other than a conclusory statement that the Company has not adequately supported its proposed depreciation rates, Mr. Arndt provides no substantive discussion regarding my depreciation study. He provides no reasons as to why he thinks the Company's recommended average service lives and net salvage values, as reflected in my depreciation study, are not supported, or what support he thinks would be adequate. He provides no analysis of any aspect of reasonable average service lives or net salvage values -- no principles, no theory, no methodology, no calculations and no estimates. His recommendation for the ACC to use previously approved depreciation rates has the effect of assuming that there will be no cost of removal, which is simply unrealistic.

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY IN THIS CASE?

A. Yes.

EXHIBIT
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BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

GARY PIERCE, Chairman
BOB STUMP
PAUL NEWMAN
SANDRA D. KENNEDY
BRENDA BURNS

IN THE MATTER OF THE APPLICATION OF ARIZONA-AMERICAN WATER COMPANY, AN ARIZONA CORPORATION, FOR A DETERMINATION OF THE CURRENT FAIR VALUE OF ITS UTILITY PLANT AND PROPERTY AND FOR INCREASES IN ITS RATES AND CHARGES BASED THEREON FOR UTILITY SERVICE BY ITS AGUA FRIA, HAVASU AND MOHAVE WATER DISTRICTS	DOCKET NO. W-01303A-10-0448

REJOINDER TESTIMONY
OF
JOHN F. GUASTELLA
ON BEHALF OF
ARIZONA-AMERICAN WATER COMPANY
AUGUST 9, 2011

**REJOINDER TESTIMONY
OF
JOHN F. GUASTELLA
ON BEHALF OF
ARIZONA-AMERICAN WATER COMPANY
AUGUST 9, 2011**

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EXECUTIVE SUMMARY

Mr. Guastella provides rejoinder to the surrebuttal testimony of Mr. Arndt and Mr. Simer relating to the Company's proposed depreciation rates.

I INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. John F. Guastella, Guastella Associates, LLC, 6 Beacon Street, Suite 200, Boston, MA 02108.

Q. HAVE YOU PREVIOUSLY PROVIDED DIRECT AND REBUTTAL TESTIMONY IN THIS PROCEEDING REGARDING THE COMPANY'S PROPOSED DEPRECIATION RATES AND EXPENSES?

A. Yes.

Q. DID YOU ALSO SUBMIT YOUR STATEMENT OF QUALIFICATIONS AND EXPERIENCE AS EXHIBIT JFG-1, A COMPANY-WIDE DEPRECIATION STUDY AS EXHIBIT JFG-2 AND SPECIFIC SCHEDULES IN SUPPORT OF THE COMPANY'S PROPOSED DEPRECIATION WITH RESPECT TO AQUA FRIA, HAVASU AND MOHAVE, AS EXHIBIT JFG-3?

A. Yes.

Q. HAVE YOU REVIEWED THE SURREBUTTAL TESTIMONY AND EXHIBITS SUBMITTED IN THIS CASE BY MR. MICHAEL L. ARNDT ON BEHALF OF THE SUN CITY GRAND COMMUNITY ASSOCIATION ON AUGUST 2, 2011 AND MR. KENT SIMER ON BEHALF OF VERRADO COMMUNITY ASSOCIATION, INC. ON AUGUST 2, 2011?

A. Yes.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. My rebuttal testimony addresses the testimonies of Messrs. Arndt and Simer with respect to their statements and recommendations as to depreciation.

II RESPONSE TO MR. ARNDT

Q. ON PAGE 51 OF HIS TESTIMONY, MR. ARNDT IS ASKED TO DESCRIBE THE DEPRECIATION EXPENSE ISSUE, AND HE RESPONDS ON PAGE 52. DO YOU AGREE WITH HIS RESPONSE?

A. No. Mr. Arndt's response simply refers to percentage changes in the existing and proposed composite depreciation rate and expense. The real issue is whether the depreciation rates and expense represent the best estimate of the recovery of the original cost of the depreciable assets, and take into account the most reasonable estimate of net salvage values, including cost of removal in order to best maintain intergenerational equity.

Q. HOW DOES MR. ARNDT RESPOND TO YOUR REBUTTAL TESTIMONY?

A. He doesn't. On page 53, lines 3 and 4, Mr. Arndt repeats his direct testimony that my negative net salvage values were not supported, which I rebutted on page 9 of my rebuttal testimony. On pages 53 and 54, Mr. Arndt then repeats Mr. Becker's direct testimony, which I rebutted on pages 3 to 9 of my rebuttal testimony. Mr. Arndt does not address my rebuttal testimony.

Q. WHAT IS THE RELEVANCE OF MR. ARNDT'S REFERENCE TO AND COMPARISON OF THE 2.33% COMPOSITE DEPRECIATION RATE IN A SETTLEMENT DECISION IN THE NEW JERSEY'S BOARD OF PUBLIC UTILITIES ("BPU") DOCKET NO. WR08010020 IN CONNECTION WITH NEW JERSEY AMERICAN WATER COMPANY AND THE 3.36% COMPOSITE RATE FOR THE AGUA FRIA WATER DISTRICT?

A. None. First, different composite depreciation rates are a function of variances in average service lives, net salvage values and the relative amounts of original costs in the various plant accounts. Most of these components will likely differ; and even if the depreciation rates were exactly the same for each account, the different dollar amounts in each account would produce a difference in the composite depreciation rate. Second, the averaging method indicated in New Jersey for that particular settlement -- as opposed to a stated BPU policy was, as Mr. Arndt acknowledges, tried by Mr. Becker in this case and rejected because it produced incomplete and unreliable results.

Q. WHAT IS YOUR OVERALL CONCLUSION REGARDING MR. ARNDT'S SURREBUTTAL TESTIMONY?

A. As in his direct testimony, Mr. Arndt's surrebuttal testimony does not adequately address the issue. He provides no substantive discussion as to the principles and methodology stated in my study. He does not provide any analysis of the cost of removal schedules or sample calculations. He did not discuss my specific rebuttal of his direct testimony, or my rebuttal of Mr. Becker's direct testimony (to which Mr. Becker did not respond). Moreover, his recommendation not to change the existing depreciation rates is, in effect, a presumption that there is absolutely no cost of removal related to any retired assets -- an impossible conclusion.

III <u>RESPONSE TO MR. SIMER</u>

Q. DO YOU HAVE ANY COMMENTS WITH RESPECT TO MR. SIMER'S SURREBUTTAL TESTIMONY REGARDING DEPRECIATION RATES?

A. Mr. Simer does not address the issue of intergenerational equity as to the establishment of appropriate depreciation rates. He doesn't provide any discussion or analysis with respect to my depreciation study. A decision regarding individual revenue requirements, such as depreciation expense, should be made on the merits of issue, aside from any broader opinions as to overall rate impact. Mr. Simer's recommendation not to accept the

Company's proposed depreciation rates also reflects the unreasonable presumption that there is no cost of removal for any retired assets. Also, contrary to Mr. Simer's recommendations, the establishment of appropriate depreciation rates is best accomplished in the context of the current rate filings in order to better establish intergenerational equity.

Q. DOES YOUR SILENCE ON ANY ISSUE RAISED BY ANY PARTY IN SURREBUTTAL TESTIMONY INDICATE YOUR ACCEPTANCE OF THEIR POSITION?

A. No.

Q. DOES THIS CONCLUDE YOUR REJOINDER TESTIMONY IN THIS CASE?

A. Yes.

EXHIBIT

PENGAD 800-631-6989

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BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

KRISTIN K. MAYES, Chairman
GARY PIERCE
BOB STUMP
PAUL NEWMAN
SANDRA D. KENNEDY

IN THE MATTER OF THE APPLICATION OF ARIZONA-AMERICAN WATER COMPANY, AN ARIZONA CORPORATION, FOR A DETERMINATION OF THE CURRENT FAIR VALUE OF ITS UTILITY PLANT AND PROPERTY AND FOR INCREASES IN ITS RATES AND CHARGES BASED THEREON FOR UTILITY SERVICE BY ITS AGUA FRIA WATER, HAVASU WATER AND MOHAVE WATER DISTRICTS	DOCKET NO. W-01303A-10-____

DIRECT TESTIMONY
OF
DR. BENTE VILLADSEN
ON BEHALF OF
ARIZONA-AMERICAN WATER COMPANY
November 3, 2010

DIRECT TESTIMONY
OF
DR. BENTE VILLADSEN
ON BEHALF OF
ARIZONA-AMERICAN WATER COMPANY
November 3, 2010

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EXECUTIVE SUMMARY

Dr. Bente Villadsen, a Principal at *The Brattle Group*, files testimony on the cost of capital for Arizona-American Water Company's Aqua Fria Water, Havasu Water and Mohave Water Districts.

Dr. Villadsen selects two benchmark samples, water utilities and gas local distribution companies (LDC). For the water sample, she primarily relies on a subsample that excluded Southwest Water which recently restated its financials and currently pays no dividends. Using two versions of the Discounted Cash Flow (DCF) method and three versions of the Capital Asset Pricing Model (CAPM), she estimates the sample companies' after-tax weighted-average cost of capital. The after-tax weighted average cost of capital is the measure that companies most commonly use to evaluate investments and the measure recommended in standard financial textbooks. Textbooks, the academic literature as well as businesses weigh debt and equity by the market values in determining the after-tax weighted cost of capital.[1]

Having estimated the samples' after-tax weighted-average cost of capital for the samples, she determines the corresponding cost of equity for Arizona-American Water at its target of approximately 45 percent equity. In undertaking her analysis, Dr. Villadsen notes that the overall cost of capital is constant within a broad middle range of capital structures although the distribution of costs and risks among debt and equity holders is not. Because the overall cost of capital is the same in a broad range of capital structures, there are no impacts on the rates customers pay from a higher or lower percentage of equity, so ratepayers are not affected by the choice of capital structure within a broad range. However, Arizona-American Water's capital structure includes only 45 percent equity, which is lower than the percentage equity among many utilities. Therefore, its financial risk is higher and the return required by investors' increases with the level of risk they carry, but this return is paid on a smaller amount of equity than is typical in the water industry. Therefore, the dollar amount paid by customers is the same as if the Company had a lower return on equity but a higher equity percentage.

Dr. Villadsen discusses the impact of the recent recession and ongoing turmoil in financial markets on utilities' cost of capital and notes that while the yield on government issued bills and bonds is currently very low, the spread between the yield on investment-grade utility bonds and government bonds is currently unusually high. As utilities cannot raise debt (or equity) at the same rates as the government, it is necessary to take the yield on investment grade utility bonds into account in assessing the cost of capital for Arizona-American Water. Specifically, the yields on government bills and bonds have been driven artificially down by monetary policy and a flight to safety, so that the yields on these securities are not reflective of normal economic conditions. Consequently, Dr. Villadsen bases her CAPM models on a normalized risk-free rate which consists of the observed risk-free rate plus an adjustment for the increase in the spread between risk-free rates and investment grade utility bond yields. Further, equity investors lost substantial value in capital markets over the couple of years and stock prices have been extremely volatile. As a result, investors risk aversion has increased and the premium they require to invest in stocks going forward has increased. Therefore, the risk premium associated with equity investments is currently higher than it has been in the recent past. Dr. Villadsen performs several sensitivity analyses on the impact hereof, but the requested return on equity is fully supported by her baseline analysis, which relies on a historical market risk premium. In

[1] For example, the Hamada article relied upon by Commission Staff in past proceedings uses market value capital structures.

other words, her recommended return on equity does not include the current higher risk premium making her recommendation conservative in the current economic environment.

In addition to the cost of capital estimation discussed above, Dr. Villadsen reviewed data on Arizona-American Water's earned return over the past 10 years and data on Arizona-American Water's current credit ratios. Both the inability to earn the allowed return on equity and the credit ratios show that it is vital that Arizona-American Water be allowed an opportunity to earn a reasonable return on equity that would support as the bare minimum an investment grade credit rating on a stand alone basis. Further, Dr. Villadsen reviewed 22 recent decisions by the Arizona Corporation Commission to assess the reasonableness of Arizona-American Water's current request. When compared in terms of the overall return, the cost of equity requested by Arizona-American Water in this proceeding is comparable to that granted to other water and wastewater utilities in Arizona as adjusted using Arizona-American's equity percentage.

Lastly, the industry needs to invest in wastewater collection and treatment. The needed infrastructure investment requires substantial external financing (i.e., new debt and equity) and access to capital requires that investors expect to earn their required return. Failure to provide adequate returns may discourage potential investors. While it may seem counterintuitive to increase the cost of capital at a time when the economy is performing poorly, it is necessary to attract needed capital. The increase in the spread between utility bond yields and government bond yields along with the fact that investors are holding onto their funds, are indicators that the required return has increased. Thus, in order to attract investments, investors need to expect that they can earn a return on their investment that makes it worth the risk and that return is higher than prior to the financial crisis. The fact that Arizona-American Water has been unable to earn its allowed return since 2000 and on a stand alone basis has weak credit ratios makes the attraction of capital especially difficult for Arizona-American Water. These factors indicate that investors expect a higher risk premium for investing in equity than prior to the financial crisis and that Arizona-American Water face additional challenges in raising capital.

Based on the evidence from the samples, Dr. Villadsen finds that Arizona-American Water's request for 11.50% return on equity is reasonable and fully supported by her analysis. The financial turmoil has made the range of a reasonable return on equity wider and especially the water sample shows a wide range from approximately 10½ to 14½%, although the risk positioning results are in a narrower range from 11¼ to 12. The gas LDC sample's results are concentrated in the range of 11 to 12%. Based on the data and the analysis of Arizona-American Water's credit metric and the returns allowed other water utilities, I support the request for an allowed return on equity of 11.50%.

I. INTRODUCTION AND SUMMARY

Q. PLEASE STATE YOUR NAME AND ADDRESS FOR THE RECORD.

A. My name is Bente Villadsen. My business address is The Brattle Group, 44 Brattle Street, Cambridge, MA 02138.

Q. PLEASE DESCRIBE YOUR JOB AND EDUCATIONAL EXPERIENCE.

A. I am a Principal of The Brattle Group, (Brattle), an economic, environmental and management consulting firm with offices in Cambridge, Washington, San Francisco, London, Brussels, and Madrid. My work concentrates on regulatory finance and accounting. I have previously prepared and presented cost-of-capital testimony before the Arizona Corporation Commission (Commission). I hold a B.S. and M.S. from University of Aarhus, Denmark and a Ph.D. from Yale University.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. I have been asked by Arizona-American Water Company (Arizona-American Water or the Company) to estimate the cost of equity for Arizona-American Water's Aqua Fria Water, Havasu Water and Mohave Water Districts. The cost of equity is the return that the Commission should provide the Company an opportunity to earn on the portion of its rate base financed by equity.

To determine the cost of equity for Arizona-American Water, I first estimate the overall cost of capital for two samples (and two subsample) of regulated companies using several versions of the discounted cash flow (DCF) and risk-positioning models. Second, I determine the cost of equity that the estimated overall cost of capital gives rise to at Arizona-American Water's requested capital structure consisting of about 45 percent equity. Third, I evaluate the relative risk of Arizona-American Water and the sample companies to determine the recommended cost of **equity for Arizona-American Water**. In doing so, I compare the characteristics of the comparable companies and those of Arizona-American Water.

In addition, I review how credit rating agencies rate utilities such as Arizona-American Water and discuss the critical importance placed on cash flow by credit rating agencies and creditors. The development of credit ratings and generic financial strength is important because debt investors, as well as equity investors, are concerned about the financial strength of companies and investors have become increasingly concerned about the credit worthiness of companies following the financial crisis. For a regulated entity such as Arizona-American Water, the revenue requirement to a large degree determines the cash flow that will accrue to the utility. A utility's financial strength is linked to cash flow, so a utility is clearly very dependent upon (1) the allowed rate of return and (2) its ability to earn the allowed rate of return. It is important that a utility remains credit worthy and maintains a solid credit rating, because the lack of creditworthiness reduces and possibly eliminates the utility's access to credit markets and hence to financing. Further, a reduction in, for example, a utility's credit rating implies a higher cost of debt and because the cost of debt increases very dramatically as the credit rating drops.

Q. PLEASE SUMMARIZE ANY PARTS OF YOUR BACKGROUND AND EXPERIENCE THAT ARE PARTICULARLY RELEVANT TO YOUR TESTIMONY ON THESE MATTERS.

A. Brattle's specialties include financial economics, regulatory economics, and the utility industry. I have worked extensively on cost of capital matters for electric, natural gas distribution, pipeline, transportation and water utilities in state, federal, and foreign jurisdictions. Additionally, I have significant experience in other areas of rate regulation, credit risk in the utilities industry, energy contracts, and accounting issues. I have filed expert testimony and appeared before regulatory commissions and arbitration tribunals as well as in federal and district court concerning cost of capital, accounting questions, and damage issues. I have previously filed cost of capital testimony before this Commission. Appendix A contains more information on my professional qualifications.

Q. PLEASE SUMMARIZE YOUR ESTIMATION OF THE COST OF CAPITAL FOR ARIZONA-AMERICAN WATER.

A. To assess the cost of capital for Arizona-American Water, I select two benchmark samples, regulated water utilities and natural gas local distribution companies (LDC). These samples are selected to have risks characteristics comparable to those of Arizona-American Water. I also report results for a subsample of both the water and the gas LDC sample as the subsample companies are less likely to have unique issues that may affect the cost of capital estimates. For each sample, I estimate the sample companies' cost of equity using several versions of the DCF method and of the risk-positioning model. Next, based on the cost-of-equity estimates for each company and its market costs of debt and preferred stock, I calculate each firm's overall cost of capital, i.e., its after-tax weighted-average cost of capital (ATWACC), using the company's market value capital structure. I then calculate the samples' average ATWACC and the cost of equity for a capital structure with approximately 45 percent equity. Thus, I present the cost of equity that is consistent with the samples' market information and Arizona-American Water's regulatory capital structure. (By "regulatory capital structure," I mean the capital structure that Arizona-American Water proposes in its application.) Because of the ongoing financial turmoil, I present results for both a baseline case and for several scenarios that take the increased risk aversion among investors into account.

The results for the gas LDC sample and subsample are concentrated in a relatively narrow range from 11 to 12%, while the ROE estimates for the water sample exhibit substantially larger variation. Specifically, the risk positioning results for the water sample are also in the range of 11 to 12%, but the water subsample indicate a higher return on equity. The water sample and subsample's DCF estimates range from 10½ to 14½ percent. Therefore, the requested return on equity of 11.5% in the middle of the range and fully supported by the estimation results.

Q. ARE THERE ANY UNIQUE ISSUES IN ESTIMATING THE COST OF CAPITAL AT THIS POINT IN TIME?

A. Yes. While the economic crisis may have lessened and the National Bureau of Economic Research (NBER) has declared the recession over, there is still substantial turmoil in financial markets and investors remain wary of providing capital. I discuss the impact hereof in more detail in Section III below, but in general, the cost of capital is higher for all companies today than it was before the crisis. Therefore, in addition to my standard cost of capital estimates, I also report the results from several benchmarks that take the impact of the financial crisis into account.

Q. ARE THERE ANY SPECIAL CIRCUMSTANCES FOR ARIZONA-AMERICAN WATER THAT NEEDS TO BE CONSIDERED?

A. Yes. As noted in the Direct Testimony of Mr. Townsley, Arizona-American has been unable to earn its allowed rate of return during the last 10 years. In addition, its credit metric on a stand-alone basis shows that the Company on a stand alone basis is generating too little cash flow to meet credit rating agencies' expected metric for an investment grade rating. Both of these facts indicate that it is imperative that Arizona-American be allowed a reasonable return on its equity capital and that there are no regulatory barriers that prevent the Company from being able to earn the allowed return on equity on average. Examples of barriers to earn the allowed rate of return include delayed inclusion of capital expenditures in rate base as is the case under a historic test year or if Construction Work in Progress (CWIP) is not in rate base.[2] Similarly, any delays in including expenses in the revenue requirement would create barriers to earn the allowed return.

Q. USING YOUR BASELINE RESULTS, PLEASE SUMMARIZE YOUR CONCLUSIONS REGARDING ARIZONA-AMERICAN WATER'S COST OF EQUITY.

A. Using the risk positioning models, the baseline cost of equity estimate for both the water sample and the gas LDC sample and subsample is 11 to 12 percent at Arizona-American Water's regulatory capital structure. The risk positioning estimates for the water subsample range from 12 to 12½ percent. The DCF results for the gas LDC sample and subsample are clustered around 11½ percent, while the DCF results for the Water sample and subsample is much wider at 10½ to 14½ percent. Because the risk positioning results and the gas LDC DCF results have a range of 11 to 12 percent and the Water DCF results include that range, a point estimate of 11½ is reasonable for Arizona-American, which is exposed to a greater amount of risk than most of the companies in the comparable samples and subsamples. Arizona-American Water's parent, American Water has a lower debt rating than the comparable companies and on a stand alone basis, Arizona-American Water's credit metric is weak. In addition, the Company operates in a state that has seen a substantial growth in population, which makes the use of a historic test year and the fact that CWIP is not included in rate base a larger issue than in states, where population growth is lower. As discussed below, Arizona-American is significantly under earning its allowed return and has only earned a positive profit in one year since 2001.

[2] Arizona relies on a historic test year and only in specific circumstances is CWIP part of rate base. The regulatory treatment of test year and CWIP vary by state. See, for example, National Association of Water Companies survey, "Construction Work in Progress." (http://www.nawc.org/)

Q. WHY DO YOU NEED TO CONSIDER ARIZONA-AMERICAN WATER'S REGULATORY CAPITAL STRUCTURE?

A. A firm's cost of equity is a function of both its business risk and its financial risk. The more leveraged a company is the higher its financial risk. Investors holding equity in companies with higher risk require a higher rate of return, so as a company adds debt, the cost of equity goes up at an ever increasing rate. The higher cost of equity offsets the lower cost of debt, so that the after-tax weighted-average overall cost of capital remains constant over a broad range of capital structures.

That is, the associated capital structure affects an estimated cost-of-equity estimate just as a life insurance applicant's age affects the required life-insurance premium. It is therefore necessary to calculate the cost of equity the sample companies would have had at Arizona-American Water's regulatory capital structure to report accurately the market evidence on the cost of equity.

Q. HOW IS THE REST OF YOUR TESTIMONY ORGANIZED?

A. The rest of my testimony is organized as follows:

Section II defines the cost of capital and discusses the principles that relate a company's cost of capital and its capital structure

Section III discusses the impact on cost of capital of the current turmoil in financial markets and methods to estimate the relevant risk-free rate and market risk premium under current financial market conditions.

Section IV presents the methods used to estimate the cost of capital for the benchmark samples, and the associated numerical analyses. This section also explains the basis of my conclusions for the benchmark samples' returns on equity and overall costs of capital.

Section V explains why credit ratings matter and also discusses Arizona-American Water's earned return and the impact of under earning on credit metrics.

Section VI summarizes the analysis and discusses the recommendation for Arizona-American Water.

Appendix A lists my qualifications.

Appendix B discusses in detail the selection procedure for each sample, and the methods used to derive the necessary capital structure market value information.

Appendix C details the risk-positioning method including the numerical analyses.

Appendix D details the DCF method, including the numerical analyses.

Appendix E discusses the impact of leverage on the cost of capital in more detail.

I repeat portions of my testimony in the appendices in order to give the reader the context of the issues before I present additional technical detail and further discussion.

II. THE COST OF CAPITAL AND RISK

A. The Cost of Capital and Risk

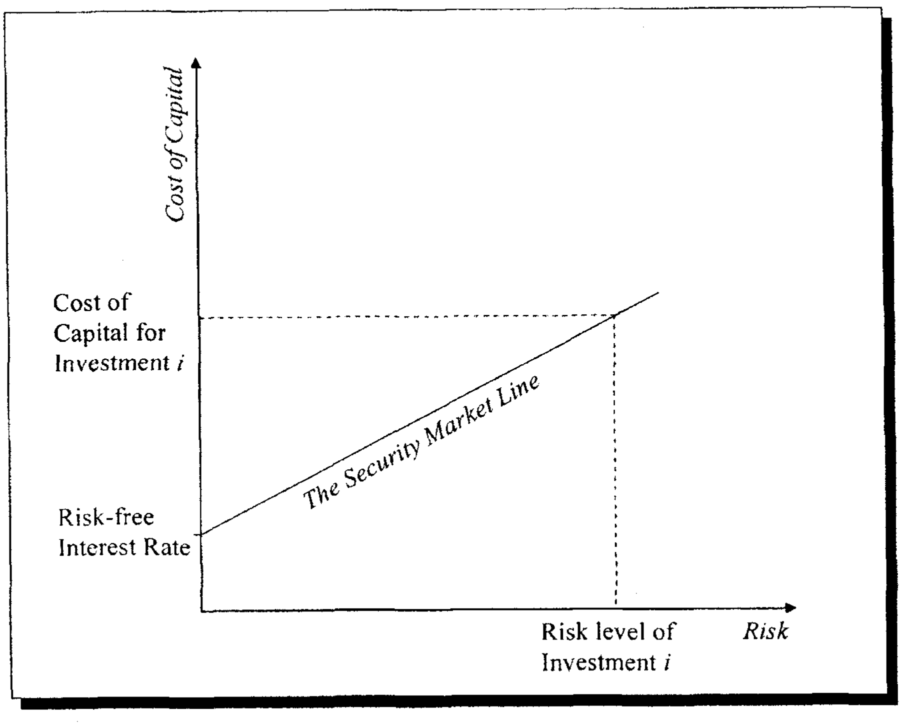
Q. PLEASE FORMALLY DEFINE THE "COST OF CAPITAL."

A. The cost of capital is the expected rate of return in capital markets on alternative investments of equivalent risk. In other words, it is the rate of return investors require based on the risk-return alternatives available in competitive capital markets. The cost of capital is a type of opportunity cost: it represents the rate of return that investors could expect to earn elsewhere without bearing more risk.[3]

[3] "Expected" is used in the statistical sense: the mean of the distribution of possible outcomes. The terms "expect" and "expected" in this testimony, as in the definition of the cost of capital itself, refer to the probability-weighted average over all possible outcomes.

The definition of the cost of capital recognizes a tradeoff between risk and return that is known as the "security market risk-return line," or "security market line" for short. This line is depicted in Figure 1. Figure 1 shows that the higher the risk, the higher the cost of capital. The risk depicted on the horizontal axis in Figure 1 is often measured by the security's beta, which measures the security's systematic risk in comparison to the market as a whole. The market as a whole has a beta of 1, so betas below one indicate a security with less systematic risk than the market whiles a beta above 1 indicate a security with higher systematic risk than the market. A version of Figure 1 applies for all investments. However, for different types of securities, the location of the line may depend on corporate and personal tax rates.

Figure 1: The Security Market Line



Q. WHY IS THE COST OF CAPITAL RELEVANT IN RATE REGULATION?

A. U.S. rate regulation accepts the "cost of capital" as the right expected rate of return on utility investment.[4] This practice is normally viewed as consistent with the U.S. Supreme Court's opinions in *Bluefield Waterworks & Improvement Co. v. Public Service Commission*, 262 U.S. 678 (1923), and *Federal Power Commission v. Hope Natural Gas*, 320 U.S. 591 (1944).

From an economic perspective, rate levels that give investors a fair opportunity to earn the cost of capital are the lowest levels that compensate investors for the risks they bear. Over the long run, an expected return above the cost of capital makes customers overpay for service. Regulatory authorities normally try to prevent such outcomes, unless there are offsetting benefits (e.g., from incentive regulation that reduces future costs). At the same time, an expected return below the cost of capital does a disservice not just to investors but, importantly, to customers as well. In the long run, such a return denies the company the ability to attract capital, to maintain its financial integrity, and to expect a return commensurate with that of other enterprises characterized by commensurate risks and uncertainties.

More important for customers, however, are the economic issues an inadequate return raises for them. In the short run, deviations of the expected rate of return on the rate base from the cost of capital may seemingly create a "zero-sum game"-- investors gain if customers are overcharged, and customers gain if investors are shortchanged. But in fact, even in the short run, such action may adversely affect the utility's ability to provide stable and favorable rates because some potential efficiency investments may be delayed or because the company is forced to file more frequent rate cases. In the long run, inadequate returns are likely to cost customers – and society generally – far more than

[4] An early paper that links the cost of capital as defined by financial economics with the correct expected rate of return for utilities is Stewart C. Myers, "Application of Finance Theory to Public Utility Rate Cases," *The Bell Journal of Economics and Management Science*, 3:58-97 (Spring 1972).

may be gained in the short run. Inadequate returns lead to inadequate investment, whether for maintenance or for new plant and equipment. The costs of an undercapitalized industry can be far greater than the short-run gains from shortfalls in the cost of capital. Moreover, in capital-intensive industries (such as the water industry),[5] systems that take a long time to decay cannot be fixed overnight. Thus, it is in the customers' interest not only to make sure that the return investors expect does not exceed the cost of capital, but also to make sure that it does not fall short of the cost of capital, either.

Of course, the cost of capital cannot be estimated with perfect certainty, and other aspects of the way the revenue requirement is set may mean investors expect to earn more or less than the cost of capital even if the allowed rate of return equals the cost of capital exactly. However, a commission that sets rates so investors expect to earn the cost of capital on average treats both customers and investors fairly, which is in the long-run interests of both groups.

While it may seem counter-intuitive that the cost of capital has increased in a market where many companies and individuals have seen their income decline, it is important to keep two facts in mind. First, the cost of capital is an *expected* rate of return and thus a forward looking measure as opposed to a measure of the recent past. Therefore, low realized returns in, for example, 2008 do not necessarily reflect the *expected* rate of return. As market volatility and investors' risk aversion has increased, investors are likely to require a higher return for providing capital. Second, it the expected rate of return that is available in capital markets on alternative investments of equivalent risk, so a key question becomes what the return on alternative investments is. The yields on

[5] Water utilities are very capital intensive and have over the last five years earned only about $0.33 for each $1 of property, plant of equipment. In comparison, railroads earn approximately $0.45, gas utilities $1.35, and the Dow Jones companies $4.56 for each $1 invested in property, plant and equipment.

investment grade utility bonds, which are relatively low risk, have increased, so utility stock would expect a higher rate of return, too. Therefore, the cost of equity in today's financial markets is higher than it was before the financial crisis.

B. Business Risk and Financial Risk: Capital Structure and the Cost of Equity

Q. WHAT IS THE DIFFERENCE BETWEEN BUSINESS RISK AND FINANCIAL RISK?

A. Business risk is the risk of a company from its line of business if it used no debt financing. When a firm uses debt to finance its assets, the business risk of the assets is shared between the debt holders and the equity holders, but the equity holders bear more of the risk because debt holders have a prior claim on the company's cash flows. Equity holders are residual claimants, which simply mean that equity holders get paid last. In other words, the use of debt imposes financial risk on equity holders. The goal of selecting a sample is to choose companies whose business risk is judged to be comparable to the regulated company in the proceeding. As a result, differences in financial risk must be dealt explicitly.

Q. PLEASE EXPLAIN WHY IT IS NECESSARY TO REPORT THE COST OF EQUITY ADJUSTED FOR CAPITAL STRUCTURE.

A. Rate regulation in North America has traditionally focuses on the components of the rates.[6] In other words, the focus of cost-of-capital estimation is usually on determining the "right" cost of equity, and to a lesser degree on setting the allowed capital structure. While the overall cost of capital depends primarily on the company's line of business, the distribution of the cost of capital among debt and equity depends on their share in total

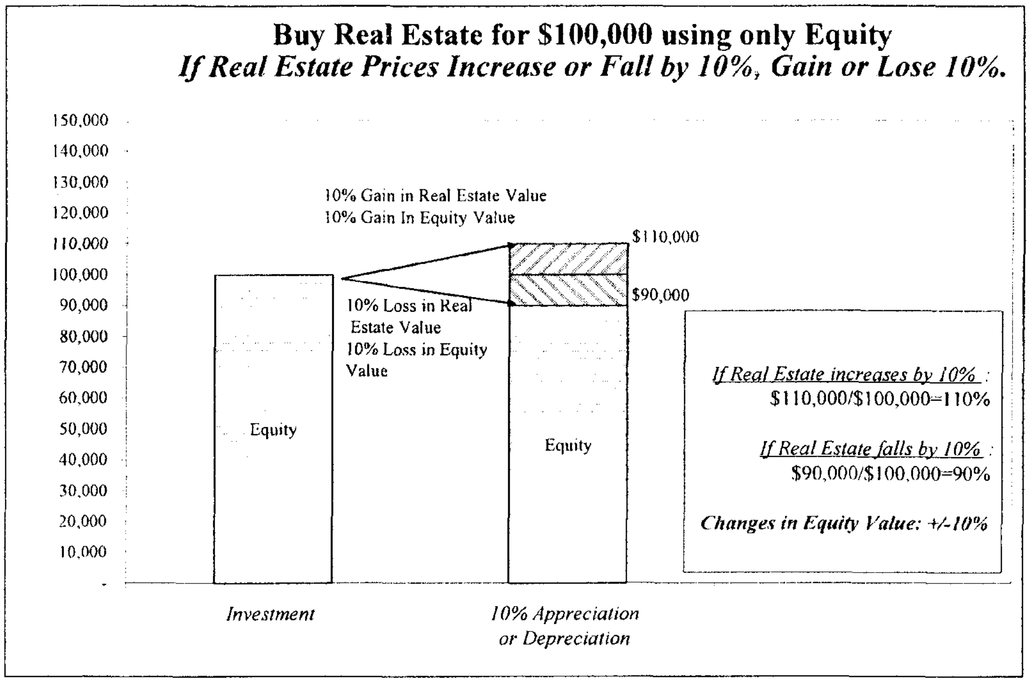
[6] An exception is the recent decision by the National Energy Board of Canada which in its RH-1-2008 decision, issued March 2009, determined the after-tax weighted average cost of capital rather than a return on equity and a capital structure.

revenues. Debt holders' claim is usually a fixed amount (except in situations of default) while equity holders are residual claimants, meaning that equity holders get paid last. In other words, the use of debt imposes financial risk on the equity holders. Because a company's financial risk depends on its capital structure, the risk shareholders carry increases with the leverage of the company. As shareholders expect to be compensated for increased risk, the required rate of return increases with the company's leverage. The increased risk is caused by the fact that debt has a senior claim on a specified portion of earnings and in bankruptcy on assets. As common equity is the most junior security, it gets what's left after everyone else has been paid. In other words, common equity holders carry all residual risk. However, as explained in more detail in Appendix E, the overall cost of capital is constant within a broad middle range of capital structures, although the distribution of costs and risks among debt and equity holders is not.

Q. PLEASE PROVIDE AN EXAMPLE ON HOW DEBT ADDS RISK TO EQUITY.

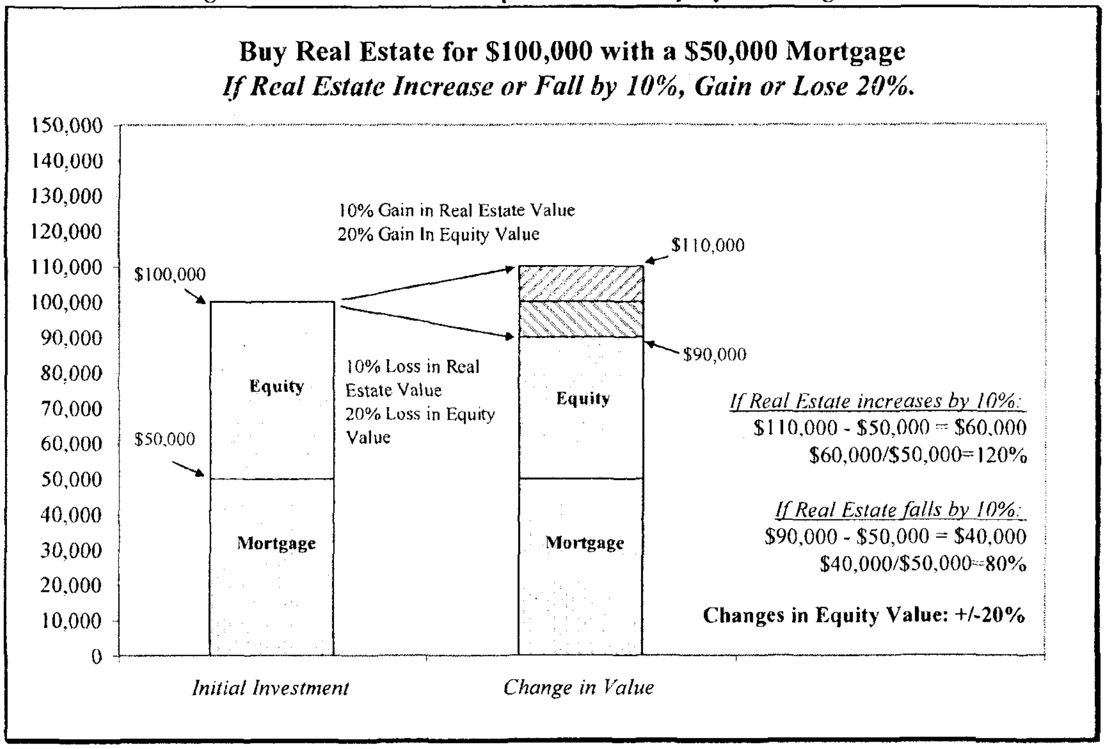
A. As a simple example, think of an investor who takes money out of his savings account and invests $100,000 in real estate. The future value of the real estate is uncertain. If the real estate market booms, he wins. If the real estate market goes down, he loses. Figure 2 below illustrates this.

Figure 2. Financial risk example – equity financing



In the scenario above, the investor financed his real estate purchase through 100 percent equity. Suppose instead that the investor had financed 50 percent of his real estate investment with a mortgage of $50,000. The mortgage lender does not expect to share in any benefits from increases in real estate values. Neither does the mortgage lender expect to share in any losses from falling real estate values. As a result, the investor carries the entire risk of fluctuating real estate prices. Figure 3 illustrates this effect.

Figure 3. Financial risk example - debt and equity financing



In Figure 3, where the investor financed his purchase through 50 percent equity and 50 percent debt, the variability in the investor's equity return is two times greater than that of Figure 2. The entire fluctuation of 10 percent from rising or falling real estate prices falls on the investor's $50,000 equity investment. The lesson from the example is obvious: debt adds risk to equity.

C. Implications for Analysis

Q. PLEASE EXPLAIN THE IMPLICATIONS OF THE RELATIONSHIP BETWEEN CAPITAL STRUCTURE AND THE COST OF EQUITY FOR RATE REGULATION.

A. The risk equity holders carry, and therefore the cost of equity, depends on the capital structure. As illustrated in the example above, as leverage increases, the market risk increases and hence the required return on equity increases.

Q. TO ASSESS THE MAGNITUDE OF FINANCIAL RISK FOR A RATE REGULATED COMPANY, SHOULD YOU USE THE MARKET-VALUE OR THE BOOK-VALUE CAPITAL STRUCTURE?

A. The market-value capital structure is the relevant quantity for analyzing the cost-of-equity evidence, which is based on market information.[7]

Q. PLEASE PROVIDE AN EXAMPLE THAT ILLUSTRATES WHY MARKET VALUES ARE RELEVANT.

A. Suppose in the previous example that the investor has invested in real estate 10 years ago. Further assume that depreciation has reduced the book value of the real estate from \$100,000 to \$75,000 and assume the investor has paid off 40 percent of his \$50,000 mortgage. Thus, the investor has a remaining mortgage of \$30,000 (= 60% × \$50,000). The book value of the investor's equity is therefore \$45,000 (= \$75,000 - \$30,000).

What happens now if real estate prices rise or fall 20 percent? To answer that question, we need to know how real estate prices have developed over the past 10 years. If the market value of the real estate now is \$200,000, then a 20-percent decrease in the price of real estate (\$40,000) is almost equal to the investor's book value equity. However, his market value equity (or net worth) is equal to the value of the real estate minus what he owes on the mortgage. If we assume that the market value of the mortgage equals the unpaid balance (\$30,000), then the investor's net worth is calculated as follows:

[7] The need to use market-value capital structures to analyze the effect of debt on the cost of equity has been recognized in the financial literature for a long time. For example, the initial reconciliation of the Modigliani-Miller theories of capital structure with the Capital Asset Pricing Model, in Robert S. Hamada, "Portfolio Analysis, Market Equilibrium and Corporate Finance," *The Journal of Finance* 24: 13-31 (March 1969) works with market-value capital structures. For a more recent presentation of the concept, see, for example, Richard A. Brealey, Stewart C. Myers, and Franklin Allen, *Principles of Corporate Finance*, New York: McGraw-Hill/Irwin 9th ed. (2008) (Brealey, Myers, and Allen (2008)) pp. 530-533. Book values may be relevant for some issues, e.g., for covenants on individual bond issues, but as explained in the text, market values are the determinants of the impact of debt on the cost of equity.

Net Worth	=	Market Value of Real Estate	-	Remaining Mortgage
	=	$200,000	-	$30,000
	=	$170,000		

Therefore, the rate of return on equity due to a 20 percent decline in real estate prices is calculated as follows:

Table 1. Calculating the Rate of Return on Equity

Decline in Real Estate Value	$40,000
Market-Value Equity	$170,000
Rate of Return on Equity	- $40,000/$170,000 = -23.5%

Q. PLEASE EXPLAIN THE IMPLICATIONS FOR RATE REGULATION AND YOUR TESTIMONY.

A. Because the market risk, and therefore the cost of equity, depends on the market-value capital structures, one must base the estimation of the sample companies' cost of capital on market value capital structures. An approach that estimates the cost of equity for each of the sample firms without explicit consideration of the market value capital structure (i.e. the financial risk) underlying those costs risks material errors. The cost-of-equity estimates of the sample companies at their actual market-value capital structures are not necessarily reflected in the regulatory capital structure. Therefore, using book values could lead to an incorrect rate of return. I avoid this problem by calculating each sample company's ATWACC using its market value capital structure. I then use the sample companies' average overall cost of capital to determine the corresponding return on equity at Arizona-American Water's regulatory capital structure. This procedure ensures that the capital structure and the estimated cost of equity are consistent.

In my analyses, I estimate the cost of equity for each of the sample firms using traditional estimation methods (such as the DCF and Capital Asset Pricing Model (CAPM)). For each estimation method, I use each sample company's estimated cost of equity, market cost of debt and market-value capital structure to estimate along with Arizona-American Water's marginal tax rate to estimate each sample company's overall cost of capital. I then calculate the samples' average overall cost of capital for each estimation method. Finally, I determine the cost of equity that is associated with the estimated ATWACC at Arizona-American Water's regulated capital structure. Thus, the samples' overall cost-of-capital and that of Arizona-American Water is the same.

Q. IS THE USE OF MARKET VALUES TO CALCULATE THE IMPACT OF CAPITAL STRUCTURE ON THE RISK OF EQUITY INCOMPATIBLE WITH USE OF A BOOK-VALUE RATE BASE FOR A REGULATED COMPANY?

A. No. Investors buy stock at market prices and expect a reasonable return on their investment. Market-based cost-of-equity estimation methods, such as DCF or CAPM which are frequently used in rate regulation, recognize this and rely on market data. That is, the cost of capital is the fair rate of return on regulatory assets for both investors and customers. Most regulatory jurisdictions in the U.S. measure the rate base using the net book value of assets, not current replacement value or historical cost trended for inflation. But the jurisdictions still apply market-derived measures of the cost of equity to that net book value rate base.

The issue here is "what level of risk is reflected in that cost-of-equity estimate?" That risk level depends on the sample company's market-value capital structure, not its book-value capital structure. *That risk level would be different if the sample company's market-value capital structure exactly equaled its book-value capital structure, so the estimated cost of equity would be different, too.*

Q. PLEASE SUM UP THE IMPLICATIONS OF THIS SECTION.

A. The market risk, and therefore the cost of equity depend on the market-value capital structure of the company or asset in question. It therefore is impossible to validly compare the measured costs of equity of different companies without taking capital structure into account. Capital structure and the cost of equity are unbreakably linked, and any effort to treat the two as separate and distinct questions violates both everyday experience (e.g., with home mortgages) and basic financial principles.

Q. HOW SHOULD A COST-OF-CAPITAL ANALYST IMPLEMENT THIS PRINCIPLE?

A. As discussed further in Appendix E, there has been a great deal of financial research on the effects of capital structure on the value of the firm. One of the key conclusions that result from the research is that no narrowly defined optimal capital structure exists within industries, although the typical range of capital structures does vary among industries. Instead, there is a relatively wide range of capital structures within any industry in which fine-tuning the debt ratio makes little or no difference to the value of the firm, and hence to its overall after-tax cost of capital.

Accordingly, it is appropriate to treat the market-value weighted average of the cost of equity and the after-tax current cost of debt, or the "ATWACC" for short, as constant. The economically appropriate cost of equity for a regulated firm is the quantity that, when applied to the regulatory capital structure, produces the same ATWACC, as was derived from the sample companies. That value is the cost of equity that the sample would have, estimation problems aside, if the sample's market-value capital structure had been equal to the regulatory capital structure in question.

Q. HOW DO YOU CALCULATE THE COST OF EQUITY CONSISTENT WITH THE MARKET-DETERMINED ESTIMATE OF THE SAMPLE'S AVERAGE COST OF CAPITAL?

A. For simplicity assume that all sample companies have only common stock and debt. Then the ATWACC is calculated as:

$$ATWACC = r_D \times (1 - T_C) \times D + r_E \times E$$

where r_D is the market cost of debt, r_E is the market cost of equity, T_C is the marginal corporate income tax rate, D is the percent debt in the capital structure, and E is the percent equity in capital structure. The cost of equity consistent with the overall cost-of-capital estimate (ATWACC), the market cost of debt and equity, the marginal corporate income tax rate and the amount of debt and equity in the capital structure can be determined by solving equation (1) for r_E.

Q. WHY DOESN'T ARIZONA-AMERICAN WATER SIMPLY INCREASE ITS EQUITY RATIO SO THAT NO ADJUSTMENT IS NEEDED?

A. First, as long as a utility operates within a broad middle range of capital structure the total capital costs are the same, so it is not clear why it would affect rates. Second, as discussed in the Direct Testimony of Mr. Paul G. Townsley (Townsley Testimony), the parent of Arizona-American Water, American Water Works, has not infused equity capital in the Company in 2009 or 2010, and has no plans on providing additional equity unless the financial performance of the Company improves.[8] Therefore, it would be extremely difficult if not impossible for Arizona-American Water to increase its equity ratio without an improvement in the earned return.

[8] Direct Testimony of Paul Townsley.

Q. CAN YOU PROVIDE AN EXAMPLE OF HOW THIS FORMULA IS USED TO DETERMINE THE COST OF EQUITY?

A. Yes. Consider a company with a 40 percent marginal corporate income tax rate and a cost of debt equal to 6 percent. For simplicity, I assume there is no difference in the company's embedded cost of debt and the cost at which it currently can issue additional debt. Further, suppose that the ATWACC estimate based on a sample of companies with comparable business risk is 7.5 percent. If the company's capital structure has 50 percent debt and 50 percent equity, equation (1) above yields a cost-of-equity estimate of 11.4 percent. If the equity ratio is lower, for example 45 percent, the cost of equity would instead be 12.3 percent. Conversely, a higher equity ratio such as 55 percent would imply a lower cost-of-equity estimate of 10.7 percent. Table 2 below summarizes these calculations as well as the dollar amount customers have to pay for financing costs.

Table 2. Example of the effect of capital structure on the estimated cost of equity.

Marginal tax rate	40%		
Cost of debt	6%		
Estimated ATWACC	7.50%		
Rate Base	$ 1,000,000		
Regulatory Equity Ratio	45%	50%	55%
Regulatory Debt Ratio	55%	50%	45%
Estimated ATWACC	7.50%	7.50%	7.50%
Cost-of-equity	12.3%	11.4%	10.7%
After Tax Cost of Financing[1)]	$ 75,000	$ 75,000	$ 75,000
Before Tax Cost of Financing[2)]	$ 125,000	$ 125,000	$ 125,000

[1)] Estimated ATWACC × Rate Base.
[2)] Estimated ATWACC × Rate Base / (1 - Tax Rate).

The important point of this example is that the overall cost of capital does not depend on the company's capital structure, as long as the capital structure is in a wide middle range of values. Therefore, the cost to customers does not depend on the capital structure either. A higher equity ratio simply means that a higher percentage return is paid to equity investors, but the fraction of the rate base to which this higher return applies is lower. The equity investors are compensated appropriately for the higher risk, but that has no effect on the overall cost borne by customers. As long as equity investors are correctly compensated for the risk of their investment, the only effect that a higher equity ratio has is on how the return is divided between debt holders and equity holders, and not on how much customers end up paying.

Q. BUT IS IT NOT THE CASE THAT IF THE ALLOWED RATE OF RETURN ON EQUITY IS LOWER, THEN ALL ELSE EQUAL RATEPAYERS PAY LESS?

A. Yes, for a given equity percentage. However, it comes at a cost: if the rate of return on equity for a capital structure with 55 percent equity were applied to a company whose equity ratio is 45 percent, the company's equity investors would not be compensated for the financial risk of their investment. In particular, in this situation the expected return on equity would be set too low. Such a result would impair the company's ability to attract investors, since they can expect higher returns elsewhere for the same risk level. This may well have negative consequences for the utility's ability to sustain an appropriate level of investment. Ultimately, this translates into a lower quality of the services that the utility can provide to its customers. Alternatively, the company could reduce its equity percentage with possibly negative effects on the cost of debt or other credit factors.

Q. ARE YOU AWARE THAT COMMISSION STAFF PREFERS A SPECIFIC METHDOLOGY AND THAT STAFF IN THE PAST HAS VIEWED THE ATWACC METHDOLOGY APPLIED TO MARKET VALUES AS NON-STANDARD?

A. Yes. In past proceedings, Commission Staff has typically relied on two versions of the DCF methodology and two versions of the risk-positioning methodology. In addition, Staff has in the past taken differences between the sample's and Arizona-American Water's book-value capital structure into account. Thus, Commission Staff has in the past acknowledged that differences in capital structure needs to be considered as companies with less equity face higher financial risk. Specifically, Staff has in the past relied upon the so-called Hamada methodology to compensate Arizona-American Water for having higher financial risk that the sample companies.[9] However, the Hamada article that derives the Hamada methodology clearly uses market values[10] as do newer expositions of the results.[11]

III. CURRENT FACTORS TO CONSIDER WHEN SETTING THE COST OF CAPITAL

Q. WHAT DO YOU DISCUSS IN THIS SECTION?

A. This section addresses the effect of the recent recession and ongoing financial turmoil on the cost of capital.

Q. HOW DOES THE FINANCIAL TURMOIL IMPACT THE COST OF CAPITAL?

A. Although the turmoil in the financial markets has lessened, economic conditions are not back to their pre-crisis status. For example, although the spread between utility bond yields and government bonds yields (yield spread) narrowed in recent months, the spread remains larger than before the crisis and especially so for lower-rated bonds, including utility bonds. Capital markets remain more volatile than prior to the crisis, and macroeconomic factors such as unemployment and mortgage foreclosures are very high by historic standards. Some investors fear that the current economic recovery may not

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[9] See, for example, Direct Testimony of Juan C. Manrique in Docket No. W-0130A-09-0343, p. 43.

[10] Robert S. Hamada, "Portfolio Analysis, Market Equilibrium and Corporate Finance," *The Journal of Finance* 24: 13-31 (March 1969).

[11] It is also noteworthy that other jurisdictions such as the Australian Energy Regulator and the New Zealand Commerce Commission rely on market value capital structures to determine the overall cost of capital.

continue and that we may enter a "double dip" recession. At the same time, the deficits at all levels of government are at high and unsustainable levels, with the potential for rampant inflation inherent in the deficit spending by the U.S. government and by the liquidity injected into the capital markets by the Federal Reserve (Fed).

Q. HOW HAS THE YIELD SPREAD BETWEEN GOVERNMENT AND UTILITY BONDS CHANGED SINCE THE START OF THE CREDIT CRISIS?

A. Although the yield on utility bonds declined and the spread between utility bond yields and government bond yields has narrowed from the height of the financial crisis, the yield spread has recently begun to increase again in response to the ongoing economic uncertainty. The yield on utility bonds has shown an increased spread to government bond yields during much of the past year than prior to the credit crisis. Figure 4 illustrates an important point: the yield spread increases dramatically during times of financial distress, which is one reason that the credit ratings of regulated companies should not be allowed to decline to non-investment grade levels. Further, Figure 4 illustrates that the yield spread remain higher than prior to the financial crisis of 2008-09. A supportive regulatory environment coupled with an appropriate allowed ROE are important components to insure that the utility's credit rating remains investment grade.

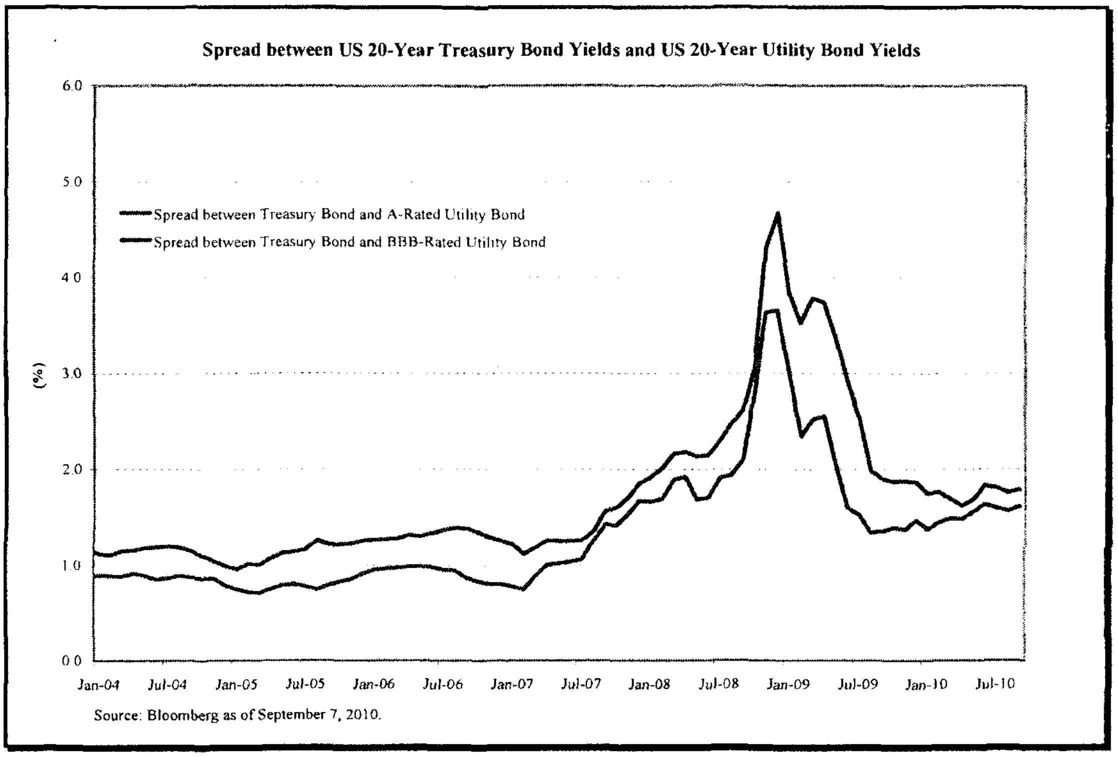

Figure 4

The current spread between the yield on utility bonds and 20-year government is unusually high as illustrated in Table 3 below. The spread between 20-year A-rated utility bond yield and the 20-year government bond yield is currently 66 bps above its normal level, while the widening for BBB-rated utility bonds is a bit lower.

Table 3

Spreads between US Utility Bond (20 year maturity) and US Treasury Bond (20 year maturity)

Periods	Bloombergs Composite A-Rated Utility and Treasury	Bloombergs Composite BBB-Rated Utility and Treasury	Notes
Period 1 - Average Apr-1991 - 2007	0.95	1.25	[1]
Period 2 - Average Aug-2008 - 2010	1.94	2.54	[2]
Period 3 - Average Aug 2010	1.57	1.76	[3]
Period 4 - Average 15-Day (Aug. 31 - Sept. 21, 2010)	1.61	1.79	[4]
Spread Increase between Period 2 and Period 1	0.99	1.29	[5] = [2] - [1].
Spread Increase between Period 3 and Period 1	0.62	0.51	[6] = [3] - [1].
Spread Increase between Period 4 and Period 1	0.66	0.54	[7] = [4] - [1].

Source:
Spreads for the periods are calculated from Bloomberg's yield data.
Data were retrieved from Bloomberg as of October 15, 2010, calculations are through September 21, 2010.

Q. WHAT IS THE IMPLICATION OF HIGHER THAN NORMAL YIELD SPREADS?

A. A higher than normal yield spread is one indication of the higher cost of capital. As investors consider the risk-return tradeoff illustrated in Figure 1, they select investments based on the desired level of risk. Currently, the expected return on utility debt is elevated (relative to government debt). More risky equity is therefore also more costly relative to government debt. As a result, the cost of equity is currently elevated compared to its pre-crisis level. I discuss how to take this fact into account below.

Q. ARE THE HIGHER THAN NORMAL YIELD SPREADS AN INDICATION OF INVESTORS' "FLIGHT TO SAFETY"?

A. Yes. When investors become concerned about the economy, they frequently seek to reduce their exposure to investment risk. U.S. Government debt is generally considered to be the least risky available investment – in effect it is considered to be risk-free – so U.S. Government debt is in high demand during times of economic uncertainty.

Q. DO REGULATED COMPANIES BENEFIT FROM THE FLIGHT TO SAFETY?

A. To a degree. However, the required return on all risky investments, including utilities, increases during a time of flight to safety. Stock prices of regulated companies fell along with the market, although not as much in percentage terms as the market, but that is to be expected because regulated companies are of lower risk. The prices of regulated companies have recovered along with the market, but not as quickly or as much in percentage terms as the market, again as expected by the relative risk of regulated companies compared to the market.[12]

Q. WHAT EVIDENCE DO YOU HAVE THAT FINANCIAL MARKETS ARE VOLATILE?

A. Although the day-to-day volatility has decreased from the height of the financial crisis, it remains high by historical standards. As displayed in Figure 5 below, the VIX index is higher its historical level.[13] The VIX index is an indicator of volatility in the market, and a high value indicates substantial uncertainty among investors. The relatively high level of VIX is one important measure demonstrating that financial markets remain more volatile than in the recent past.

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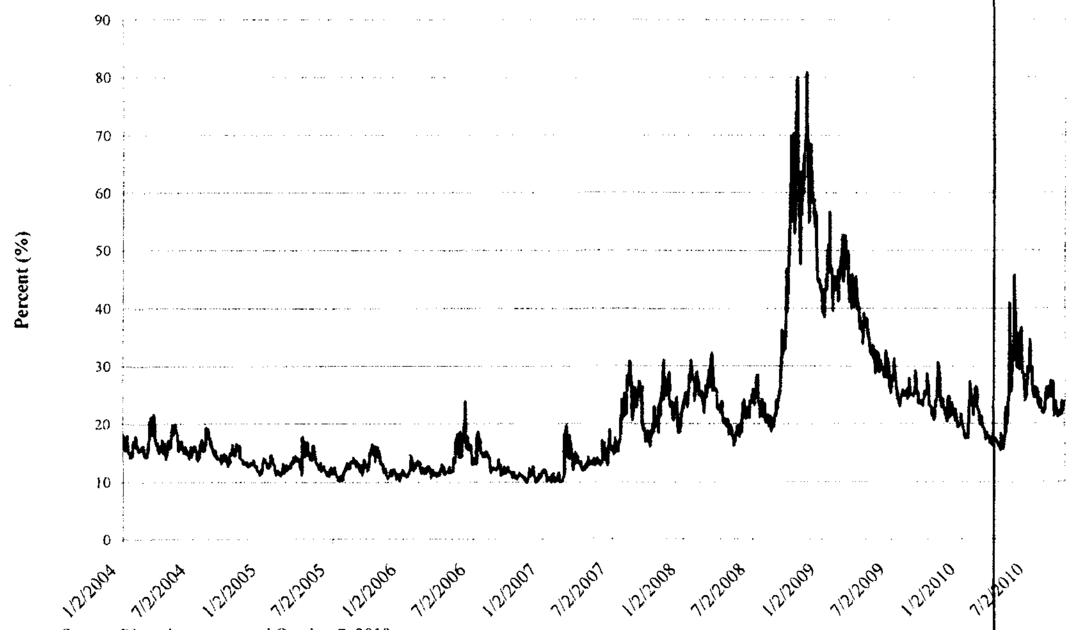
[12] For example, while the Dow Jones Industrial Index and the S&P 500 have gained more than 60% since their low in March 2009, the Dow Jones Utility Index has only increased approximately 35%.

[13] Trading in futures on the VIX index started in 2004. (http://www.cboe.com/micro/vix/introduction.aspx)

VIX Index: January 2004 through September 2010



Source: Bloomberg, accessed October 7, 2010.

Q1.

Figure 5

As can be seen from Figure 5, the VIX index and thus market volatility remains above the pre-crisis level.

Q. WHY IS IT IMPORTANT TO CONSIDER THE STOCK MARKET'S VOLATILITY?

A. Academic research finds that investors expect a higher risk premium during more volatile periods. The higher the risk premium, the higher is the required return on equity. For example, French, Schwert, and Stambaugh (1987) find a positive relationship between the expected market risk premium (MRP) and volatility:

> We find evidence that the expected market risk premium (the expected return on a stock portfolio minus the Treasury bill yield) is positively related to the predictable volatility of stock returns. There is also evidence that unexpected stock returns are negatively related to the unexpected change in the volatility of stock returns. This negative relation provides

> indirect evidence of a positive relation between expected risk premiums and volatility.[14]

One significant implication of this finding is that even if investors' risk aversion had not changed, the MRP would increase simply because market volatility is up.

Q. WHAT DO YOU MEAN BY THE TERM "RISK AVERSION"?

A. Risk aversion is the recognition that investors dislike risk, which means that for any given level of risk, investors must expect to earn a higher return than before to be induced to invest. An increase in risk aversion means that investors require an even greater return for a given level of risk.

Q. ARE THERE ANY FACTS THAT INDICATE THAT INVESTORS' ATTITUDE TOWARDS RISK HAS CHANGED?

A. Yes. Many investors were burned and lost substantial wealth during the 2008-09 financial crisis and it likely will take a while for the confidence in financial markets to be restored. According to a recent Mercer report, pension plans shifted approximately $40 billion to bonds from other asset classes in 2009.[15] This indicates that they remain cautious about other investments, including stocks. If investors have changed their attitude towards risk, then the required reward for investing in the stock market, i.e., the MRP, must have gone up and is likely to stay at a higher-than-normal level for the foreseeable future. An increase in the MRP is corroborated by Professor Damodaran, who assessed the increase to the MRP to be on the order of two percent.[16] This view is

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[14] K. French, W. Schwert and R. Stambaugh (1987), "Expected Stock Returns and Volatility," *Journal of Financial Economics*, Vol. 19, pp 3.

[15] Aspen Publishers news release, "Pension Plan Sponsors Repositions to Bonds, Mercer Reports," May 13, 2010.

[16] Professor Aswath Damodaran, "September 12 to October 16, Five weeks from Hell? And the lessons we have learned ...," power point presentation, New York University.

(www.stern.nyu.edu/~adamodar/pdfiles/country/crisis08.pdf) supported by a recent article suggesting that the equity risk premium is at an all time high in the United States.[17] An increase in the MRP results in an increase in the cost of capital for all risky investments including regulated utilities.

Q. IF THE INCREASE IN THE COST OF CAPITAL IS LIKELY TO BE TEMPORARY, SHOULD THE COMMISSION STILL TAKE THE INCREASED COST OF CAPITAL INTO CONSIDERATION WHEN SETTING THE ALLOWED RETURN FOR THE COMPANY?

A. Yes. I recommend that the Commission recognize the increased cost of capital. Although I believe that some of the increase in yield spread and in the MRP is likely to be temporary, it is very difficult to predict when the capital markets will return to normal conditions, so it is difficult to predict when the market cost of risk will return to normal levels. Even when market conditions are more normal than during the height of the financial crisis, investors' risk aversion may remain higher well into the recovery period until their confidence fully returns. The federal government seems to recognize investors' fears, and is in the process of overhauling the financial regulatory environment in order to restrict the behavior by financial institutions that led to the current crisis.[18] While the success or failure of those actions are unlikely to be observed in the short- to medium-term, in the long run these measures may help alleviate investors concerns. However, it could easily be years before investors regain the confidence prevailing prior to the current crisis. In fact, there may be a "permanent" adjustment in risk tolerance now that investors realize that severe economic conditions are still possible even with the increased tools to manage the economy available to government.

[17] *The Economist*, "A Bull Market in Pessimism," August 21st to 27th, 2010, pp. 59-60.

[18] The so-called Dodd-Frank Act was passed in July 2010. For a summary, see "Brief Summary of the Dodd-Frank Wall Street Reform and Consumer Protection Act" by the Senate's Banking Committee. Available at http://banking.senate.gov/public/_files/070110_Dodd_Frank_Wall_Street_Reform_comprehensive_summary_Final.pdf)

Q. ARE THERE OTHER ISSUES THAT MAY AFFECT THE COST OF CAPITAL IN THE LONGER TERM?

A. Yes, the federal budget deficit is the highest on record with the 2009 fiscal year deficit at $1.4 trillion, more than triple that of 2008 and well above the average for the last ten years. Further, the Congressional Budget Office (CBO) recently announced that the 2010 deficit was the second largest on record at $1.3 trillion corresponding to 8.9% of the GDP.[19] The CBO estimates that the budget deficit will remain high over the foreseeable future.[20] It will be difficult to sustain such a high deficit, so it is likely that the magnitude of the federal deficit will affect the inflation and hence the cost of capital going forward. Also, the Fed now holds approximately one trillion dollars in mortgage-backed securities and continues to have substantial holdings related to Bear Stearns, AIG, and other institutions.[21] It is unclear how the unwinding of these positions will affect financial markets, which creates additional uncertainty and market volatility.

Q. CAN YOU SUMMARIZE HOW THE ECONOMIC DEVELOPMENTS DISCUSSED ABOVE HAVE AFFECTED THE RETURN ON EQUITY AND DEBT THAT INVESTORS REQUIRE?

A. Investors have been dramatically affected by the credit crisis, and companies such as Arizona-American rely on these investors to support efficient business operations. As noted previously, many have lost their jobs, their homes and/or their savings. Many cannot retire as early as hoped or planned. As a result investors' risk aversion has increased. Figure 5 above shows that volatility has increased over its historical level and day-to-day volatility remains high as investors react to financial news. Although the bottom of the economic downturn may have been reached, the speed and duration of

[19] http://cboblog.cbo.gov/?p=1457.

[20] Congressional Budget Office: http://www.cbo.gov/

[21] Federal Reserve Statistical Release, March 25, 2010 (http://www.federalreserve.gov/releases/h41/).

economic recovery are highly uncertain as are the effects of the federal budget deficit and the Fed's unwinding of its involvement in providing credit. Uncertainty in the capital markets remains high due in part to the ongoing concern over sovereign debt in Europe. Therefore, the required level of return is higher today than it was prior to the crisis for all risky investments.

Q. HOW DO YOU TAKE THE CURRENT ECONOMIC CONDITIONS INTO ACCOUNT WHEN ESTIMATING THE COST OF EQUITY?

A. Because the risk-free rate currently is unusually low and the spread between the yield on utility bonds and government bonds is high, I recognize the phenomena by adding a "yield spread adjustment" to the current long-term risk-free rate. This has the effect of increasing the intercept of the Security Market Line displayed in Figure 1 above. The normalization of the risk-free rate is consistent with forecasts on the government bond yield, where, the Federal Reserve Bank of Philadelphia recently releases a survey, which expects the yield on the 10-year government bond to increase by 60-130 basis points over the next 1-2 years.[22] In addition, I present result for several estimates of the MRP, which has increased due to investors' added risk aversion. In addition to my baseline results, which rely on an MRP of 6.5%, I also estimate the risk positioning models using and MRP of 7.0% and 7.5%.[23] These sensitivity analyses show that the cost of equity for Arizona-American Water likely has increased by 25 to 75 basis points as a result of the financial crisis. However, my recommended range and point estimate is fully supported by the baseline results that do not increase the MRP over its historical estimate.

[22] Federal Reserve Bank of Philadelphia, "Survey of Professional Forecasters: Third Quarter 2010," August 13, 2010 comparing the data provided for Q3, 2010 with the forecast for 2011 and 2012.

[23] Because it is plausible that the government bond beta against the equity market is different from zero, I adjust the risk-free rate downward in the sensitivity analyses where the MRP is increased. The details of this relationship is explained in Appendix C.

Q. HOW HAVE THE FINANCIAL CONDITIONS DISCUSSED ABOVE AFFECTED THE WATER INDUSTRY?

A. There is a substantial need for ongoing investment in water industry infrastructure. The EPA has recently updated the spending needs in the water industry from $275 billion to $334.8 billion over the next 20 years.[24] These expenditures are driven by the need for upgrades to the distribution and transmission system as well as by the need to develop new water resources Thus, infrastructure investment in the water industry will require substantial external financing (i.e., new debt and equity). Access to capital requires that investors expect to earn their required return. Failure to provide adequate returns may discourage potential investors.

Q. IS THIS DISCUSSION RELEVANT TO ARIZONA-AMERICAN WATER?

A. Yes. As discussed in the Townsley Testimony, Arizona-American Water's has not had any recent infusions of equity capital and its access to equity capital may be limited. While it is always true that investors expect a reasonable return on their investment, the financial crisis has crystallized the need to earn a reasonable return to maintain or gain access to equity capital.

IV. THE COST OF CAPITAL FOR THE BENCHMARK SAMPLES

Q. HOW IS THIS SECTION OF YOUR TESTIMONY ORGANIZED?

A. As noted in *Section I*, I estimate the cost of capital using two samples of comparable risk companies. This section first covers preliminary matters such as sample selection, market-value capital structure determination, and the sample companies' costs of debt. It then covers estimation of the cost of equity for the sample companies and the resulting estimates of the sample's overall after-tax cost of capital.

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[24] Rudden Energy Strategies Report, May 26, 2009 p. 6.

A. Preliminary Decisions

Q. WHAT PRELIMINARY DECISIONS ARE NEEDED TO IMPLEMENT THE ABOVE PRINCIPLES?

A. I must select the benchmark samples, calculate the sample companies' market-value capital structures, and determine the sample companies' market costs of debt and preferred equity.

1. The Samples: Water Utilities and Gas Local Distribution Companies

Q. WHY DO YOU USE TWO SAMPLES?

A. The overall cost of capital for a part of a company depends on the risk of the business in which the part is engaged, not on the overall risk of the parent company on a consolidated basis.

Estimating the cost of capital for Arizona-American Water's regulated assets is the subject of this proceeding. The ideal sample would be a number of companies that are publicly traded "pure plays" in the water production, storage, treatment, transmission, distribution and wastewater lines of business.[25] "Pure play" is an investment term referring to companies with operations only in one line of business. Publicly traded firms, firms whose shares are freely traded on stock exchanges, are ideal because the best way to infer the cost of capital is to examine evidence from capital markets on companies in the given line of business.

Therefore, for this case, a sample of companies whose operations are concentrated solely in the regulated portion of the water industry would be ideal. Unfortunately, the available

[25] Most of the water utilities in *Value Line* have operations in the water as well as wastewater business.

sample of "water" utility companies in the U.S. is relatively small and has data deficiencies.

To select my sample of comparable water and gas LDC companies, I start with those companies that are listed as a water utility or natural gas utility in *Value Line*.[26] Usually, I would apply several selection criteria to delete companies with unusual circumstances that may bias the cost-of-capital estimation and companies whose risk characteristics differ from those of the filing entity. However, the application of such criteria would eliminate almost all the water utilities listed in *Value Line*. Therefore, I do not apply selection criteria to the water utility sample although I do apply my standard criteria to the gas LDC sample. Specifically, if I eliminate all water utilities with annual revenues below $300 million, less than 50 percent regulated revenues, lack of growth rates (from Bloomberg or *Value Line*), lack of a bond rating or lack of other data, I would be left with at most three companies (American States Water, Aqua America and California Water Services). A three-company sample is simply too small to provide reliable results. Therefore, I keep all water utilities with data in my water utility sample, but I do report results for a subsample of companies that are more stable. Specifically, this sample excludes Southwest Water, because Southwest Water currently does not pay dividends and recently restated its financials. The subsample for the risk positioning method also excludes American Water Works, because data on stock prices are available for less than five years. It is noteworthy that Value Line "recommends that investors wait on the sidelines, give AWK some time to develop a track record and certain performance indicators."[27] Similarly, Value Line cites the short trading history of American Water as the reason for not provide all of *Value Line's* standard measures (e.g., timeliness). The

[26] To select the samples I include both the Standard, the Small and Mid-Cap Editions of *Value Line Investment Survey* and *Value Line Investment Survey - Plus Edition.*

[27] Value Line Investment Survey, "American Water," July 23, 2010.

short history also shows up in the beta estimation I perform where American Water's beta larger statistical uncertainty that estimates for the other large water utilities. This feature is likely a consequence of the lack of sufficient data for the statistical analysis.[28] Finally, some of the water utilities do not have growth forecasts, so I exclude them from the DCF analysis.

Q. WHAT DO YOU DO TO OVERCOME THE WEAKNESSES OF THE WATER UTILITY SAMPLE?

A. To overcome the weaknesses of the water sample, I select a second sample of regulated utilities: gas local distribution companies. Gas LDCs, like water utilities, are regulated by state regulatory bodies, have large distribution investments, and serve a mix of residential, industrial, and commercial customers.

One reason for using the gas LDC sample is to generate a sample of regulated companies whose primary source of revenues is in the regulated portion of the natural gas industry to provide a second set of results for the cost of capital in a heavily regulated distribution industry. Therefore, I start with *Value Line*'s universe of natural gas utilities, and eliminate those companies whose percentage of assets attributed to regulated activities is less than 50 percent. In addition, I only include companies with an investment grade bond rating, no recent sizable mergers or acquisitions, no recent dividend cuts, and no other activity that could cause the estimation parameters to be biased. Additionally, I require the companies to have necessary data available. The final sample includes eleven companies. From this sample, I create a subsample of companies that are closer to being pure plays in the regulated gas distribution industry. Additional details of the sample

[28] Statistically, the t-statistic for American Water is lower than that of all but Pennichuck Corp. and York Water, which have a market capitalization of approximately $150 and $275 million, respectively. In comparison, American Water's market capitalization is approximately $9.8 billion (Table No. BV-3, Panels D, I, and J)

selection process for each sample and subsample are described below as well as in Appendix B.

Q. IF THE BUSINESS RISK OF THE GAS LDC SAMPLE DIFFERS FROM THE WATER SAMPLE, CAN YOU STILL RELY ON THE COST OF EQUITY ESTIMATED FOR THE GAS LDC SAMPLE?

A. Yes. If the business and financial risk of the two samples differ, then a cost-of-capital analyst can still make use of the information from the more reliable sample to evaluate the reliability of the estimates from the water sample. The inference would be based on information about the relative risk of the two industries. In this instance the business operations of water and gas LDC companies are similar, but the water companies tend to have a higher percentage of their assets and revenue subject to regulation.

Q. PLEASE ELABORATE ON THE WAY TWO SAMPLES WITH DIFFERENT BUSINESS AND FINANCIAL RISKS CAN BE COMPARED.

A. As mentioned above, the overall cost of capital for a part of a company depends on the risk of the business in which the part is engaged, not on the overall risk of the parent company on a consolidated basis. According to financial economics, the overall risk of a diversified company equals the market value weighted-average of the risks of its components.

Calculating the overall after-tax weighted average cost of capital for each sample company as described above allows the analyst to estimate the average overall cost of capital for the sample. The ATWACC captures both the business risk and the financial risk of the sample companies in one number. This allows comparison of the cost of capital between two samples on a much more informed basis. If the alternative (more reliable) sample is judged to have slightly different risk than the water sample, but the results show wide differences in the ATWACC estimates, the analyst should carefully consider the validity of the water sample estimates, whether they are materially higher or lower than the alternative sample's estimates. Of course, the alternative sample could be the source of the error, but that is less likely because the alternative sample has been selected precisely because of its expected reliability.

Q. PLEASE COMPARE THE CHARACTERISTICS OF THE WATER UTILITY SAMPLE AND THE GAS LDC SAMPLE.

A. The two samples differ primarily in that they operate in two different (regulated) industries, but they are relatively similar in terms of the percentage of revenues from regulated operations and the customers they serve. On average, both samples earn a large percentage of their revenue from regulated activities and serve a mix of residential, industrial, and other customers. In addition, both industries are characterized by large capital investment and both are operating a large distribution system. Because of their larger size and better data availability, the Gas LDC sample has fewer estimation issues than the water sample. Please refer to Appendix B for additional details on the two samples.

2. Market-Value Capital Structure

Q. WHAT CAPITAL STRUCTURE INFORMATION DO YOU REQUIRE?

A. For reasons discussed below and in Appendix E, explicit evaluation of the market-value capital structures of the sample companies is vital for a correct interpretation of the market evidence on the return on equity. This requires estimates of the market values of common equity, preferred equity and debt, and the current market costs of preferred equity and debt.

Q. PLEASE DESCRIBE HOW YOU CALCULATE THE MARKET VALUES OF COMMON EQUITY, PREFERRED EQUITY AND DEBT.

A. I estimate the capital structure for each sample company by estimating the market values of common equity, preferred equity and debt from the most recent publicly available data. The details are in Appendix B.

Briefly, the market value of common equity is the price per share times the number of shares outstanding. For the risk-positioning approach, I use the last 15 trading days of each year to calculate the market value of equity for the year. I then calculate the average capital structure over the corresponding five-year period used to estimate the "beta" risk measures for the sample companies. This procedure matches the estimated beta to the degree of financial risk present during its estimation period. In the DCF analyses, I use the average stock price over 15 trading days ending on the release date of the BEst growth rate forecasts utilized.[29] I use 15 trading days to balance the need for a current stock price and avoiding that any one day unduly influences the results.

The market value of debt is estimated at its book value adjusted by the difference between the "estimated fair (market) value" and the "carrying cost" of long-term debt reported in each company's 10-K. The market value of preferred stock for the samples is set equal to its book value.[30,31]

3. Market Costs of Debt and Preferred Equity

Q. HOW DO YOU ESTIMATE THE CURRENT MARKET COST OF DEBT?

[29] Best is Bloomberg's name for its earnings growth rate information. BEst growth rate forecasts are as of September 15, 2010 for the Gas LDC sample and as of September 30, 2010 for the Water sample.

[30] This is unlikely to affect the results as the average percentage of preferred is close to zero for both the water and gas LDC sample.

[31] Commission Staff has in the past used the book value capital structure as of a specific recent date as well as the stock price on a recent date. As financial risk is determined in financial markets, I rely on the market value capital structure. Further, to match the horizon over which the systematic risk is determined and the capital structure I use an average over the last five years. The reliance of a 1-day versus a 15-day stock price in the DCF model is unlikely to materially impact the results unless the 1-day price is influenced by unusual events on that specific day.

A. The market cost of debt for each company is set equal to the fifteen-day average yield on an index of public utility bonds that have the same credit rating, as reported by Bloomberg. The DCF analyses use the current credit rating whereas the risk-positioning analyses use the current yield of a utility bond that corresponds to the five-year average debt rating of each company so as to match consistently the horizon of information used by *Value Line* to estimate each company's beta. Bond rating information was obtained from Bloomberg which reports Standard & Poor's bond ratings. I calculate the after-tax cost of debt using Arizona-American's estimated marginal income tax rate of 38.6 percent.

Q. HOW DO YOU ESTIMATE THE MARKET COST OF PREFERRED EQUITY?

A. For all sample companies, the preferred rating was assumed equal to the company's bond rating. The cost of a company's preferred equity was set equal to the yield on an index of preferred utility stock with the same rating. The data were obtained from the Mergent Bond Record.[32]

B. Cost-of-Equity Estimation Methods

Q. HOW DO YOU ESTIMATE THE COST OF EQUITY FOR YOUR SAMPLE COMPANIES?

A. Recall that the cost of capital is the expected rate of return in capital markets on alternative investments of equivalent risk. This definition leads me to address three key points in my estimation procedures. First, the cost of capital is an expected rate of return – it cannot be directly observed, but must be inferred from available evidence. Second, the cost of capital is determined in capital markets (such as the New York Stock

[32] Published monthly, Mergent's Bond Record offers a comprehensive review of over 68,000 bond issues including coverage of corporate, government, municipal, industrial development/environmental control revenue and international bonds, plus structured finance and equipment trust issues, medium-term notes, convertible issues, preferred stocks and commercial paper issues.

Exchange). Therefore, capital market data provide the best evidence from which to draw inferences. Third, the cost of capital depends on the return offered by alternative investments of equivalent risk. Consequently, measures of risk that matter in capital markets are part of the evidence that I need to examine. The overall cost of capital that I estimate for the samples is the primary evidence I rely on to determine Arizona-American Water's overall cost of capital.

Q. HOW DOES THE ABOVE DEFINITION HELP YOU ESTIMATE THE COST OF CAPITAL?

A. The definition of the cost of capital recognizes a tradeoff between risk and expected return; this is the security market line plotted above in Figure 1 above. Cost-of-capital estimation methods usually take one of two approaches: (1) they establish the location of the security market line and estimate the relative risk of the security, which jointly determine the cost of capital, or (2) they try to identify a comparable-risk sample of companies and estimate the cost of capital directly. Looking at Figure 1, the first approach focuses directly on the vertical axis, while the second focuses both on the security's position on the horizontal axis and on the position of the security market line.

The first type of approach is more direct, but ignores the wealth of information available on securities not thought to be of precisely comparable risk. The "discounted cash flow" or "DCF" model is an example. The second type of approach, sometimes known as "equity risk premium approach," requires an extra step – positioning the security market line. Using the second approach allows me to use information from all traded securities rather than just those included in my sample. The capital asset pricing model (CAPM) is an example. While both approaches can work equally well if conditions are right, one may be preferable to the other under certain circumstances. In particular, approaches that rely on the entire security market line are less sensitive to deviations from the assumptions that underlie the model, all else equal. In this case, I examine both DCF and risk-positioning approach evidence for the water utility and gas LDC sample.

1. The Risk-Positioning Approach

Q. PLEASE EXPLAIN THE RISK-POSITIONING METHOD.

A. The risk-positioning method estimates the cost of equity as the sum of a current interest rate and a risk premium. It is therefore sometimes also known as the "risk premium" approach. This approach may sometimes be applied more or less formally. As an example of an informal application, an analyst may estimate the spread between interest rates and what is believed to be a reasonable estimate of the cost of capital at a specific time, and then apply that spread to current interest rates to get a current estimate of the cost of capital.

More formal applications of the risk-positioning approach take full advantage of the security market line depicted in Figure 1: they use information on a large number of traded securities to identify the security market line and derive the cost of capital for the individual security based on that security's relative risk. This reliance on the entire security market line makes the method less vulnerable to the kinds of problems that arise from using one stock at a time (such as the DCF method). The risk-positioning approach is widely used and underlies much of the current research published in academic journals on the nature, determinants and magnitude of the cost of capital. The most commonly used version of the formal risk-positioning models is the Capital Asset Pricing Model (CAPM). The equation for the CAPM is:

$$k_s = r_f + \beta_s \times MRP$$

where k is the cost of capital, r_f is the risk-free interest rate, MRP is the market risk premium, and β is the measure of relative risk.

Section I of Appendix C to this testimony provides more detail on the principles that underlie the risk-positioning approach. Section II of Appendix C provides the details of the risk-positioning approach empirical estimates I obtain.

Q. HOW ARE THE "MORE FORMAL" APPLICATIONS OF THE RISK-POSITIONING APPROACH IMPLEMENTED?

A. The first step is to specify the current values of the benchmarks that determine the security market line. The second is to determine the security's, or investment's, relative risk. The third is to specify exactly how the benchmarks combine to produce the security market line, so the company's cost of capital can be calculated based on its relative risk.

a) Security Market Line Benchmarks

Q. WHAT BENCHMARKS ARE USED TO DETERMINE THE LOCATION OF THE SECURITY MARKET LINE?

A. The essential benchmarks that determine the security market line are the risk-free interest rate and the premium that a security of average risk commands over the risk-free rate. This premium is commonly referred to as the "market risk premium" (MRP), i.e., the excess of the expected return on the average common stock over the risk-free interest rate. In the risk-positioning approach, the risk-free interest rate and MRP are common to all securities. A security-specific measure of relative risk (beta) is estimated separately and combined with the MRP to obtain the company-specific risk premium.

Q. WHAT BENCHMARK DO YOU USE FOR THE MRP?

A. For this proceeding I estimate only a long-term version of the risk-positioning model. This version of the risk-positioning model measures the market risk premium as the risk premium of average-risk common stocks over long-term Government bonds. I do not present result on a short-term version in this proceeding because monetary policy has driven the short-term risk-free rate close to zero. I also report several sensitivity analyses that take into account the increase in the MRP as discussed above in *Section III.*

Q. HOW DO YOU ESTIMATE THE BASELINE MRP?

A. Appendix C summarizes academic and empirical research on the MRP. However, as discussed in the appendix, there is currently little consensus on the "best practice" for estimating the MRP even pre-crisis. (Note: this is not the same as saying that all practices are equally good). For example, the leading graduate textbook in corporate finance expresses the view that a range between 5 to 8 percent is reasonable for the U.S.[33] Morningstar data from 1926 to 2009, the longest period reported, show an MRP average premium of stocks of 8.1 percent over Treasury bills and 6.7 percent over long-term Government bonds. The publication reports a premium of stocks over bonds of 6.5 percent for the period 1947 to 2009.[34] At the same time, *Credit Suisse's Global Investment Return Yearbook 2010* estimate the arithmetic market risk premium for the U.S. over the 1900 to 2009 period at 6.3 percent over bonds.[35] In a regulatory setting, the Surface Transportation Board (STB) recently decided to rely on the CAPM when determining the cost of capital for major railroads in the U.S. As part of its methodology, the STB decided to rely on the long-term market risk premium reported by Morningstar/Ibbotson in its implementation of the CAPM.[36]

[33] Richard A. Brealey, Stewart C. Myers, and Franklin Allen, *Principles of Corporate Finance*, McGraw-Hill, 9th edition, 2008, pp. 173-180.

[34] Morningstar, *Ibbotson SBBI Valuation Yearbook 2010*, Appendix A, Tables A-1 and A-3.

[35] Credit Suisse (with E. Dimson, P. Marsh, and M. Staunton), "*Global Investment Returns Yearbook 2010*," Table 10.

[36] *STB Ex Parte No. 664*, Issued January 17, 2008, pp. 8-9.

My testimony considers both the historical evidence and the results of scholarly studies of the factors that affect the risk premium for average-risk stocks in order to estimate the benchmark risk premium investors currently expect.

Considering all the evidence, I conclude that S&P 500 stocks of average risk commanded 6.5 percent over the long-term Government rate prior to the financial crisis. This estimate is a conservative estimate of the historical average risk-premium in that it is lower than the figure reported over the longest period available and includes the unusual 2008 year. As discussed in *Section III* above, this figure has increased with the current market turmoil, so that the baseline of 6.5 percent likely underestimates the current MRP. However, I choose to use it as a benchmark to be conservative. I do, however, report sensitivity analyses that reflect an increase in the MRP I refer to models that use the 6.5 percent MRP as the baseline. The estimation of the MRP is discussed in greater detail in Appendix C.

Q. HOW DO YOU DETERMINE THE RISK-FREE RATE YOU USE?

A. First, I calculate the yield on long-term Government bonds over a recent 15-day period. Second, I determine the increase in the spread between the yield on A-rated utility bonds and long-term (20-year) Government bonds.[37] As of September 22, 2010 this spread stood at 161 basis points (using Bloomberg's calculated yields) and were 66 basis points above the average for the period 1991 to 2007.[38] I conservatively choose to add 50 basis points to the current long-term risk-free rate and note that this is conservative compared to the increase expected in the Federal Reserve Bank of Philadelphia study cited above.

[37] I use the yield on A-rated utility bonds as they are less likely to include a default premium than are lower rated utility bonds.

[38] See Table 3 above and Workpaper #2 to Table No. BV-9, Panel B.

b) Relative Risk

WHAT MEASURE OF RELATIVE RISK DO YOU USE?

A. I examine the "beta" of the stocks in question. Beta is a measure of the "systematic" risk of a stock — the extent to which a stock's value fluctuates more or less than average when the market fluctuates.

The basic idea behind beta is that risks that cannot be diversified away in large portfolios matter more than those that can be eliminated by diversification. Beta is a measure of the risks that cannot be eliminated by diversification. This concept is explored further in Appendix C.

Q. WHAT DOES A PARTICULAR VALUE OF BETA MEAN?

A. By definition, a stock with a beta equal to 1.0 has average non-diversifiable risk: it goes up or down by 10 percent on average when the market goes up or down by 10 percent. Stocks with betas above 1.0 exaggerate the swings in the market. A stock with a beta of 2.0 tends to fall 20 percent when the market falls 10 percent, for example. Stocks with betas below 1.0 understate the swings in the market. A stock with a beta of 0.5 tends to rise 5 percent when the market rises 10 percent.

Q. HOW DO YOU ESTIMATE BETA?

A. I use beta estimates from Bloomberg in this testimony. In the past, I have relied on *Value Line* estimates, but because I have been unable to replicate *Value Line's* estimates for the gas LDC companies, I choose to rely on Bloomberg estimates instead.[39] Bloomberg betas are very close to those I obtain using standard estimation methods and also have the advantage of being recent as of the calculation date, while *Value Line* betas can be up to 3 month old.

[39] *Value Line* and Bloomberg estimates for the water sample are comparable and similar to what I estimate using standard techniques. However, for consistency, I choose to rely on the same source for both samples.

c) Cost of Equity Capital Calculation

Q. HOW DO YOU COMBINE THE PRECEDING STEPS TO ESTIMATE THE COST OF EQUITY?

A. The most widely used approach to combine a risk measure with the benchmark market risk premium on common stocks to find a risk premium for a particular firm or industry is the Capital Asset Pricing Model. However, the CAPM is only one risk-positioning technique.

In addition to the CAPM, I rely on an empirical variety of the model. Empirical research has long shown that the CAPM tends to overstate the actual sensitivity of the cost of capital to beta: low-beta stocks tend to have higher risk premia than predicted by the CAPM and high beta stocks tend to have lower risk premia than predicted. A number of variations on the original CAPM theory have been proposed to account for this finding.

This finding can be used directly to estimate the cost of capital, using beta to measure relative risk, without simultaneously relying on the CAPM. Here I examine results from both the CAPM and a version of the security market line based on the empirical finding that risk premia are related to beta, but are not as sensitive to beta as the CAPM predicts, to convert the betas into a risk premium. I refer to this latter model as the "ECAPM," where ECAPM stands for Empirical Capital Asset Pricing Model. The formula for the ECAPM is

$$k_s = r_f + \alpha + \beta_s \times (MRP - \alpha)$$

where as before k is the cost of capital, r_f is the risk-free interest rate, MRP is the market risk premium, β is the measure of relative risk, and α is the empirical adjustment factor.

Research supports values for α ranging from one to seven percent when using a short-term interest rate. I use benchmark values of α of 0.5 percent for the long-term risk-free rate as it is in the lower range of what empirical evidence support. I also conduct sensitivity tests for different values of α. For the long-term risk-free rate I use values for α of 0, 0.5 and 1.5 percent. See Appendix C for a more detailed discussion of the ECAPM model and Table C-1 for a summary of the empirical evidence on the size of the required adjustment.

Q. WHY IS IT APPROPRIATE TO USE THE ECAPM MODEL?

A. Empirical tests of the CAPM have repeatedly shown that an investment's return is related to systematic risk, but that the increase in return for an increase in risk is less than is predicted. The empirical tests have also shown that the theoretical intercept, as measured by the return on Treasury bills, is too low to fit the data. In other words, the empirical tests indicate that the slope of the CAPM is too steep and the intercept is too low. The empirical data support the ECAPM. The ECAPM recognizes the consistent empirical observation that the CAPM underestimates (overestimates) the cost of capital for low (high) beta stocks. The ECAPM corrects the predictions of the CAPM to more closely match the results of the empirical tests. Ignoring the results of CAPM tests would lead to an estimate of the cost of capital that is likely to be less accurate than is possible.

Q. IS THE USE OF THE ECAPM EQUIVALENT TO ADJUSTING THE ESTIMATED BETAS FOR THE SAMPLE COMPANIES?

A. No. Fundamentally, this is not an adjustment (increase) in beta. This can easily be seen by the fact that the expected return on high beta stocks is lower with the ECAPM than when estimated by the CAPM. The ECAPM model is a recognition that the actual slope of the risk-return tradeoff is flatter than predicted and the intercept higher based upon repeated empirical tests of the model.[40] Even if the beta of the sample companies were

[40] Many investment firms make an adjustment to the beta. A commonly used adjustment is the Merrill Lynch adjustment, which adjusts betas 1/3 toward one. This type of adjustment is intended to compensate for

estimated accurately, the CAPM would still underestimate the required return for low beta stocks. Even if the ECAPM were used, the costs of equity would be underestimated if the betas were underestimated.

2. Discounted Cash Flow Method

Q. PLEASE DESCRIBE THE DISCOUNTED CASH FLOW APPROACH.

A. The DCF model takes the first approach to cost-of-capital estimation, i.e., to attempt to estimate the cost of capital in one step. The method assumes that the market price of a stock is equal to the present value of the dividends that its owners expect to receive over the life of the company. The method also assumes that this present value can be calculated by the standard formula for the present value of a cash flow stream:

$$P = \frac{D_1}{(1+k)} + \frac{D_2}{(1+k)^2} + \frac{D_3}{(1+k)^3} + \cdots + \frac{D_T}{(1+k)^T}$$

where " P " is the market price of the stock; " D_t " is the dividend cash flow expected at the end of period t (i.e., subscript period 1, 2, 3 or T in the equation); " k " is the cost of capital; and " T " is the last period in which a dividend cash flow is to be received. The formula just says that the stock price is equal to the sum of the expected future dividends, each discounted for the time and risk between now and the time the dividend is expected to be received.

Most DCF applications go even further, and make very strong (i.e., unrealistic) assumptions that yield a simplification of the standard formula, which then can be rearranged to estimate the cost of capital. Specifically, if investors expect a dividend stream that will grow forever at a steady state, the market price of the stock will be given by a very simple formula,

sampling errors in the beta estimation, not for the empirical fact that CAPM tends to overestimate the sensitivity of the cost of capital to beta. See Appendix C for a more detailed explanation.

$$P = \frac{D_1}{(k-g)}$$

where " D_1 " is the dividend expected at the end of the first period, " g " is the perpetual growth rate, and " P " and " k " are the market price and the cost of capital, as before. Equation (5) is a simplified version of Equation (4) that can be solved to yield the well known "DCF formula" for the cost of capital:

$$\begin{aligned} k &= \frac{D_1}{P} + g \\ &= \frac{D_0 \times (1+g)}{P} + g \end{aligned}$$

where " D_0 " is the current dividend, which investors expect to increase at rate g by the end of the next period, and the other symbols are defined as before. Equation (6) says that if Equation (5) holds, the cost of capital equals the expected dividend yield plus the (perpetual) expected future growth rate of dividends. I refer to this as the simple DCF model. Of course, the "simple" model is simple because it relies on very strong, unrealistic, assumptions.

Q. CAN YOU ILLUSTRATE THE DCF MODEL?

A. Yes. For simplicity, I will illustrate the method using annual data although most companies pay dividends quarterly, so that a quarterly model is more appropriate. If, on an annual basis, a company paid \$2 in dividends, D_0, has a current stock price, P, of \$30 and an estimated growth rate, g, of 5 percent per year, then the calculations in equations (5) and (6) above are as follows

Dividends next period:	$D_1 = D_0 \times (1+g) = \$2.00 \times (1 + 5\%) = \$2.10$
Dividend Yield:	$D_1 / P = \$2.10 / \$30 = 7.0\%$
Cost of equity:	$k = D_1 / P + g = 7.0\% + 5\% = 12\%$.

Q. ARE THERE OTHER VERSIONS OF THE DCF MODELS BESIDES THE "SIMPLE" ONE?

A. Yes. There are many variations on the DCF models that may rely on less strong (more realistic) assumptions in that they allow growth rates to vary over time. I consider a variant of the DCF model that uses the companies' individual growth rates during the first five years, converges to a perpetual growth rate in years 6-10 and then uses the GDP growth rate as the perpetual growth rate after year 10 for all companies. This is a variant of the "multi-stage" DCF method. The DCF models are described in detail in Section I of Appendix D. (Section II of Appendix D provides the details of my empirical DCF analysis.)

Q. WHAT ARE THE MERITS OF THE DCF APPROACH?

A. The DCF approach is conceptually sound if its assumptions are met, but can run into difficulty in practice because those assumptions are so strong, and hence so unlikely to correspond to reality. Two conditions are well known to be necessary for the DCF approach to yield a reliable estimate of the cost of capital: the variant of the present value formula that is used must actually match the variations in investor expectations for the dividend growth path; and the growth rate(s) used in that formula must match current investor expectations. Less frequently noted conditions may also create problems. (See Appendix D for details.)

Q. WHAT IS THE MOST DIFFICULT PART OF IMPLEMENTATING THE DCF APPROACH?

A. Finding the right growth rate(s) is the usual "hard part" of a DCF application. The original approach to estimation of the growth rate, *g*, relied on average historical growth rates in observable variables, such as dividends or earnings, or on the "sustainable growth" approach, which estimates *g* as the average book rate of return times the fraction of earnings retained within the firm. But it is highly unlikely that these historical averages over periods with widely varying rates of inflation and costs of capital will equal current growth rate expectations. This is particularly true for the water sample as many companies in the industry are growing fast, engaged in mergers, acquisitions or other restructuring activities.

Moreover, the constant growth rate DCF model requires that dividends and earnings grow at the same rate for companies that on average earn their cost of capital.[41] It is inconsistent with the theory on which the model is based to have different growth rates in earnings and dividends over the period when growth is assumed to be constant. If the growth in dividends and earnings were expected to vary over some number of years before settling down into a constant growth period, then it would be appropriate to estimate a multistage DCF model. In the multistage model, earnings and dividends can grow at different rates, but must grow at the same rate in the final, constant growth rate period. A difference between forecasted dividend and earnings rates therefore is a signal that the facts do not fit the assumptions of the simple DCF model.

Q. HOW DO YOU ESTIMATE THE GROWTH RATES YOU USE IN YOUR DCF ANALYSIS?

A. I use earnings growth rate forecasts from Bloomberg and *Value Line*. Analysts' forecasts are superior to using single variables in time series forecasts based upon historical data as

[41] Why must the two growth rates be equal in a steady-growth DCF model? Think of earnings as divided between reinvestment, which funds future growth, and dividends. If dividends grow faster than earnings, there is less investment and slower growth each year. Sooner or later dividends will equal earnings. At that point, growth is zero because nothing is being reinvested (dividends are constant). If dividends grow slower than earnings, each year a bigger fraction of earnings are reinvested. That makes for ever faster growth. Both scenarios contradict the steady-growth assumption. So if you observe a company with different expectations for dividend and earnings growth, you know the company's stock price and its dividend growth forecast are inconsistent with the assumptions of the steady-growth DCF model.

has been documented and confirmed extensively in academic research. Please see Section I in Appendix D for a detailed discussion on this issue.

Q. ARE YOU AWARE THAT SOME REGULATORY COMMISSIONS RELY ON BOTH HISTORICAL AND FORECAST GROWTH RATES IN THEIR IMPLEMENTATION OF THE DCF MODEL?

A. Yes, but I do not believe that is the best way to estimate the growth rate for use in the DCF model for the following reasons. First, as mentioned above, the model requires that dividends and earnings grow at the same rate at some point in the future in order to apply the model. The data on historical growth rates do not confirm this condition. Second, analysts have access to historical information and include that information in their forecast of earnings growth rates. In other words, using historical data provides no additional information than that captured in analyst forecasts. Data providers such as *Value Line* provide information on the going forward payout ratio as well as on other key financial parameters.

Q. ARE YOU AWARE OF EVIDENCE THAT ANALYSTS'FORECAST OF EARNINGS GROWTH HAVE HISTORICALLY OVERESTIMATED EARNINGS AND DIVIDEND GROWTH?

A. Yes. Although analyst forecasts have historically been too optimistic, this problem is less acute for regulated companies.[42] Further, according to a recent joint report by NASD and the NYSE,

> … the SRO Rules have been effective in helping restore integrity to research by minimizing the influences of investment banking and promoting transparency of other potential conflicts of interest. Evidence

[42] See, for example, L.K.C. Chan, J. Karceski, and J. Lakonishok (2003), "The Level and Persistence of Growth Rates," *Journal of Finance* 58(2), pp. 643-684.

> also suggests that investors are benefiting from more balanced and accurate research to aid their investment decisions.[43]

In addition, the use of a two-stage DCF model, which substitutes the forecast growth of GDP, mitigates analyst optimism by substituting the GDP growth rate for the potentially optimistic (or pessimistic) earnings forecasts of analysts.

Q. HOW WELL ARE THE CONSTANT-GROWTH RATE CONDITIONS NECESSARY FOR THE RELIABLE APPLICATION OF THE DCF LIKELY TO BE MET FOR THE SAMPLE COMPANIES AT PRESENT?

A. The requisite conditions for the sample companies are not fully met at this time, particularly for the water sample, which include several companies that have limited data available and where acquisitions have been frequent. Of particular concern for this proceeding is the uncertainty about what investors truly expect the long-run outlook for the sample companies to be. The longest time period available for growth rate forecasts of which I am aware is five years. The long-run growth rate (i.e., the growth rate after the water industry settles into a steady state, which may be beyond the next five years for this industry) drives the actual results one gets with the DCF model. Unfortunately, this implies that unless the company or industry in question is stable – so there is little doubt as to the growth rate investors expect – DCF results in practice can end up being driven by the subjective judgment of the analyst who performs the work.

Of the ten companies in the water sample, five do not have *BEst* growth rates and one *Value Line* estimate is not meaningful, as it is based on a very low 2010 earnings estimate resulting in a growth rate above 90%, which is not plausible. As a result only five companies have growth rates from both *BEst* and *Value Line*. These five companies constitute the DCF water subsample. The long-term growth rates for the water

[43] Joint Report by NASD and NYSE on the Operation and Effectiveness of the Research Analyst Conflict of Interest Rules, December 2005, p. 44.

companies range from 1.1% to 14.3% (See Table No. BV-5). A problem for the water DCF is that only three of the sample companies have more than 2 analysts following them. The growth rates for gas LDC sample vary much less from 3.0 to 7.5 percent, and are more consistent with the GDP growth forecast of 4.8 percent. Of the 11 companies in the gas LDC sample, one has currently no *BEst* forecast and one has only two analysts providing a forecast (one *Value Line* and one BEst). The two-stage DCF model adjusts for any overly optimistic (or pessimistic) growth rate forecasts by adjusting the 5-year growth rate forecasts of the analysts toward the long-term GDP growth rate in the years after year 5. See Appendix D, *Section I* for a discussion of the two-stage model.

The DCF growth rates, whether estimated from historical data or from analyst forecasts, have likely been affected by several factors: many mergers and acquisitions in the water industry in recent years, significant growth in many parts of the country, and a trend towards consolidation. The industry appears to be moving towards a larger degree of consolidation – at least among the privately held water utilities. The consolidation of the industry may well increase as the industry needs significant infrastructure investments and the capital expenditures exceed funds available internally to the companies.[44] The American Society of Civil Engineers estimated in 2009 that "drinking water systems face an annual shortfall of at least $11 billion in funding needed to replace aging facilities that are near the end of their useful life and to comply with existing and future federal water regulations"[45] with a total investment need for drinking water and wastewater investments of $255 billion over the next five years.[46] Drinking water is mentioned as the second most important infrastructure concern for Arizona and the required

[44] See, for example, *Value Line*, Water Utility Industry, July 23, 2010.

[45] Report Card for America's Infrastructure, The American Society of Civil Engineers, 2009, p. 1.

[46] *Ibid.*, Executive Summary p. 7. According to the document, the investment shortfall is about $108.6 billion for the water industry over the next five years.

investments is estimated at $9.12 billion for drinking water and at $4.57 billion for wastewater.[47] Coupled with the rising construction costs of utility infrastructure, this creates uncertainty about future conditions and diverging expectations. The uncertainty associated with these factors increases the industry's business risk. Additionally, environmental regulations impact the industry as standards for water quality evolve over time, and there is potential for new safety and security requirements in the future. The industry has no federal regulator (other than for environmental and health issues), and state public utility commissions regulate most investor owned water utilities. Different regulatory bodies may lead to differing regulatory requirements for companies operating in adjacent parts of the country. Taken together, these factors mean that it may be some time before the water industry settles into anything investors will see as a stable equilibrium necessary for the reliable application of the DCF model.

Such circumstances imply that a commission may often be faced with a wide range of DCF estimates, none of which can be well grounded in objective data on true long-run growth expectations, *because no such objective data now exist*. DCF for firms or industries in flux is *inherently* subjective with regard to the most important parameter, the long-run growth rate that drives the answer.

In short, the unavoidable questions about the DCF model's strong assumptions cause me to view the DCF method as *inherently* less reliable than the risk-positioning approach described above. This is particularly true for the water sample, because of the data problems discussed above. However, because the DCF method has been widely used in the past, I submit DCF evidence in this case, where the gas LDC sample is reasonable stable and the results are comparable to other estimates.

[47] Report Card for America's Infrastructure: Arizona, The American Society of Civil Engineers, 2009. (http://www.infrastructurereportcard.org/state-page/arizona)

In this proceeding, I give little weight to the water sample's DCF estimates, but note that the wide range of estimates spans my recommendation. The gas LDC DCF estimates are concentrated around the midpoint of my recommendation and therefore a useful check on the reasonableness of my risk-positioning estimates. While the Commission Staff in the past has given weight to the water sample's DCF results, I respectfully submit that the high variability of these growth rates and resulting wide range of estimates makes them very unreliable at this point in time. Relying on historical growth rate does not make the water sample's DCF results reliable, because (1) the DCF method's strength is being forward looking and historical data violates this principle and (2) historical growth rates for the water industry vary as much as do forecasted growth rates. A number of companies in the water industry, which has a relative small number of companies, are in flux and therefore their growth rates are very volatile. Therefore, even minor variations in methodology, timing, or sample composition drives the results which is not consistent with stable rate making.

C. The Samples and Results

1. The Water Utility Sample

Q. EARLIER YOU SAID THAT THE SAMPLE OF WATER UTILITIES HAD SERIOUS DATA WEAKNESSES. PLEASE ELABORATE ON THESE WEAKNESSES.

A. In attempting to apply the DCF model to the sample, five companies had no *BEst* growth forecasts. The size of the companies in the water sample also makes cost-of-capital estimation difficult. Currently, only four companies have more than $500 million in market value of equity. More important, however, is the fact that the stock of these companies trades relatively infrequently. Low trading volume causes concern because there may be a delay between the release of important information and the time that this information is reflected in prices. Such delay is well known to cause beta estimates to be statistically insignificant and possibly biased.

In addition to lack of data and the small size of the companies, there are firm-specific events that render the water utility sample less reliable than would be ideal. First, Aqua America (the second largest of the companies) has gone through a large number of mergers and acquisitions in recent years. Normally, I would not include companies with significant merger or acquisition activity in a sample because the individual information about the progress of the proposed merger is so much more important for the determination of the company's stock price than day-to-day market fluctuations. In practice, beta estimates for such companies tend to be too low. The growth rates for such companies may also be affected. Second, Southwest Water Co. currently pays no dividends, has restated its financials and has announced plans to be required by private equity. Lastly American Water Works has only been publicly traded since 2008 and therefore has less than five years of data available for examination. I therefore report my results for both the full sample and for a subsample of companies that differ in the risk positioning and DCF method. Specifically, I do not include Southwest Water Co. in either subsample. In addition I do not include American Water in the risk positioning subsample as it has less than five years of data. A key reason for excluding American Water from the subsample is that it has only 2½ years of data available for beta estimation. One consequence hereof is that the precision with which the company-specific data is determined is weaker than for other companies. Value Line as a result do not report some of its standard performance measures for American Water and I find that the beta estimate for American Water is subject to larger statistical uncertainty that that of other large water utilities. In addition, I am determining the cost of capital for Arizona-American Water rather than for American Water. Therefore, it is important to include companies that are comparable to Arizona-American Water rather than comparable to American Water. For the DCF analysis, I create a subsample of those companies that has growth estimates from at least two analysts (e.g., one BEst and one Value Line), which results in the subsample having five companies: Aqua American, California Water, SJW Corp., American States Water, and American Water Works.[48] Because the DCF method relies on current and forward looking data, the fact that American Water only has only 2½ years of data is not as large an issue although analysts clearly review a company's history when estimating their growth rate.

2. Risk-Positioning Cost-of-Capital Estimates

Q. HOW IS THIS SECTION OF YOUR TESTIMONY ORGANIZED?

A. This section first describes the input data used in the CAPM and ECAPM models, then reports the resulting cost-of-equity estimates for the samples. The second section of Appendix C details the empirical analysis.

a) Interest Rate Estimate

Q. HOW DID YOU DETERMINE THE EXPECTED RISK-FREE INTEREST RATE?

A. I reviewed current constant maturity U.S. Government bond yield data available from the St. Louis Federal Reserve Bank. For the period August 24 to September 14, 2010, the average yield on long-term government bonds was 3.40 percent. To that figure I added 50 basis points in the baseline case as an adjustment for the increase in yield spread.[49] I note that in the sensitivity analyses, I reduce the adjustment for yield spread by 25 basis

[48] In my most recent testimony before the Commission, I noted that I believed the comparability of the water and the gas LDC sample had declined because *Value Line's* beta estimates for the two industries had deviated. I no longer believe that to be true as beta estimates from alternative sources such as Bloomberg and those obtained through standard regression analysis are comparable.

[49] See Table No. BV-9.

points for each 1 percent increase in the MRP. This intends to take into account the fact that bond betas may be positive and .25 is a conservative estimate hereof - - i.e., bond betas are likely to be lower, so that a .25 percent adjustment is in the upper end of the needed adjustment.

b) Betas and the Market Risk Premium

Q. WHAT BETA ESTIMATES DID YOU USE IN YOUR ANALYSIS FOR THE SAMPLES?

A. I rely upon recent beta estimates from Bloomberg but also show the beta estimates obtained by standard regression analysis and those provided by *Value Line* (see Workpaper 1 to Tables No. BV-10 and BV-21).

Q ARE THE BETA VALUES REPORTED BY BLOOMBERG ADJUSTED BETAS?

A. Yes. Both Bloomberg and *Value Line* reports betas that are adjusted towards one. For this proceeding, I rely on Bloomberg's estimated betas for both samples. In my most recent testimony before this Commission, I reversed the adjustment for the water utilities to be conservative. However, because all commercial providers rely on adjusted betas and because water utility betas have fallen to a level where they are comparable to those of other utilities, I do not adjust the reported Bloomberg betas.

Q. PLEASE SUMMARIZE THE BETA ESTIMATES YOU RELY ON.

A. The average Bloomberg beta for both the water and the gas LDC sample is about 0.8. These beta estimates are reported in Workpaper #1 to Tables No. BV-10 and BV-21.[50]

Q. PLEASE EXPLAIN THE METHOD TO ADJUST FOR DIFFERENCES IN CAPITAL STRUCTURE.

[50] The beta estimates for both the water sample and the gas LDC sample are between the beta estimates relied upon in my recent testimony before this Commission in Dockets No. W-01303A-08-0227 and W-01303A-09-0343.

A. Starting with the ATWACC, the cost of equity for any capital structure within a broad range of capital structures can be determined by the following formula:

$$\text{Return on equity} = \frac{\text{ATWACC - Return on debt} \times \text{\% debt in capital structure} \times (1 - \text{tax rate})}{\text{\% equity in capital structure}}$$

This is the calculation that is displayed in Tables No. BV-12 and BV-23.[51] The tables display the result of converting the sample average ATWACC to a return on equity for a specific capital structure. It is straightforward to use this method to determine the cost of equity consistent with the capital structure.

c) Risk-Positioning Results

Q. WHAT ARE THE COST-OF-EQUITY ESTIMATES DERIVED FROM THE RISK-POSITIONING APPROACH FOR THE WATER AND GAS LDC SAMPLE?

A. Using the long-term interest rate in the two risk-positioning models (CAPM and ECAPM), with two values of the ECAPM parameter (0.5% and 1.5%), I obtain three estimates of each sample company's cost of equity (Tables No. BV-10 for the water sample and subsample and BV-21 for the gas LDC sample). The cost-of-equity estimates are combined with the estimates of the company's cost of debt and preferred to calculate the company's ATWACC (Tables No. BV-11 and BV-22). Tables No. BV-12 and BV-23 combine the sample average ATWACC with Arizona-American Water's capital structure, cost of debt, and tax rate to obtain the cost of equity at Arizona-American Water's 45 percent equity. The baseline cost-of-equity results as well as the sensitivities are summarized below in Table 4 for the water sample and subsample and in Table 5 for the gas LDC sample.

Table 4: Water Sample and Sub-Sample

[51] For companies that have preferred equity, an additional term equal to (Return on preferred equity × % preferred in capital structure) is subtracted from the numerator of this fraction.

Return on Equity Summary and Sensitivity Analysis
Using Bloomberg Betas

Estimated Return on Equity	Baseline [1]	Scenario 2 [2]	Scenario 3 [3]
Full Sample			
CAPM	11.2%	11.6%	12.0%
ECAPM (α = 0.5%)	11.4%	11.8%	12.2%
ECAPM (α = 1.5%)	11.6%	12.0%	12.4%
Sub-Sample			
CAPM	11.7%	12.1%	12.5%
ECAPM (α = 0.5%)	11.8%	12.3%	12.7%
ECAPM (α = 1.5%)	12.1%	12.5%	12.9%

Sources and Notes:
Baseline: Long-Term Risk Free Rate of 3.90%, Long-Term Market Risk Premium of 6.50%.
Scenario 2: Long-Term Risk Free Rate of 3.77%, Long-Term Market Risk Premium of 7.00%.
Scenario 3: Long-Term Risk Free Rate of 3.65%, Long-Term Market Risk Premium of 7.50%.

Table 5: Gas LDC Sample and Sub-Sample
Return on Equity Summary and Sensitivity Analysis
Using Bloomberg Betas

Estimated Return on Equity	Baseline [1]	Scenario 2 [2]	Scenario 3 [3]
Full Sample			
CAPM	11.0%	11.4%	11.7%
ECAPM (α = 0.5%)	11.2%	11.5%	11.9%
ECAPM (α = 1.5%)	11.5%	11.8%	12.2%
Sub-Sample			
CAPM	11.2%	11.6%	11.9%
ECAPM (α = 0.5%)	11.3%	11.7%	12.1%
ECAPM (α = 1.5%)	11.7%	12.0%	12.4%

Sources and Notes:
Baseline: Long-Term Risk Free Rate of 3.90%, Long-Term Market Risk Premium of 6.50%.
Scenario 2: Long-Term Risk Free Rate of 3.77%, Long-Term Market Risk Premium of 7.00%.
Scenario 3: Long-Term Risk Free Rate of 3.65%, Long-Term Market Risk Premium of 7.50%.

Q. PLEASE SUMMARIZE YOUR FINDINGS FROM THE RISK-POSITIONING MODEL.

A. Focusing on the middle ECAPM ($\alpha = .50\%$) for Baseline case, I find that the water sample's cost of equity range from 11¼ to 11¾%, while the subsample estimates range from 11½ to 12%. Thus, the baseline scenario for the water sample and sub-sample results indicate a range of 11¼ to 12 percent. The baseline estimates for the gas sample and sub-sample estimates are similar to the estimates for the water sample and range from 11 to 11¾ with the subsample estimates being slightly higher. Taking a modest increase in the MRP of say 0.5% into account increases the estimates by 30 to 50 basis points. Therefore, it the baseline estimates may under estimate the current cost of equity.

Looking at the risk positioning results for the water sample and the gas LDC sample and subsample, the best point estimate is 11½ percent in the baseline case with a range of 11 to 12 percent. The water subsample shows a higher range than other samples. I discuss the assessment of Arizona-American Water's cost of equity in the concluding section.

3. The DCF Cost-of-Capital Estimates

Q. WHAT STEPS DO YOU TAKE IN YOUR DCF ANALYSES?

A. Given the above discussion of DCF principles, the steps are to collect the data, estimate the sample companies' costs of equity at their current capital structures, and then to adjust the sample's estimates to Arizona-American Water's 45 percent equity ratio.

a) Growth Rates

Q. WHAT GROWTH RATE INFORMATION DO YOU USE?

A. For reasons discussed above and in Appendix D, historical growth rates today are not as relevant as forecasts of current investor expectations for these samples. I therefore use rates forecast by security analysts.

The ideal in a DCF application would be a detailed forecast of future dividends, year by year well into the future until a true steady state (constant) dividend growth rate was reached, based on a large sample of investment analysts' expectations. I know of no source of such data. Dividends are ultimately paid from earnings, however, and earnings forecasts from a number of analysts are available for a few years. Investors do not expect dividends to grow in lockstep with earnings, but for companies for which the DCF approach can be used reliably (*i.e.*, for relatively stable companies whose prices do not include the option-like values described in Appendix D), they do expect dividends to track earnings over the long-run. Thus, use of earnings growth rates as a proxy for expectations of dividend growth rates is a common practice.

Accordingly, the first step in my DCF analysis is to examine a sample of investment analysts' forecast earnings growth rates from Bloomberg and *Value Line* to the degree such forecasts are available. The details are in Appendix D. At present, *Value Line* data run through a 2013-2015 horizon, representing an average of about four years from the current earning forecasts available for 2010. Bloomberg also provides a long-term earnings growth rate estimate. The longest-horizon forecasted growth rates from these sources underlie the simple DCF model (*i.e.*, the standard perpetual-growth model associated with the "DCF formula," dividend yield plus growth). Unfortunately, the longest growth forecast data only go out four to five years, which is too short a period to make the DCF model completely reliable.

b) Dividend and Price Inputs

Q. WHAT VALUES DO YOU USE FOR DIVIDENDS AND STOCK PRICES?

A. Dividends are either for the third or the fourth quarter of 2010, depending on the most recent dividend information available at the time of estimation for each company.[52] This dividend is grown at the estimated growth rate and divided by the price described below to estimate the dividend yield for the simple DCF model.

[52] The dividend information was obtained from Bloomberg.

Stock prices are an average of closing stock prices for the 15-day trading period ending on the day the BEst forecast was obtained from Bloomberg. A 15-day stock price average is used to guard against anomalous price changes in any single day.

c) DCF Results

Q. WHAT ARE THE DCF ESTIMATES FOR THE SAMPLES?

A. The data are used in the two versions of the DCF method to get sample company estimates at the sample company's capital structure. The resulting cost of equity at Arizona-American Water's 45 percent equity estimates are shown in Table 6 and Table 7 below. For the water sample, there is a very large difference between the simple and multi-stage DCF as well as between the full sample and the sub-sample estimates resulting in estimates ranging from 10¼ to 14½ percent. The gas LDC estimates are concentrated in a narrow range from 11½ to 12 percent. As a result I find the water DCF estimates unreliable, but believe the gas LDC estimates are consistent with the risk positioning estimates for the water sample and gas LDC sample and subsample. I discuss the cost of equity for Arizona-American Water in *Section VI* below.

Table 6: Water Sample

DCF Return on Equity Summary

	DCF Simple	DCF Multi-stage
Full Sample		
Cost of Equity	11.7%	10.3%
Sub-Sample		
Cost of Equity	14.6%	10.5%

Table 7: Gas LDC Sample
DCF Return on Equity Summary

	DCF	
	Simple	Multi-stage
Full Sample		
Cost of Equity	11.9%	11.4%
Sub-Sample		
Cost of Equity	11.9%	11.5%

V. ARIZONA-AMERICAN WATER'S EARNED RETURN ON EQUITY

Q. WHAT RETURNS HAVE ARIZONA-AMERICAN WATER EARNED IN RECENT YEARS?

A. Unlike most of its peers, Arizona-American Water has earned a negative return on equity in 8 of the last 9 years.[53] While there will always be fluctuations in the earned return on equity, the fact that the earned return for an extended period of time is close to zero or even negative is reason for serious concern. This section first summarize Arizona-American Water's situation and second, discuss the consequences on the Company's credit metrics.

Q. PLEASE BRIEFLY DESCRIBE FINANCIAL CHALLENGES FACING ARIZONA-AMERICAN WATER.

A. As noted in the Townsley Direct, Arizona-American Water has earned a negative return on equity every year but 2004, since 2001. Further, Arizona-American Water is not paying dividends and currently has negative retained earnings, which reduces the Company's equity. In addition, Mr. Townsley has calculated some credit ratios that are typically considered by credit rating agencies when they evaluate the credit worthiness of

[53] Townsley Direct.

a company. On a stand alone basis, Arizona-American Water have several ratios that are below the level Moody's consider appropriate for an investment grade water utility.

Q. PLEASE BRIEFLY DESCRIBE CREDIT RATINGS AND WHY THEY MATTER FOR A UTILITY SUCH AS ARIZONA-AMERICAN WATER.

A. Credit rating agencies, such as Standard & Poor's (S&P), Moody's Investors Service (Moody's) and FitchRatings (Fitch), evaluate the default risk of debt issued by companies, government agencies, municipalities, state agencies, and others. As part of the rating process, the agencies assign a credit rating to the debt and to the issuing company (or other entity).[54] Using S&P's designations (Moody's equivalent in parantheses), the highest rating is AAA (Aaa), followed by AA (Aa), A (A), BBB (Baa), BB (Ba), B, CCC (Caa), CC (Ca), C, and D.[55] At times these ratings are designated with a '+' or '-', where a plus indicates higher than average and a minus indicates a lower than average rating for the category.[56] Thus, among all BBB rated entities, BBB+ rated entities are viewed more favorably than the average BBB rated entity and BBB- rated entities are viewed less favorably from a credit perspective. Ratings below BBB- are considered non-investment grade, and many institutional investors are prohibited from investing in those instruments. Investors in non-investment grade debt instruments bear substantial default risk and usually require a much higher yield to invest in such instruments; hence, non-investment grade bonds are also referred to as high-yield bonds.

Q. WHY IS A CREDIT RATING IMPORTANT TO A COMPANY?

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[54] An issue of debt may have a different credit rating than the unsecured credit rating of the issuing entity because of differences in collateral or in claims to cash flow of different debt issues.

[55] Fitch Ratings uses a designation similar to that of S&P.

[56] Moody's use the designation 1, 2, and 3 to indicate a higher than average, average, and lower than average rating for the category.

A. It is usually necessary for a company to obtain a credit rating to place its bonds (or other debt) with the public. In general, the higher the credit rating, the lower the yield investors require, and the required yield increases at an increasing rate as the credit rating declines. For example, the difference between the yields on BBB and BB rated bonds is larger than is the difference in yield between A and BBB rated bonds. Recently and especially during the height of the financial crisis, the yields on BBB- rated bonds (the lowest investment grade) and on non-investment grade bonds increased much more than did the yields on higher-rated bonds. This observation is illustrated in Figure 6 below for four investment grade bond ratings. From Figure 6, it is clear that while utility bond yields have declined in recent months, the spreads between categories such as between BBB and BBB- rated utility bonds and especially between BBB and BB rated utility bonds have not returned to their pre-crisis levels. The yield spread on BB rated utility debt remains very high, about 405 basis points, compared to less than 160 basis points in April 2007. Thus, a downgrade to the BBB- or worse, the BB range, could result in a substantial increase in the expected cost of debt. Given the ongoing volatility in capital markets, yield spreads for bonds rated BBB- or lower may not return to a more normal range for an extended period of time.

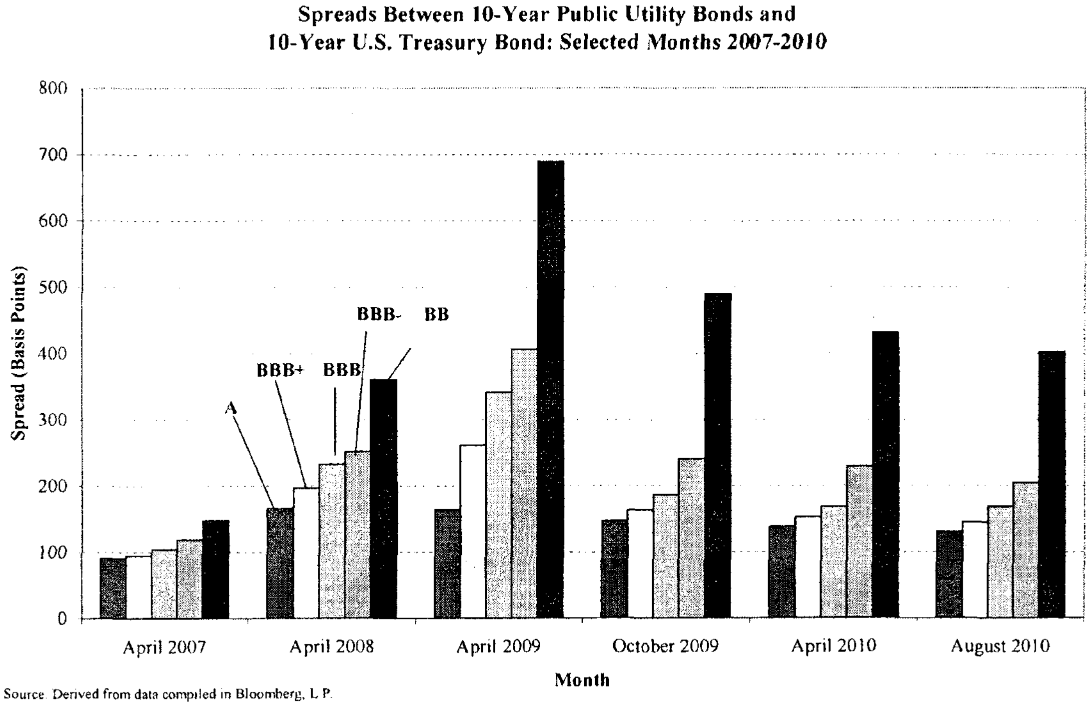

Figure 6

For a company such as Arizona-American Water, the impact of the widening yield could be very significant. If Arizona-American Water were to issue debt on a stand alone basis, the difference between issuing debt as a BBB and a BB rated entity is currently about 235 basis points for 10-year bonds. More importantly, BB rated or even BBB- rated entities have difficulty accessing credit markets during times of limited liquidity, and if they do, they must pay very high interest rates, as illustrated in the April and October 2009 data in Figure 6.

Q. ARE THERE OTHER COSTS OF A NON-INVESTMENT GRADE CREDIT RATING?

A. Yes. Mutual fund and many other financial institutions cannot hold non-investment grade paper and cannot acquire bonds with a rating below BBB-. If an entity's debt were downgraded to non-investment grade, many financial institutions are required by their charters to sell all such bonds. The effect of forced sales by financial institutions is likely to be an increase in the required yield on non-investment grade debt. BBB- rated entities are more vulnerable to economic turmoil because they are 'closer to the edge' than other investment grade rated entities. As a result, yields on BBB- rated debt increase more when financial markets are in turmoil. In addition, companies with non-investment grade credit ratings are considered to be in financial distress and experience additional costs not borne by investment grade companies. These factors underline the importance of improving Arizona-American Water's credit metric.

Q. WHAT FACTORS DO CREDIT RATING AGENCIES CONSIDER IN DETERMINING THE RATING OF A REGULATED WATER AND WASTEWATER UTILITY SUCH AS ARIZONA-AMERICAN?

A. The three major credit rating agencies, Fitch, Moody's and S&P, all look at qualitative as well as quantitative measures. Among the qualitative measures all rating agencies review are the utility's regulatory environment and especially its ability to recover all capital expenditures and expenses in a timely fashion. Rating agencies also look to quantitative measures such as interest coverage ratios and leverage. For example, Moody's assign 40% weight to credit ratios when evaluating global water utilities[57] and consider, among other measures, interest coverage as measured by Funds from Operations (FFO) to Interest or by Adjusted Interest Coverage. S&P also looks to FFO to interest. In addition, Moody's assigns weight to (1) net debt to assets or net debt to capitalization, (2) FFO to net debt and (3) retained cash flow to capital expenditures. S&P and Fitch look to similar ratios.[58]

[57] Moody's, "Global Regulated Water Utilities," December 2009, p. 7.

[58] See, for example, FitchRatings, "Credit Rating Guidelines for Regulated Utility Companies," July 2007 and Standard & Poor's, "Corporate Ratings Criteria 2008," April 2008.

A key input to these credit ratios is FFO, which measures operating profits from continuing operations, after tax, plus depreciation and amortization, plus deferred income tax (during the period), plus other major recurring noncash items. Thus, operating profit is a key component to several ratios.

Q. DO THE CREDIT RATING AGENCIES FOCUS ON THE ALLOWED ROE OR ON THE EARNED ROE?

A. Earned or realized returns are the key. S&P is explicit in saying that it focuses on actual earned returns because cash flow depends upon what is actually earned, not what is allowed.[59] The implication is that treating the regulated company (and customers) fairly requires not only that allowed return be set equal to the cost of capital but also that the company have a fair opportunity to earn the allowed return.

Q. WHAT ARE THE IMPLICATIONS OF ARIZONA-ARMERICAN WATER HAVING EARNED A NEGATIVE PROFIT FOR A LONGER PERIOD OF TIME?

A. As shown in the Townsley Testimony, Arizona-American Water has only earned a positive income in one year since 2001, and it has not earned its allowed return in any year. Because credit agencies and investors emphasize realized return on equity, it is important that Arizona-American Water being able to earn a reasonable return on equity. If it cannot earn a reasonable return on equity, the Company will face difficulties raising both debt and equity capital on a stand alone basis. For example, J.P. Morgan emphasizes cash flow measures such as FFO Interest Coverage and FFO to debt.[60] Thus,

[59] S&P, "Assessing U.S. Utility Regulatory Environments," March 11, 2010, p. 4.

[60] Susan Voorhees, "The Changing Economic Environment: An Investor Perspective," *J.P. Morgan North America Credit Research*, April 29, 2010, p. 1, presented at the *2010 SURFA Financial Forum.*

like the credit rating agencies, fixed income investors view these credit metrics as important for regulated utilities.

Q. PLEASE SUMMARIZE THIS SECTION OF YOUR TESTIMONY AS IT PERTAINS TO ARIZONA-AMERICAN WATER.

A. Earning a solid cash flow is critical to maintenance of a strong, investment grade credit rating, which in turn is essential for access to capital markets. A regulated company, such as Arizona-American Water (or its parent), must raise debt and equity in the capital markets to finance its capital investment program. Anything that adversely affects cash flow will weaken the Company's credit metrics and increase the cost of debt and possible equity as well. Factors such as the use of a historic test year, delays in recognizing assets in rate base, and rate case moratoria work against the Company's ability to earn the allowed ROE and weakens its credit metrics. Under these circumstances, the Commission should consider allowing a ROE at the upper end of the range of reasonableness to strengthen the Company's credit metrics and to improve the chance that the ROE actually earned will equal its cost of capital.

VI. ARIZONA-AMERICAN WATER'S COST OF EQUITY

Q. WHAT CONCLUSIONS DO YOU DRAW FROM THE ABOVE DATA REGARDING EACH SAMPLE'S COST OF EQUITY AT ARIZONA-AMERICAN WATER'S 45 PERCENT EQUITY RATIO?

A. For the gas LDC sample, the estimated costs of equity from the risk-positioning model and from the DCF model are in line. These estimates are also consistent with the Water sample's risk positioning estimates, but the water sub-sample's risk positioning estimates are higher while the multi-stage DCF estimates for the water sample and subsample are a bit lower. Because the risk positioning estimates for the water sample and for the gas

LDC sample and subsample as well as the DCF estimates for the gas LDC sample are close together and reasonable, these figures deserve the most weight.

Q. DO YOU HAVE ANY COMMENTS REGARDING THE RESULTS OF THE RISK-POSITIONING MODELS?

A. Yes. If any increase in investors' risk aversion and thus the market risk premium is taken into account, the estimates are well above the baseline figures. Also, as noted in Section V above, the fact that Arizona-American Water has been unable to earn its allowed return on equity for a sustained period of time and currently face credit ratios that are problematic indicate that the allowed return on equity, if anything, should be adjusted upward from the estimates derived from the sample companies.

Q. DID YOU CONSIDER ANY OTHER EVIDENCE IN DETERMINING WHETHER ARIZONA-AMERICAN'S REQUESTED RETURN ON EQUITY WAS REASONABLE?

A. Yes. I reviewed recent water utility decisions from the Arizona Corporation Commission and compared the overall rates of return to that requested by Arizona-American Water. Specifically, I compared the overall rate of return allowed by the Commission to that requested by Arizona-American Water using two scenarios. Specifically, I compared the allowed rate of return at the time of the decision to that requested by Arizona-American today.

Q. PLEASE EXPLAIN YOUR COMPARISON TO RECENT COMMISSION DECISIONS.

A. I obtained data on 22 recent Arizona decisions on water and wastewater utilities.[61] The data is summarized in Table 8 below.

Table 8: Summary of Recent Commission Water and Wastewater Decisions[62]

Company	Decision	Date	Common Equity	Allowed Rate of Return on Equity
	[1]	[2]	[3]	[4]
Bella Vista Water Company	65350	11/1/2002	68.1%	9.1%
Clearwater Utilities	66782	2/13/2004	100.0%	9.1%
Arizona Water Company	66849	3/19/2004	66.2%	9.2%
AZ-American Water Co. (Citizens)	67093	6/30/2004	39.9%	9.0%
Rio Rico Utilities	67279	10/5/2004	100.0%	8.7%
Las Quintas Serenas Water C o.	67455	1/4/2005	100.0%	8.1%
Forest Highlands	67983	7/18/2005	100.0%	8.1%
Pineview Water Co.	67989	7/18/2005	51.0%	8.9%
Chaparral City Water	68176	9/30/2005	58.8%	9.3%
Arizona Water Company	68302	11/14/2005	73.4%	9.1%
AZ-American Water Co. (PV)	68858	7/28/2006	36.7%	10.4%
Black Mountain Sewer	69164	12/5/2006	100.0%	9.6%
Far West Water & Sewer Co.	69335	2/20/2007	56.0%	9.3%
Goodman Water Co.	69404	4/16/2007	100.0%	9.3%
AZ-American Water Co. (Mohave)	69440	5/1/2007	40.0%	10.7%
Gold Canyon Sewer Company	69664	6/28/2007	100.0%	9.2%
Utility Source	70140	1/23/2008	100.0%	8.9%
Cordes Lakes Water Company	70710	2/27/2008	100.0%	10.0%
AZ -American (Sun City Wastewater)	70209	3/20/2008	38.5%	10.6%
AZ-American (Anthem)	70372	6/13/2008	39.2%	8.8%
Arizona Water Company	71845	8/24/2010	45.9%	9.5%
Global Water	71878	9/14/2010	55.5%	9.0%

Arizona-American Water's requested capital structure contains only 45 percent equity which is lower than that of any company in Table 8 other than Arizona-American Water itself. Therefore, Arizona-American Water has a higher level of financial risk and consequently its cost of equity capital is higher. As Arizona-American Water has less equity, a smaller fraction of its rate base gets an equity return while a larger fraction of

[61] The first 17 decisions were provided by Arizona-American and the last five were obtained from the Commission's website (E-dockets). Recommended opinions were not included.

[62] Decision 71878 for Global Water pertains to five districts. Therefore, the data presented in Tables 8 and 9 represent a rate base weighted average of the capital structure and allowed return on debt and equity.

the rate base gets a debt return. Henceforth, the weighted average cost of capital or overall return is not higher than that of other entities. Table 9 below shows the after-tax weighted-average cost of capital inherent in each decision listed in Table 8 using the cost of debt from the relevant decision. This figure is calculated in column [7]. Column [8] reports the corresponding cost of equity at Arizona-American Water's capital structure.

Table 9: Comparing Recent Commission Decisions at 45% Equity

Company	Decision	Common Equity	Allowed Rate of Return on Equity	Long-term Debt	Debt Cost	Implied ATWACC	Implied ROE at AZ-Am Equity %
Bella Vista Water Company	65350	68.1%	9.1%	31.9%	5.9%	7.4%	12.0%
Clearwater Utilities	66782	100.0%	9.1%	0.0%	n/a	9.1%	15.9%
Arizona Water Company	66849	70.1%	9.2%	29.9%	8.5%	8.0%	13.5%
AZ-American Water Co. (Citizens)	67093	39.9%	9.0%	60.1%	4.8%	5.4%	7.6%
Rio Rico Utilities	67279	100.0%	8.7%	0.0%	n/a	8.7%	15.0%
Las Quintas Serenas Water Co.	67455	100.0%	8.1%	0.0%	n/a	8.1%	13.7%
Forest Highlands	67983	100.0%	8.1%	0.0%	n/a	8.1%	13.7%
Pineview Water Co.	67989	51.0%	8.9%	49.0%	5.4%	6.2%	9.4%
Chaparral City Water	68176	58.8%	9.3%	41.2%	5.1%	6.8%	10.7%
Arizona Water Company	68302	73.4%	9.1%	26.6%	8.4%	8.1%	13.6%
AZ-American Water Co. (PV)	68858	36.7%	10.4%	63.3%	5.4%	5.9%	8.9%
Black Mountain Sewer	69164	100.0%	9.6%	0.0%	n/a	9.6%	17.0%
Far West Water & Sewer Co.	69335	56.0%	9.3%	44.0%	5.8%	6.8%	10.8%
Goodman Water Co.	69404	100.0%	9.3%	0.0%	n/a	9.3%	16.3%
AZ-American Water Co. (Mohave)	69440	40.0%	10.7%	60.0%	5.7%	6.4%	9.9%
Gold Canyon Sewer Company	69664	100.0%	9.2%	0.0%	n/a	9.2%	16.1%
Utility Source	70140	100.0%	8.9%	0.0%	n/a	8.9%	15.4%
Cordes Lakes Water Company	70710	100.0%	10.0%	0.0%	n/a	10.0%	17.9%
AZ -American (Sun City Wastewater)	70209	38.5%	10.6%	61.5%	5.5%	6.2%	9.4%
AZ-American (Anthem)	70372	39.2%	8.8%	60.8%	5.4%	5.5%	7.9%
Arizona Water Company	71845	45.9%	9.5%	49.4%	6.8%	6.4%	10.0%
Global Water	71878	55.5%	9.0%	44.5%	6.4%	6.8%	10.7%
Average		71.5%	9.3%	28.3%	6.1%	7.6%	12.5%
Average without AZ-Am		81.1%	9.1%	18.6%	6.5%	8.1%	13.6%
Average without AZ-Am and Companies with 100% Equity		59.8%	9.2%	39.6%	6.5%	7.0%	11.3%

As can be seen from Table 9 above, on an apples-to-apples comparison, the average return on equity allowed by the Commission at Arizona-American Water's targeted capital structure was 12.5 percent for all companies, while an exclusion of both Arizona-American Water and companies that are 100 percent equity financed decreases the comparable cost of equity to 11.3 percent, which is comparable to the Company's requested return on equity. However, the figures above do not consider the increase in the cost of debt that utilities face and therefore underestimate today's ATWACC and hence the implied cost of equity. As the comparable return allowed to water and wastewater utilities in Arizona in recent years is higher than that requested by the

Company, prior Commission decisions indicate that Arizona-American Water's request in this proceeding is conservative.

Q. BASED ON THE EVIDENCE WHAT IS YOUR CONCLUSION REGARDING ARIZONA-AMERICAN WATER'S REQUESTED 11.5 PERCENT RETURN ON EQUITY?

A. Based on the results from my cost-of-capital estimation procedures, I conclude that 11.50 percent return on equity is very reasonable and a conservative request. It is included in both the risk positioning and DCF ranges and close to the majority of the estimates. If Arizona-American Water's financial situation or the increased risk premium is considered, the request is in the lower end of the resulting cost of equity. In addition, the request is conservative when compared to the weighted average cost of capital the Commission has allowed in the past. Therefore, I fully support the Company's request.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

APPENDIX A: QUALIFICATIONS OF DR. BENTE VILLADSEN

Dr. Bente Villadsen's work concentrates in the areas of regulatory finance and accounting. Her recent work has focused accounting issues, damages, cost of capital and regulatory finance. Among her recent accounting work, she has been involved in accounting disclosure issues and principles including impairment testing, fair value accounting, leases, accounting for hybrid securities, accounting for equity investments, cash flow estimation as well as overhead allocation. Damages estimation has been performed in the U.S. as well as internationally for companies in the construction, telecommunications, energy, cement, and rail road industry. In the regulatory finance area, Dr. Villadsen has testified on cost of capital, analyzed credit issues in the utility industry as well the impact of regulatory initiatives such as energy efficiency and de-coupling. She has filed testimony before and testified in federal and state court, in international and U.S. arbitrations and before state and federal regulatory commissions. Her testimonies and expert reports pertain to accounting issues, damages, discount rates and cost of capital for regulated entities.

Dr. Villadsen holds a Ph.D. from Yale University's School of Management with a concentration in accounting. She has a joint degree in mathematics and economics (BS and MS) from University of Aarhus in Denmark. Prior to joining *The Brattle Group*, she was a Professor of Accounting at the University of Iowa, University of Michigan, and at Washington University in St. Louis where she taught financial and cost accounting. Dr. Villadsen also worked as a consultant for Risoe National Laboratories in Denmark.

EXPERIENCE

Regulatory Finance

- Dr. Villadsen has filed several cost of capital testimonies and appeared at hearings for water and wastewater utilities as well as for electric utilities in connection with rate hearings before state and federal regulatory commissions.

- On behalf of water and wastewater utilities, Dr. Villadsen has filed cost of capital testimony in state regulatory proceedings. In recent proceedings, her testimony included an evaluation of the impact of the financial crisis on the cost of capital.

- In a matter before Bonneville Power Administration, Dr. Villadsen filed expert testimony on behalf of customers regarding the cost of capital for electric utilities and the appropriate discount rate to apply to a government entity's cash flows.

- She estimated the cost of capital for major U.S. and Canadian utilities, pipelines, and railroads. The work has been used in connection with the companies' rate hearings before the Federal Energy Regulatory Commission, the Canadian National Energy Board, the Surface

Transportation Board, and state and provincial regulatory bodies. The work has been performed for pipelines, integrated electric utilities, non-integrated electric utilities, gas distribution companies, water utilities, railroads and other parties.

- In a matter pertaining to regulatory cost allocation, Dr. Villadsen assisted counsel in collecting necessary internal documents, reviewing internal accounting records and using this information to assess the reasonableness of the cost allocation.

- Dr. Villadsen has worked on estimating the appropriate cost of capital for airport operations in the U.K.

- She has been engaged to estimate the cost of capital or appropriate discount rate to apply to segments of operations such as the power production segment for utilities.

- In connection with rate hearings for electric utilities, Dr. Villadsen has estimated the impact of power purchase agreements on the company's credit ratings and calculated appropriate compensation for utilities that sign such agreements to fulfill, for example, renewable energy requirements.

- Dr. Villadsen has been part of a team assessing the impact of conservation initiatives, energy efficiency, and decoupling of volumes and revenues on electric utilities financial performance. Specifically, she has estimated the impact of specific regulatory proposals on the affected utilities earnings and cash flow.

- In a regulatory matter, she evaluated the impact of a depreciation proposal on an electric utility's financial metric and also investigated the accounting and regulatory precedent for the proposal.

- For a large integrated utility in the U.S., Dr. Villadsen has for several years participated in a large range of issues regarding the company's rate filing, including the company's cost of capital, incentive based rates, fuel adjustment clauses, and regulatory accounting issues pertaining to depreciation, pensions, and compensation.

- Dr. Villadsen has been involved in several projects evaluating the impact of credit ratings on electric utilities. She was part of a team evaluating the impact of accounting fraud on an energy company's credit rating and assessing the company's credit rating but-for the accounting fraud.

- For a large electric utility, Dr. Villadsen modeled cash flows and analyzed its financing decisions to determine the degree to which the company was in financial distress as a consequence of long-term energy contracts.

- For a large electric utility without generation assets, Dr. Villadsen assisted in the assessment of the risk added from offering its customers a price protection plan and being the provider of last resort (POLR).

Accounting and Corporate Finance

- On behalf of a taxpayer, Dr. Villadsen recently testified in federal court on the impact of discount rates on the economic value of alternative scenarios in a lease transaction.

- In an arbitration matter before the International Centre for Settlement of Investment Disputes, she provided expert reports and oral testimony on the allocation of corporate overhead costs and damages in the form of lost profit. Dr. Villadsen also reviewed internal book keeping records to assess how various inter-company transactions were handled.

- Dr. Villadsen provided expert reports and testimony in an international arbitration under the International Chamber of Commerce on the proper application of US GAAP in determining shareholders' equity. Among other accounting issues, she testified on impairment of long-lived assets, lease accounting, the equity method of accounting, and the measurement of investing activities.

- In an arbitration matter before the American Arbitration Association, she provided expert reports on the equity method of accounting, the classification of debt versus equity and the distinction between categories of liabilities in a contract dispute between two major oil companies. For the purpose of determining whether the classification was appropriate, Dr. Villadsen had to review the company's internal book keeping records.

- In U.S. District Court, Dr. Villadsen filed testimony regarding the information required to determine accounting income losses associated with a breach of contract and cash flow modeling.

- Dr. Villadsen recently assisted counsel in a litigation matter regarding the determination of fair values of financial assets, where there was a limited market for comparable assets. She researched how the designation of these assets to levels under the FASB guidelines affect the value investors assign to these assets.

- She has worked extensively on litigation matters involving the proper application of mark-to-market and derivative accounting in the energy industry. The work relates to the proper valuation of energy contracts, the application of accounting principles, and disclosure requirements regarding derivatives.

- Dr. Villadsen evaluated the accounting practices of a mortgage lender and the mortgage industry to assess the information available to the market and ESOP plan administrators prior to the company's filing for bankruptcy. A large part of the work consisted of comparing the company's and the industry's implementation of gain-of-sale accounting.

- In a securities fraud matter, Dr. Villadsen evaluated a company's revenue recognition methods and other accounting issues related to allegations of improper treatment of non-cash trades and round trip trades.

- For a multi-national corporation with divisions in several countries and industries, Dr. Villadsen estimated the appropriate discount rate to value the divisions. She also assisted the company in determining the proper manner in which to allocate capital to the various divisions, when the company faced capital constraints.

- Dr. Villadsen evaluated the performance of segments of regulated entities. She also reviewed and evaluated the methods used for overhead allocation.

- She has worked on accounting issues in connection with several tax matters. The focus of her work has been the application of accounting principles to evaluate intra-company transactions, the accounting treatment of security sales, and the classification of debt and equity instruments.

- For a large integrated oil company, Dr. Villadsen estimated the company's cost of capital and assisted in the analysis of the company's accounting and market performance.

- In connection with a bankruptcy proceeding, Dr. Villadsen provided litigation support for attorneys and an expert regarding corporate governance.

Damages

- In a tax matter, Dr. Villadsen testified on the economic value of alternative scenarios in a lease transaction.

- For a foreign construction company involved in an international arbitration, she estimated the damages in the form of lost profit on the breach of a contract between a sovereign state and a construction company. As part of her analysis, Dr. Villadsen relied on statistical analyses of cost structures and assessed the impact of delays.

- In an international arbitration, Dr. Villadsen estimated the damages to a telecommunication equipment company from misrepresentation regarding the product quality and accounting performance of an acquired company. She also evaluated the IPO market during the period to assess the possibility of the merged company to undertake a successful IPO.

- She assisted in the estimation of net worth of individual segments for firms in the consumer product industry. Further, she built a model to analyze the segment's vulnerability to additional fixed costs and its risk of bankruptcy.

- Dr. Villadsen was part of a team estimating the damages that may have been caused by a flawed assumption in the determination of the fair value of mortgage related instruments.

- For an electric utility, Dr. Villadsen estimated the loss in firm value from the breach of a power purchase contract during the height of the Western electric power crisis. As part of the assignment, Dr. Villadsen evaluated the creditworthiness of the utility before and after the breach of contract.

- Dr. Villadsen modeled the cash flows of several companies with and without specific power contract to estimate the impact on cash flow and ultimately the creditworthiness and value of the utilities in question.

PUBLICATIONS

"IFRS and Utilities: How the New Standards May Affect You," (with Amit Koshal and Wyatt Toolson), forthcoming *in Public Utilities Fortnightly.*

"Building Sustainable Efficiency Businesses: Evaluating Business Models," (with Joe Wharton and Peter Fox-Penner), *Edison Electric Institute*, August 2008.

"Understanding Debt Imputation Issues," (with Michael J. Vilbert and Joe Wharton and *The Brattle Group* listed as an author), *Edison Electric Institute*, June 2008.

"Measuring Return on Equity Correctly: Why current estimation models set allowed ROE too low," *Public Utilities Fortnightly*, August 2005 (with A. Lawrence Kolbe and Michael J. Vilbert).

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APPENDIX B

SELECTING THE WATER AND GAS LDC SAMPLES AND THE USE OF MARKET VALUES

I. SAMPLE SELECTION AND THE CHARACTERISTICS OF EACH SAMPLE

A. The Water Sample

Q1. How did you select your sample of water utilities?

A1. The goal was to create a sample of companies whose primary business is as a regulated water utility with business risk generally similar to that of Arizona-American Water. To construct this sample, I started with the universe of water utility companies for which *Value Line Investment Survey* - Plus Edition provides information sheets. I then eliminated Sun Hydraulics because, although listed as a water utility, its operations consist mainly of producing industrial equipment.[1]

Usually, I apply several additional selection criteria to eliminate companies with unique circumstances that may affect the cost of capital estimates. For example, I normally eliminate companies with annual revenues lower than $300 million in 2009,[2] no or low bond ratings, lack of growth estimates or Bloomberg data, and all companies with announced dividend cuts or that were involved in significant merger activity over the last five years (2005 to today). However, applying these procedures to the ten water utilities followed by *Value Line* would eliminate several companies from a sample that is already limited. I therefore try to balance stringent selection criteria against the need to have a reasonable sample size. Therefore, I use of all ten companies to form the full sample: American States Water Co., American Water Works, Aqua America Inc., California Water Service Group, Connecticut Water Service Inc., Middlesex Water Co., Pennichuck Corp., SJW Corp., Southwest Water Co., and York Water Co. I form subsamples for the analyses - - consisting of those companies that have sufficient data for analysis at hand (DCF or risk positioning). I also eliminate Southwest Water from the subsample, and

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[1] According to the company's webpage (www.sunhydraulics.com), it develops and manufactures valves and manifolds. Bloomberg lists it as part of its "metal fabricate/hardware" industry group.

[2] *Value Line* provides information on revenues and Table No. BV-2 and its associated workpapers report the share of regulated assets in 2009 for these companies. (Table No. BV-1 provides an index to the other tables.)

from the DCF analysis, because the company currently pays no dividend and because it has restated its financial statements filed with the Securities and Exchange Commission ("SEC") for 2006, 2007 and the first half of 2008.[3] Therefore, its use may bias the cost of capital estimation.[4]

Q2. Why do you usually eliminate companies currently involved in a merger from your samples?

A2. The stock prices of companies involved in mergers are often more affected by news relating to the merger than by movements in the stock market. In other words, the stock price "decouples" from its normal relationship to the stock market (the economy) which is the basis upon which a company's relative risk is calculated. Instead the stock price of a merger candidate is more affected by the latest speculation on the terms and probability of the merger.

Q3. What are some of the water sample's data problems?

A3. First, of the ten water utilities with sufficient data for analysis that Value Line follows, four companies (Connecticut Water, Middlesex Water, Pennichuck, and York Water) have 2009 revenues below $100 million and these four companies also have a market capitalization below $300 as of September 2010.[5] The stocks of small companies frequently exhibit "thin trading" which means that their stock trades infrequently.

Second, five companies lack long-term earnings forecasts from BEst and one company has an estimate that is not meaningful from *Value Line*. In addition, the existing growth rates estimates are highly variable, ranging from a low of 1.1 percent to a high of 14.3 percent (excluding Southwest Water's growth estimate). Such highly variable growth

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[3] See, Southwest Water Company, "SouthWest Water Company Completed Comprehensive Financial Review of Prior Years' Financial Results," Press Release, July 9, 2009.

[4] For example, *Value Line* expects Southwest Water's earnings per share to grow in excess of 90% annually over the next 4 years, which is caused by earnings currently being very low. It is difficult to interpret these figures.

[5] The *Value Line* sheets for the sample companies contain revenues information and Table No. BV-3 provides information on current market capitalization.

rates are not indicative of an industry that is stable and cast doubt on the applicability of the DCF model to this industry at this time.

Third, individual companies in the sample have unique characteristics. For example, the fact that Aqua America is "an active participant in the ongoing consolidation within the water service industry"[6] has impacted the market perception and hence risk measures of the company. Similarly, SouthWest Water's financial restatement and its plans to be acquired have almost certainly impacted its stock price, growth rate, and systematic risk.[7]

These factors may all potentially affect the cost of equity estimates in ways not completely predictable. This is especially true for the DCF estimates which rely exclusively on current data, so that recent events impact the measurement 100 percent. Because of the data problems and the lack of a large number of publicly traded water utilities, I include all publicly traded companies with sufficient data in the full sample but also create a subsample without SouthWest Water and without companies that lack data for the analysis at hand; e.g., growth rates in the DCF analysis or less than five years' of data for the risk positioning method.

B. The Gas Local Distribution Companies Sample

Q4. How do you select your gas local distribution company sample?

A4. To select this sample, I started with the universe of publicly traded natural gas utilities covered by Value Line Investment Survey – Plus Edition.[8] This resulted in an initial group of 25 companies that are followed by *Value Line*. I then eliminated companies by applying additional selection criteria designed to eliminate companies with unique circumstances which may bias the cost of capital estimates. Sample companies must own substantial gas distribution assets, must not exhibit any signs of financial distress, must have revenues greater than $300 million, and must not be involved in any substantial

[6] *Value Line Investment Industry*, Aqua America, July 23, 2010.

[7] *Value Line Investment Survey*, Southwest Water Co., July 23, 2010.

[8] *Value Line Investment Survey*, Plus Edition, September 10, 2010.

merger and acquisition ("M&A") activities that could bias the estimation process. I require that companies have an investment grade credit rating, a high percentage of gas distribution assets (greater than 50 percent), no significant merger activity in recent years (i.e., January 2007 to June 2010), and no dividend cuts during the past five years and no other activity that could cause the growth rates or beta estimates to be biased. I also require data from S&P or Moody's, *Value Line*, and Bloomberg be available for all sample companies. The selection criteria results in a sample of 11 companies.

Q5. Are there any issues with the remaining companies in your sample?

A5. Possibly. There are three companies in the sample, Atmos, New Jersey Resources Corp, and NiSource, that are not "pure play" gas LDCs. For example, Atmos has significant involvement in natural gas intrastate pipelines and intrastate storage segments. Also, a large portion of its income comes from natural gas marketing activities. New Jersey Resources Corp has had significant income from wholesale energy and gas marketing services in some of the recent years. NiSource has a diversified business with large intrastate transportation and storage segments as well as a large electric generation segment. As a result I create a sub-sample of those companies that are close to being a pure-play in the natural gas distribution segment. The sub-sample consists of AGL Resources, Laclede Group Inc., Nicor Inc., Northwest Natural Gas, Piedmont Natural Gas, South Jersey Industries, Southwest Gas and WGL Holdings.

Q6. What are the characteristics of the sample of gas local distribution companies you have chosen?

A6. The gas LDC sample is comprised of regulated companies whose primary source of revenues and majority of assets are in the regulated portion of the natural gas distribution industry. The final sample consists of the eleven gas LDCs from which I form a subsample of eight companies with no data issues. The purpose of the sub-sample is to guard against the possibility of unknown bias in the cost of capital estimates.

Q7. Please compare the characteristics of the water utility sample and the gas LDC sample.

A7. Both samples consist of companies with substantial capital investments in distribution facilities. Specifically, both water and gas utilities are characterized by operating large distribution systems for a mixture of residential, commercial, and industrial customers. Also, companies in both samples earn a large percentage of their revenue from regulated activities and serve a mix of residential, industrial, and other customers. For both samples, I construct a subsample consisting of companies with fewer data issues. While all companies in the water sample have more than 80% of their assets subject to regulation (see Table No. BV-2), 4 of the 11 companies in the gas LDC sample have 50-79% regulated assets, but only one company has less than 70% regulated assets (See Table BV-14 and Workpaper #1 to Table BV-14). All companies in the water utility and gas LDC sample are regulated by one or more states.

Q8. What do you conclude from the comparison of the water utility and the gas LDC samples?

A8. Water and wastewater utilities like gas LDC companies are state regulated entities that invest in pipes, mains, and storage facilities. In addition, both industries face substantial infrastructure investments going forward, so aspects of their operations are very similar. Because the two industries typically have the same regulator, similar customer mix and similar infrastructure, many current issues are similar (e.g., declining usage, increasing bad debt). One difference is that while Gas LDC companies only rarely develop their commodity (gas), water utilities usually do. Given the many similarities, the gas LDC sample is a suitable benchmark for the water industry's cost of capital.

II. Market Value Capital Structure, Costs of Debt & Costs of Preferred Equity

Q9. What capital structure information do you require?

A9. For reasons discussed in my written evidence and explained in detail in Appendix E, explicit evaluation of the market-value capital structures of the sample companies versus the capital structure used for rate making is vital for a correct interpretation of the market evidence. This requires estimates of the market values of common and preferred equity and debt, and the current market costs of preferred equity and debt.

Q10. How do you calculate the market-value capital structures of the sample companies?

A10. I estimate the capital structure for each company by estimating the market values of common equity, preferred equity and debt from publicly available data. The calculations are in Panels A to J of Table No. BV-3 and Panels A to K of Table No. BV-15 for the water and gas LDC sample, respectively.

The market value of equity is straightforward: the price per share times the number of shares outstanding. The market value of preferred equity is set equal to its book value because the portion of the capital structure financed with preferred equity is generally small. The market value of debt is estimated at the book value of debt reported by Bloomberg plus or minus the difference in the estimated fair (market) value and book value of long-term debt as reported in the companies' 10-Ks or annual reports.[9]

For purposes of assessing financial risk to common shareholders, I add an adjustment for short-term debt to the debt portion of the capital structure. This adjustment is used only for those companies whose short-term (current) liabilities exceed their short-term

[9] See Panels A through J in Table No. BV-3 and Panels A through K in Table BV-15 for details. The adjustment relies on the difference between the companies' self-reported fair value of long-term debt and the carrying value of the same line items. This information was obtained from the sample companies' annual reports.

(current) assets. I add an amount equal to the minimum of the difference between short-term liabilities and short-term assets or the amount of short-term debt. The reason for this adjustment is to recognize that when current liabilities exceed current assets, a portion of the company's long-term assets are being financed, in effect, by short-term debt.

The market value capital structure is calculated to be consistent with the time period over which the cost of capital is estimated for each sample. The capital structure is determined over the historical period over which the relevant risk positioning parameters were determined and as of the date analysts provide forward looking growth forecasts. Therefore, Tables No. BV-3 and BV-15 report the market value capital structure at year end for the years ending 2005 – 2009 and as of Q2, 2010.[10] The output of each of these tables is the market equity-to-value, debt-to-value, and preferred equity-to-value ratios. The overall cost of capital calculation for the risk positioning estimates rely on the average of the market value capital structure computed for the years 2005 through Q2, 2010 as shown in Tables No. BV-4 and BV-16, respectively. The results in columns [1]-[3] are used in the DCF model calculations, while columns [4]-[6] are for the risk positioning models.

Q11. How do you estimate the current market cost of preferred equity?

A11. For companies with preferred equity, the cost of preferred equity for each company was set equal to the yield on an index of preferred stock as reported in the Mergent Bond Record corresponding to the S&P rating of that company's debt. The yields from Mergent Bond Record were as of September 2010. In general, the amount of preferred equity in the sample companies' capital structures is very small or zero and no company had more than 1% preferred (Tables No. BV-4 and BV-16)

[10] For American Water Works only data for 2008 through Q2, 2010 were used as the company only became publicly traded in 2008.

Q12. How do you estimate the current market cost of debt?

A12. The market cost of debt for each company in the DCF analysis is the current yield reported by Bloomberg for a public utility company bond corresponding to the sample company's current debt rating as classified by S&P. The risk positioning analysis, on the other hand, uses the current yield of a utility bond that corresponds to the five-year average debt rating of each company so as to match consistently the horizon of information used to estimate company betas. The current S&P debt ratings were obtained from Bloomberg.[11]

The 15-day yield on Moody's A-rated Utility bonds was 4.95 percent as of September 15, 2010, and 5.49 percent on Moody's BBB-rated Utility bonds. (See Workpaper #1 to Table No. BV-11 for the yields on utility bonds and preferred stock by credit rating.) Based on information from the Company, the corporate tax rate was set at 38.6 percent. Calculation of the after-tax cost of debt uses the marginal tax rate 38.6 percent.

[11] Debt ratings were not available for Pennichuck Corp., SJW Corp, and Southwest Water Co.'s. I assumed a rating in the A category (A+, A, or A-), which is the same as that of all other water utilities in the sample.

APPENDIX C

RISK POSITIONING METHODOLOGY AND RESULTS

Q1. What is the purpose of this appendix?

A1. This appendix reviews the principles behind the risk positioning methodologies, describes the estimation of the parameters used in the models, and details the cost of capital estimates obtained from these methodologies. This appendix intentionally repeats portions of my direct testimony, because I want the reader to be able to have a full discussion of the issues addressed here, rather than having to continually turn back to the corresponding section of the testimony.

I. EQUITY RISK PREMIUM METHODOLOGY

Q2. How is this section of the appendix organized?

A2. It first reviews the basic nature of the equity risk premium approach. It then discusses the individual components of the model: the risk premium, the relative risk of the company or line of business in question, the appropriate interest rate, and the combination of these elements in a particular equity risk premium model.

A. The Basic Equity Risk Premium Model

Q3. How does the equity risk premium model work?

A3. The equity risk premium approach estimates the cost of equity as the sum of a current interest rate and a risk premium. (It therefore is sometimes also known as the "risk premium" or the "risk positioning" approach.)

This approach may sometimes be applied informally. For example, an analyst or a commission may check the spread between interest rates and what is believed to be a reasonable estimate of the cost of capital at one time, and then apply that spread to changed interest rates to get a new estimate of the cost of capital at another time.

More formal applications of the equity risk premium method implement theoretical finance models of cost of capital. They use information on all securities to identify the security market line (Figure 1 in the body of the testimony) and derive the cost of capital for the individual security based on that security's relative risk. This equity risk premium approach is widely used and underlies most of the current scholarly research on the nature, determinants and magnitude of the cost of capital.

Q4. How are "more formal applications" put into practice?

A4. The essential benchmarks that determine the security market line are the risk-free interest rate and the premium that a security of average risk commands over the risk-free rate. This premium is commonly referred to as the "market risk premium" ("MRP"), i.e., the excess of the expected return on the average common stock over the risk-free interest rate. In the equity risk premium approach the risk-free interest rate and MRP are common to all securities. A security-specific measure of relative risk (beta) is estimated separately and combined with the MRP to obtain the company-specific risk premium.

In principle, there may be more than one factor affecting the expected stock return, each with its own security-specific measure of relative risk and its own benchmark risk premium. For example, the "arbitrage pricing theory" and other "multi-factor" models have been proposed in the academic literature. These models estimate the cost of capital as the sum of a risk-free rate and several security-specific risk premia. However, none of these alternative models has emerged in practice as "the" improvement to use instead of the original, single-factor model. I use the traditional single-factor model in this testimony.

Accordingly, the required elements in my formal equity risk premium approach are the market risk premium, an objective measure of relative risk, the risk-free rate that corresponds to the measure of the market risk premium, and a specific method to combine these elements into an estimate of the cost of capital.

B. Market Risk Premium

Q5. Why is a risk premium necessary?

A5. Experience (e.g., the recent financial crisis and the U.S. market's October Crash of 1987) demonstrates that shareholders, even well diversified shareholders, are exposed to enormous risks. By investing in stocks instead of risk-free Government bills, investors subject themselves not only to the risk of earning a return well below what they expected in any year but also to the risk that they might lose much of their initial capital. This is why investors demand a risk premium.

Because short-term risk-free rates currently are influenced substantially by monetary policy, I estimate only a long-term version of the Capital Asset Pricing Model ("CAPM") for this proceeding. This version of the CAPM measures the market risk premium as the risk premium of average risk common stocks over the long-term risk-free rate. The use of the long-term version of the CAPM is consistent with the Commission Staff's past practice.[1]

Q6. Please discuss some of the issues involved in selecting the appropriate MRP.

A6. To determine the cost of capital in a regulatory proceeding, the MRP should be used with an estimate of the same interest rate used to calculate the MRP (i.e., the short-term Treasury bill rate or the long-term Government rate). For example, it would be inconsistent to utilize a short-term risk-free with an estimate of the MRP derived from comparisons to long-term interest rates. In addition, the appropriate measure of the MRP should be based upon the arithmetic mean not the geometric mean return.[2] The arithmetic mean is the simple average while the geometric mean is the compound rate of return between two periods.

Q7. How do you estimate the MRP?

A7. There is presently little consensus on "best practice" for estimating the MRP, which does not mean that each approach is equally valid. For example, the leading graduate textbook in corporate finance, after recommending use of the arithmetic average realized excess return on the market for many years (which for a while was noticeably over 9 percent), now reviews the current state of the research and expresses the view that the a range

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[1] See, for example, Direct Testimony of Juan C. Manrique in Docket No. W-01303A-09-0343, Schedule JCM-3. In this testimony, Staff relied on the both a 5, 7, 10-year government bond measure as well as the 30-year government bond measure.

[2] See, for example, Morningstar, *Ibbotson IBBS Valuation Yearbook 2010*, p. 55-56.

between 5 to 8 percent is reasonable for the U.S.[3] At the same time, Dimson, Marsh, and Staunton (2010) estimate that the average arithmetic risk premium of stocks *over bonds* in the U.S. was 6.3% for the period 1900 to 2009.[4] In a recent proceeding the Surface Transportation Board ("STB") decided to switch from a DCF model to the CAPM model when estimating the cost of equity for U.S. railroads. The STB further decided to rely on the arithmetic risk premium of stocks over long-term bonds as reported in Morningstar / Ibbotson (at the time 7.1 percent).[5]

My testimony considers both the historical evidence and the results of scholarly studies of the factors that affect the risk premium for average-risk stocks in order to estimate the benchmark risk premium investors currently expect. I consider the historical difference in returns between the Standard and Poor's 500 Index ("S&P 500") and the risk-free rate, recent academic literature on the MRP and the results of recent surveys to estimate the market risk premium.

Q8. Please summarize your conclusions on the MRP literature.

A8. Some research based upon U.S. data challenges the conventional wisdom of using the arithmetic average historical excess returns to estimate the MRP. However, after reviewing the issues in the debate, I remain skeptical for several reasons that the market risk premium has declined in the U.S. Instead, the recent financial crisis and the increased volatility in financial markets have likely increased investors risk aversion.[6]

First, despite eye-catching claims like "equity risk premium as low as three percent,"[7] and "the death of the risk premium,"[8] not all recent research arrives at the same

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[3] Richard A. Brealey, Stewart C. Myers, and Franklin Allen, *Principles of Corporate Finance*, McGraw-Hill, 9th edition, 2008, pp. 173-180.

[4] Credit Suisse, "*Global Investment Returns Yearbook 2010*," Table 10.

[5] *STB Ex Parte No. 664*, Issued January 17, 2008, pp. 8-9.

[6] K. French, W. Schwert and R. Stambaugh (1987), "Expected Stock Returns and Volatility," *Journal of Financial Economics*, Vol. 19, pp 3.

[7] Claus, J. and J. Thomas, (2001), "Equity Risk Premium as Low as Three Percent: Evidence from Analysts' Earnings Forecasts for Domestic and International Stocks," *Journal of Finance* 56:1629-1666.

conclusion. In his presidential address to the American Finance Association in 2001, Professor Constantinides seeks to estimate the unconditional equity premium based on average historical stock returns.[9] (Note that this address was based upon evidence just before the major fall in market value.) He adjusts the average returns downward by the change in price-earnings ratio because he assumes no change in valuations in an unconditional state. His estimates for 1926 to 2000 and 1951 to 2000 are 8.0 percent and 6.0 percent, respectively, over the 3-month T-bill rate. In another published study in 2001, Professors Harris and Marston use the DCF method to estimate the market risk premium for the U.S. stocks.[10] Using analysts' forecasts to proxy for investors' expectation, they conclude that over the period 1982-1998 the MRP over the *long-term* risk-free rate is 7.14 percent. As yet another example, the paper by Drs. Ibbotson and Chen (2003) adopts a supply side approach to estimate the forward looking long-term sustainable equity returns and equity risk premium based upon economic fundamentals. Their equity risk premium over the *long-term* risk-free rate is estimated to be 3.97 percent in geometric terms and 5.90 percent on an arithmetic basis. They conclude their paper by stating that their estimate of the equity risk premium is "far closer to the historical premium than being zero or negative."[11]

Second, Professor Ivo Welch surveyed a large group of financial economists in 1998 and 1999. The average of the estimated MRP was 7.1 percent in Prof. Welch's first survey and 6.7 percent in his second survey which was based on a smaller number of individuals. A subsequent survey[12] by Prof. Welch reported only a 5.5 percent MRP.[13] In

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[8] Arnott, R. and R. Ryan, (2001), "The Death of the Risk Premium," *Journal of Portfolio Management* 27(3):61-84.

[9] Constantinides, G.M. (2002), "Rational Asset Prices," *Journal of Finance* 57:1567-1591.

[10] Robert S. Harris and Felicia C. Marston, "The Market Risk Premium: Expectational Estimates Using Analysts' Forecasts," *Journal of Applied Finance* 11 (1) 6-16, 2001.

[11] Ibbotson, R. and P. Chen (2003), "Stock Market Returns in the Long Run: Participating in the Real Economy," *Financial Analyst Journal*, 59(1):88-98. Cited figures are on p. 97.

[12] Ivo Welch (2000), "Views of Financial Economists on the Equity Premium and on Professional Controversies," *Journal of Business*, 73(4):501-537. The cited figures are in Table 2, p. 514.

[13] Ivo Welch (2001), "The Equity Premium Consensus Forecast Revisited," School of Management at Yale University working paper. The cited figure is in Table 2.

characterizing these results Prof. Welch notes that "[T]he equity premium consensus forecast of finance and economics professors seems to have dropped during the last 2 to 3 years, a period with low realized equity premia."[14] However, in the most recent survey,[15] conducted in December 2007, Prof. Welch finds that the average estimate has increased to about 5.7 percent.

The above quotation from Prof. Welch emphasizes the caution that must attend survey data even from knowledgeable survey participants: the outcome is likely to change quickly with changing market circumstances.

Third, some of the evidence for negative or close to zero market risk premium simply does not make sense. Despite the relatively high valuation levels, stock returns remain much more volatile than Treasury bond returns. I am not aware of any empirical or theoretical evidence showing that investors would rationally hold equities and not expect to earn a positive risk premium for bearing their higher risk.

Fourth, I am unaware of a convincing theory for why the future MRP should have substantially declined. At the height of the stock market bubble in the U.S., many claimed that the only way to justify the high stock prices would be if the MRP had declined dramatically,[16] but this argument was heard less frequently after the market declined substantially from its tech bubble high. All else equal, a high valuation ratio such as price-earnings ratio implies a low required rate of return, hence a low MRP. However, there is considerable debate about whether the high level of stock prices (despite the burst of the internet bubble from its high in the summer of 2000) represents the transition to a new economy or is simply an "irrational exuberance," which cannot be sustained for the long term. If the former case is true, then the MRP may have decreased

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[14] *Ibid*, p. 8.

[15] See Ivo Welch (2008), "The Consensus Estimate for the Equity Premium by Academic Financial Economists in December 2007," School of Management at Yale University working paper. The cited figure is in Table 2.

[16] See Robert D. Arnott and Peter L. Bernstein, "What Risk Premium is 'Normal'?," *Financial Analysts Journal* 58:64-85, for an example.

permanently. Conversely, the long-run MRP may remain the same even if expected market returns in the short-term are smaller.

Another common argument for a lower expected MRP is that the U.S. experienced very remarkable growth in the 20th century that was not anticipated at the start of the century. As a result, the average realized excess return is overestimated meaning the standard method of estimating the MRP would be biased upward. However, one recent study by Professors Jorion and Goetzmann finds, under some simplifying assumptions, that the so-called "survivorship bias" is only 29 basis points.[17] Furthermore, "[I]f investors have overestimated the equity premium over the second half of the last century, Constantinides (2002) argues that 'we now have a bigger puzzle on our hands' Why have investors systematically biased their estimates over such a long horizon?"[18]

To sum up the above, I cite two passages from Profs. Mehra and Prescott's review of the theoretical literature on equity premium puzzle:[19]

> Even if the conditional equity premium given current market conditions is small, and there appears to be general consensus that it is, this in itself does not imply that it was obvious either that the historical premium was too high or that the equity premium has diminished.
>
> In the absence of this [knowledge of the future], and based on what we currently know, we can make the following claim: over the long horizon the equity premium is likely to be similar to what it has been in the past and the returns to investment in equity will continue to substantially dominate that in T-bills for investors with a long planning horizon.

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[17] Jorion, P., and W. Goetzmann (1999), "Global Stock Markets in the Twentieth Century," *Journal of Finance* 54:953-980. Dimson, Marsh, and Staunton (2003) make a similar point when they comment on the equity risk premia for 16 countries based on returns between 1900 and 2001: "While the United States and the United Kingdom have indeed performed well, compared to other markets there is no indication that they are hugely out of line." p.4.

[18] Mehra, R., and E.C. Prescott (2003), "The Equity Premium in Retrospect," in *Handbook of the Economics of Finance*, Edited by G.M. Constantinides, M. Harris and R. Stulz, Elsevier B.V, p. 926

[19] *Ibid*, p. 926.

Q9. Is there other scholarly support for the conclusion?

A9. Yes. Another line of research was pursued by Steven N. Kaplan and Richard S. Ruback. They estimate the market risk premium in their article, "The Valuation of Cash Flow Forecasts: An Empirical Analysis."[20] Professors Kaplan and Ruback compare published cash flow forecasts for management buyouts and leveraged recapitalization over the 1983 to 1989 period against the actual market values that resulted from these transactions. One of their results is an estimate of the market risk premium over the long-term Treasury bond yield that is based on careful analysis of actual major investment decisions, not realized market returns. Their median estimate is 7.78 percent and their mean estimate is 7.97 percent.[21] This is considerably higher than my estimate of 6.5 percent. Even if the maturity premium of Treasury bonds over Treasury bills were only 1 percent, well below the best estimate of 1.5 percent the resulting estimate of the market risk premium over Treasury bills is higher than my estimate of 8.0 percent.

Q10. In addition to the scholarly articles and survey evidence you discussed in Section I of your Direct Testimony, what other evidence do you consider to estimate the MRP?

A10. I also consider the long-run realized equity premia reported in Morningstar's Ibbotson SBBI Valuation Yearbook 2010. The data provided cover the period 1926 through 2009. The results are discussed below.

Q11. What is the "long-run realized risk premium" in the U.S.?

A11. From 1926 to 2009, the full period reported, Morningstar's data show that the average premium of stocks over Treasury bills is 8.1 percent. I also examine the "post-War" period. The risk premium for 1947-2009 is 7.9 percent.[22] (I exclude 1946 because its economic statistics are heavily influenced by the War years; e.g., the end of price controls yielded an inflation rate of 18 percent. It is not really a "post-War" year, from an economic viewpoint.) These averages usually change slightly when another year of data

[20] *Journal of Finance*, 50, September 1995, pp. 1059-1093.

[21] *Ibid*, p. 1082.

[22] Morningstar, *Ibbotson SBBI Valuation Yearbook 2010*, Appendix A, Table A-3.

is added to the Ibbotson series, but the effect of adding 2008 was far from trivial due to the ongoing financial turmoil. The average premium of stocks over the income returns on long-term Government bonds is 6.7 percent for the 1926 to 2009 period.

Prior to the economic crisis that started in the second half of 2008, there had been a great deal of academic research on the MRP. This research put practitioners in a dilemma: there was nothing close to a consensus about how the MRP should be estimated, but a general agreement in the academic community seemed to be emerging that the old approach of using the average realized return over long periods gave too high an answer. Realized returns were negative in 2008 and caused the observed long-term risk premium to fall, but the MRP currently exceeds the average of realized returns because of increased risk aversion among investors.[23]

Q12. Do you have any additional comments on your choice of the MRP?

A12. Yes. All of the debate discussed above has taken place before the current financial turmoil, ensuing economic downturn, and highly uncertain timing of recovery. As discussed at length in my direct testimony, the recent events in the financial markets have likely increased investors risk aversion. Therefore, there are strong reasons to expect that the current level of the MRP may in fact be significantly higher than what has been reported traditionally and higher than the base level MRP that I use in my testimony.

Q13. Have any of the prior academic studies shed any light on why the MRP would be higher under current circumstances?

A13. Yes. First and foremost, the standard consumption-based asset pricing theory suggests that, all else equal, higher risk aversion implies higher MRP.[24] To the extent that there has been an adverse shock to risk aversion of investors, the MRP is likely to have increased.

[23] See, for example, *The Economist*, "A Bull Market in Pessimism," August 21st to 27th, 2010, pp. 59-60.

[24] See, for example, Mehra and Prescott (1985).

Second, the academic literature contains studies of the impact of recessions on investors' attitude towards risk. These studies find that the risk aversion and hence the risk premium required to hold equity rather than debt increases in economic downturns. Several articles suggest that the market risk premium is higher during times of recession. Constantinides (2008) studies a classical utility model where consumers are risk averse and also summarizes some of the empirical literature. Constantinides draws from empirical evidence that shows that consumers become risk averse in times of economic recession or downturn, and equity investments accentuate this risk.[25] (Increased risk aversion leads to a higher expected return for investors before they will invest.) Specifically, equities are pro-cyclical and decline in value when the probability of a job loss increases; thus, they fail to hedge against income shocks that are more likely to occur during recessions.[26] Consequently, investors require an added risk premium to hold equities during economic downturns:

> In economic recessions, investors are exposed to the double hazard of stock market losses and job loss. Investment in equities not only fails to hedge the risk of job loss but also accentuates its implications. Investors require a hefty equity premium in order to be induced to hold equities. This is the argument that I formalize below and address the predictability of asset returns and their unconditional moments.[27]

And

> The first implication of the theory is an explanation of the counter-cyclical behavior of the equity risk premium: the risk premium is highest in a recession because the stock is a poor hedge against the uninsurable income shocks, such as job loss, that are more likely to arrive during a recession.
>
> The second implication is an explanation of the unconditional equity premium puzzle: even though per capita consumption growth is poorly correlated with stocks returns, investors require a hefty premium to hold

[25] Constantinides, G. M., "Understanding the equity risk premium puzzle". In R. Mehra, ed., *Handbook of the Equity Risk Premium*, 2008, Elsevier, Amsterdam.

[26] Constantinides, G.M., and D. Duffie (1996), "Asset Pricing with Heterogeneous Consumers", *Journal of Political Economy*, Vol. 104 (2): 219-240.

[27] G.M. Constantinides (2008), "Understanding the equity risk premium puzzle." In R. Mehra, ed., *Handbook of the Equity Risk Premium*. Elsevier, Amsterdam.

> stocks over short-term bonds because stocks perform poorly in recessions, when the investor is most likely to be laid off.[28]

Empirically, several authors have found that market volatility and the market risk premium are positively related. For example, Kim, Morley and Nelson (2004)[29] find that

> When the effects of volatility feedback are fully taken into account, the empirical evidence supports a significant positive relationship between stock market volatility and the equity premium.[30]

Additionally, in their article that won the annual Smith-Breeden Paper Award given by the American Finance Association and the *Journal of Finance*, Bansal and Yaron (2004) demonstrate that economic uncertainty plays an important role in explaining the MRP.[31] In particular, they show that uncertainty is priced in the market. In their model, higher uncertainty (measured in their paper by volatility of consumption) leads to higher conditional MRP. Another implication of the analysis in Bansal and Yaron (2004) is that even the unconditional MRP can increase if any of the following materialize: (i) investors become more risk-averse; (ii) shocks to economic uncertainty become more pronounced; (iii) periods of high economic uncertainty become longer lasting. To the extent that risk aversion has experienced an adverse shock, the MRP must have increased. Furthermore, perception of more severe shocks to economic uncertainty and slower decay of higher uncertainty periods are likely to cause the MRP to remain higher even in the absence of any shock to the risk aversion parameter.

Gabaix (2010) provides an alternative channel for interrelating time-varying risk premium in his newly circulated working paper.[32] The argument is that the MRP is

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[28] *Ibid*, p. 353.

[29] C-J. Kim, J.C. Morley and C.R. Nelson (2004), "Is There a Positive Relationship Between Stock Market Volatility and the Equity Premium," *Journal of Money, Credit and Banking*, Vol. 36.

[30] *Ibid.* p. 357. The authors rely on a statistical (Markov-switching) model of the ARCH type and data for the period 1926 to 2000 for their analysis.

[31] Bansal, R., and A. Yaron (2004), "Risks for the Long Run: A Potential Resolution of Asset Pricing Puzzles", *Journal of Finance*, Vol. 59 (4): 1481-1509.

[32] Gabaix, X. (2010), "Variable Rare Disasters: An Exactly Solved Framework for Ten Puzzles in Macro Finance", *Working Paper, New York University Stern School of Business* and *NBER.*

linked to the fear of rare but large "disasters". The time-varying nature of the severity of those disasters leads to time-varying risk premium. To the extent we are still recovering from an economic downturn of a magnitude not seen since the times of the Great Depression, I find the argument presented in the above mentioned paper to be supportive of the idea that currently the MRP is higher than its normal level.

As shown in Figure 5 in my written evidence, the volatility in both the stock market spiked to 4 times the normal level of a bit below 20 percent during the financial crisis. Current volatility is still above historical averages.

Q14. What is your conclusion regarding the MRP?

A14. Estimation of the MRP remains controversial. There is no consensus on its value or even how to estimate it. Given a careful review of all of the information, I estimate the risk premium for average risk stocks to be 6.5 percent over long-term Government bonds prior to the crisis in the U.S. economy. At this time, an additional upward adjustment likely is warranted in recognition of the unsettled condition of the capital markets. Therefore, I report the sensitivity of the results to an upward adjustment of ½ and 1 percent in Tables 7 and 8 of my direct testimony. Section II.C explains the details of the sensitivity analyses.

C. RELATIVE RISK

Q15. How do you measure relative risk?

A15. The risk measure I examine is the "beta" of the stocks in question. Beta is a measure of the "systematic" risk of a stock — the extent to which a stock's value fluctuates more or less than average when the market fluctuates. It is the most commonly used measure of risk in capital market theories.

Q16. Please explain beta in more detail.

A16. The basic idea behind beta is that risks that cannot be diversified away in large portfolios matter more than those that can be eliminated by diversification. Beta is a measure of the risks that cannot be eliminated by diversification.

Diversification is a vital concept in the study of risk and return. (Harry Markowitz won a Nobel Prize for work showing just how important it was.) Over the long run, the rate of return on the stock market has a very high standard deviation, on the order of 15 - 20 percent per year. But many individual stocks have much higher standard deviations than this. The stock market's standard deviation is "only" about 15 - 20 percent because when stocks are combined into portfolios, some of the risk of individual stocks is eliminated by diversification. Some stocks go up when others go down, and the average portfolio return — positive or negative — is usually less extreme than that of individual stocks within it.

In the limiting case, if the returns on individual stocks were completely uncorrelated with one another, the formation of a large portfolio of such stocks would eliminate risk entirely. That is, the market's long-run standard deviation would be not 15-20 percent per year, but virtually zero.

The fact that the market's actual annual standard deviation is so large means that, in practice, the returns on stocks are correlated with one another, and to a material degree. The reason is that many factors that make a particular stock go up or down also affect other stocks. Examples include the state of the economy, the balance of trade, and inflation. Thus some risk is "non-diversifiable". Single-factor equity risk premium models derive conditions in which all of these factors can be considered simultaneously, through their impact on the market portfolio. Other models derive somewhat less restrictive conditions under which several of them might be individually relevant.

Again, the basic idea behind all of these models is that risks that cannot be diversified away in large portfolios matter more than those that can be eliminated by diversification, because there are a large number of large portfolios whose managers actively seek the best risk-reward tradeoffs available. Of course, undiversified investors would like to get a premium for bearing diversifiable risk, but they cannot.

Q17. Why not?

A17. Well-diversified investors compete away any premium rates of return for diversifiable risk. Suppose a stock were priced especially low because it had especially high diversifiable risk. Then it would seem to be a bargain to well diversified investors. For example, suppose an industry is subject to active competition, so there is a large risk of loss of market share. Investors who held a portfolio of all companies in the industry would be immune to this risk, because the loss on one company's stock would be offset by a gain on another's stock. (Of course, the competition might make the whole industry more vulnerable to the business cycle, but the issue here is the diversifiable risk of shifts in market share among firms.)

If the shares were priced especially low because of the risk of a shift in market shares, investors who could hold shares of the whole industry would snap them up. Their buying would drive up the stocks' prices until the premium rates of return for diversifiable risk were eliminated. Since all investors pay the same price, even those who are not diversified can expect no premium for bearing diversifiable risk.

Of course, substantial non–diversifiable risk remains, as the ongoing financial turmoil and the October Crash of 1987 demonstrate. Even an investor who held a portfolio of all traded stocks could not diversify against that type of risk. Sensitivity to such market–wide movements is what beta measures. That type of sensitivity, whether considered in a single- or multi-factor model, determines the risk premium in the cost of equity.

Q18. What does a particular value of beta signify?

A18. By definition, a stock with a beta equal to 1.0 has average non-diversifiable risk: it goes up or down by 10 percent on average when the market goes up or down by 10 percent. Stocks with betas above 1.0 exaggerate the swings in the market: stocks with betas of 2.0 tend to fall 20 percent when the market falls 10 percent, for example. Stocks with betas below 1.0 are less volatile than the market. A stock with a beta of 0.5 will tend to rise 5 percent when the market rises 10 percent.

Q19. How is beta measured?

A19. The usual approach to calculating beta is a statistical comparison of the sensitivity of a stock's (or a portfolio's) return to the market's return. Many investment services report betas, including Bloomberg and the Value Line Investment Survey. Betas are not always calculated the same way, and therefore must be used with a degree of caution, but the basic point that a high beta indicates a risky stock has long been widely accepted by both financial theorists and investment professionals.

Q20. Are there circumstances when the "usual approach to calculating beta" should not be used?

A20. There are at least two cases where the standard estimate of beta should be viewed skeptically.

First, companies in serious financial distress seem to "decouple" from their normal sensitivity to the stock market. The stock prices of financially distressed companies tend to change based more on individual news about their particular circumstances than upon overall market movements. Thus, a risky stock could have a low estimated beta if the company was in financial distress. Other circumstances that may cause a company's stock to decouple include an industry restructuring or major changes in a company's supply or output markets.

Second, similar circumstances seem to arise for companies "in play" during a merger or acquisition. Once again, the individual information about the progress of the proposed takeover is so much more important for that stock than day-to-day market fluctuations that, in practice, beta estimates for such companies seem to be too low.

Q21. How reliable is beta as a risk measure?

A21. Scholarly studies have long confirmed the importance of beta for a stock's required rate of return. It is widely regarded as the best single risk measure available. The merits of beta seemed to have been challenged by widely publicized work by Professors Eugene F.

Fama and Kenneth R. French.[33] However, despite the early press reports of their work as signifying that "beta is dead," it turns out that beta is still a potentially important explanatory factor (albeit one of several) in their work. Thus, beta remains alive and well as the best single measure of relative risk.

D. INTEREST RATE ESTIMATE

Q22. What interest rates do your procedures require?

A22. Modern capital market theories of risk and return use the short-term risk-free rate of return as the starting benchmark. However, as the short-term risk-free rate has dropped to near-zero, the implementation becomes meaningless. Therefore, like many practitioners, I rely on the long-term risk-free rate. Specifically, I calculate the average yield on long-term Government bonds using a 15-day period ending September 14, 2010. To this figure I add 50 basis points to account for the substantial increase in the spread between investment-grade utility bond yields and government bond yields. Table 3 in my testimony provides data on the increase in the spread between utility and government bond yields.

Q23. Do you vary the risk-free rate in your sensitivity analyses?

A23. Yes. In the sensitivity analyses I decrease the risk-free rate by 25 basis points for each 100 basis points increase in the MRP. This is intended to take into account that bond betas may be positive so that part of the increase in the MRP is captured in the increase in yield spread. A bond beta measures the systematic risk of the bond relative to the market and is determined in the same manner as the stock beta. As .25 is in the high end of the likely bond beta, the adjustment is conservative.

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[33] See for example, "The Capital Asset Pricing Model: Theory and Evidence", Eugene F. Fama and Kenneth R. French, *Journal of Economic Perspectives*, Volume 18, Summer 2004, pp. 25-46.

E. Cost Of Capital Models

Q24. How do you combine the above components into an estimate of the cost of capital?

A24. By far the most widely used approach to estimation of the cost of capital is the "Capital Asset Pricing Model," and I do calculate CAPM estimates. However, the CAPM is only one equity risk premium approach technique, and I also use another.

Q25. Please start with the CAPM, by describing the model.

A25. As noted above, the modern models of capital market equilibrium express the cost of equity as the sum of a risk-free rate and a risk premium. The CAPM is the longest-standing and most widely used of these theories. The CAPM states that the cost of capital for investment *s* (e.g., a common stock) is given by the following equation:

$$k_s = r_f + \beta_s \times MRP \qquad \textbf{(C-1)}$$

where k_s is the cost of capital for investment *s*; r_f is the risk-free rate, β_s is the beta risk measure for the investment *s*; and *MRP* is the market risk premium.

The CAPM relies on the empirical fact that investors price risky securities to offer a higher expected rate of return than safe securities do. It says that the security market line starts at the risk-free interest rate (that is, that the return on a zero-risk security, the y-axis intercept in Figure 1 in the body of my testimony, equals the risk-free interest rate). Further, it says that the risk premium over the risk-free rate equals the product of beta and the risk premium on a value-weighted portfolio of all investments, which by definition has average risk.

Q26. What other equity risk premium approach model do you use?

A26. Empirical research has long shown that the CAPM tends to overstate the actual sensitivity of the cost of capital to beta: low-beta stocks tend to have higher risk premia than predicted by the CAPM and high-beta stocks tend to have lower risk premia than predicted. A number of variations on the original CAPM theory have been proposed to explain this finding. The difference between the CAPM and the type of relationship identified in the empirical studies is depicted in Figure BV-C1.

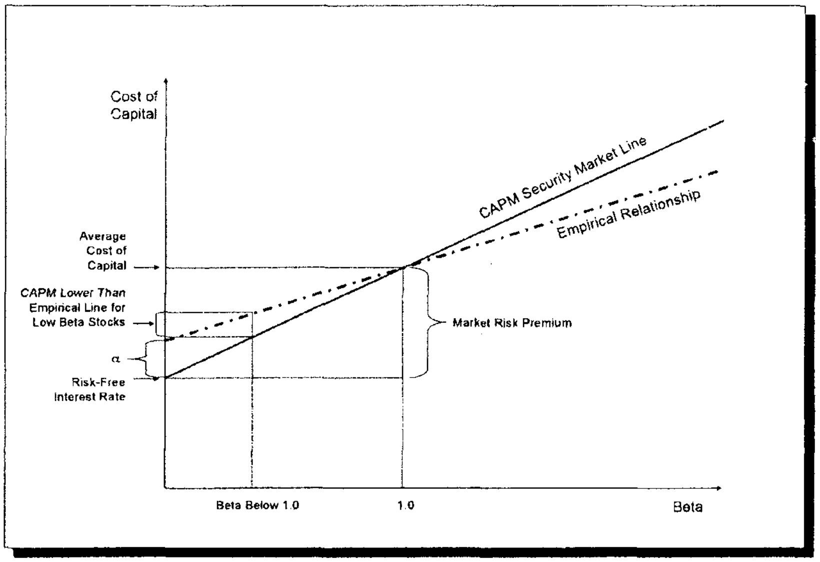

Figure BV-C1: The Empirical Security Market Line

The second model makes use of these empirical findings. It estimates the cost of capital with the equation,

$$k_s = r_f + \alpha + \beta_s \times (MRP - \alpha) \qquad \textbf{(C-2)}$$

where α is the "alpha" of the risk-return line, a constant, and the other symbols are defined as above. I label this model the Empirical Capital Asset Pricing Model, or "ECAPM." For the short-term risk-free rate models, I set alpha equal to 1, 2, and 3 percent which are values somewhat lower than that estimated empirically. For low-beta stocks such as regulated utilities, the use of a lower value for alpha leads to a lower estimate of the cost of capital. For the long-term risk-free rate models, I set alpha equal to both 0.5 percent and 1.5 percent, but I rely more heavily on the 0.5 percent results. The use of a long-term risk-free rate incorporates some of the desired effect of using the ECAPM. That is, the long-term risk-free rate version of the Security Market Line has a higher intercept and a flatter slope than the short-term risk-free version which has been tested. Thus, it is likely that I do not need to make the same degree adjustment when I use the long-term risk-free rate. A summary of the empirical evidence on the magnitude of alpha is provided in Table No. BV-C1 at the end of the appendix.

II. EMPIRICAL EQUITY RISK PREMIUM RESULTS

Q27. How is this part of the appendix organized?

A27. This section presents the full details of my equity risk premium approach analyses, which are summarized in the body of my testimony. Details behind the estimates of the short-term and the long-term risk-free interest rates are discussed. Next, the beta estimates, and the estimates of the MRP I use in the models are addressed. Finally, this section reports the CAPM and ECAPM results for the sample's costs of equity, and then describes the results of adjusting for differences between the benchmark sample and Arizona-American's regulated capital structures.

A. RISK-FREE INTEREST RATE

Q28. How do you obtain estimates of the risk-free interest rates over the period the utility rates set here are to be in effect?

A28. I obtain these rates using data from the Federal Reserve and provided by Bloomberg. In particular, I use their reported government debt yields from the "constant maturity series". This information is displayed in Table No. BV-9.

Q29. What values do you use for the long-term risk-free interest rate?

A29. I use a baseline value of 3.9 percent for the long-term risk-free interest rate including the baseline adjustment for the increase in the spread between the yield on investment-grade utility bonds and government bonds. I note that the 3.9 percent I use is lower than the forecasted yield on 10-year government bonds for 2012.[34]

[34] Federal Reserve Bank of Philadelphia, "Survey of Professional Forecasters: Third Quarter 2010," August 13, 2010.

B. BETAS AND THE MARKET RISK PREMIUM

1. Beta Estimation Procedures

Q30. Which betas do you use in your risk positioning models?

A30. I obtained estimates from Bloomberg for the sample companies.[35]

Q31. How does Bloomberg estimate the reported betas?

A31. *Bloomberg* estimates the reported betas using weekly data for a five year period.[36] As a market index, *Bloomberg's* default index is the New York Stock Exchange. Also *Bloomberg* reports so-called adjusted betas, i.e. the betas reported by *Bloomberg* are calculated as follows:

$$\beta_{Value\ Line} = 2/3 \times \beta + 1/3 \qquad \textbf{(C-3)}$$

where β is the estimate obtained from a regression of the company's return on the return of the market index.

Q32. Is this a deviation from your last testimony before the Commission?

A32. Yes, it is. Because I was unable to replicate *Value Line's* betas for the gas LDC sample using standard regression techniques, I choose to rely on Bloomberg betas, which are close to the estimates, I obtained. Further, I have in the past reversed the adjustment with which commercial data providers report beta estimates. However, in the past I reversed the adjustment to be conservative - - not because I disagreed with the adjustment. Now that beta estimates have declined, there is no need to be conservative.

Q33. Please summarize the beta estimates you rely on.

A33. The *Bloomberg* betas range from .56 to 1.1 for the water sample with one company, SJW Corp. having a beta above 1. The gas LDC companies' betas fall in a much narrower range from .71 to .92. The beta estimates for individual sample companies are reported in Workpaper #1 to Tables No. BV-10 and BV-21, respectively. This table also reports

[35] For each sample I used Bloomberg's estimated beta as of September 10, 2010.

[36] An exception is made for American Water, which has only 2½ years of pricing data is available.

Value Line's beta estimates and my beta estimates. For the water sample, *Value Line*, *Bloomberg* and I obtain very similar beta estimates, but for the gas LDC sample, *Value Line* betas are different from those *Bloomberg* or I estimate.

C. MARKET RISK PREMIUM ESTIMATION

Q34. Given all of the evidence, what MRP do you use in your analysis?

A34. It is clear that market return information is volatile and difficult to interpret in the current environment, but my baseline estimate for the MRP is 6.5 percent. However, this figure does not take the ongoing financial turmoil into account, so I also report results for two alternative sensitivity analyses with an MRP of 7.0 and 7.5 percent, respectively. Because it is possible that bonds are correlated with equity markets, I allow for the bond beta to be different from zero. Specifically, I conservatively assume that the bond beta is .25, so that a 1.0% increase in the MRP would lower the risk-free rate by 0.25%.[37] Therefore, in the first sensitivity analysis, the MRP is 7.0% and the risk-free rate is 3.77%, while in the second sensitivity analysis, the MRP is 7.5% and the risk-free rate is 3.65%.

D. COST OF CAPITAL ESTIMATES

Q35. Based on these data, what are the values you calculate for the overall cost of capital and the corresponding cost of equity for the samples?

A35. Tables No. BV-10 and BV-21 present the cost of equity results using the equity risk positioning methods at the sample companies' market value capital structures.

Q36. What does the water market data imply about the sample's cost of equity at the proposed 45 percent equity ratio for Arizona-American Water?

A36. The return on equity and the overall cost of capital for the various equity risk positioning methods are reported in Tables No. BV-12 and BV-23.

[37] For example, Edwin J. Elton, Martin J. Gruber, Deepak Agrawal and Christopher Mann, Explaining the Rate Spread on Corporate Bonds, *The Journal of Finance* LVI, 2001 footnote 32 reports bond betas range from 0.12 to 0.76 with the average BBB-rated bond having a beta of 0.26.

Q37. What are the implications of the risk positioning results for Arizona-American's estimated cost of equity?

A37. I discuss the implications of the risk positioning results for the two samples in the main body of my testimony.

Table BV-C1

EMPIRICAL EVIDENCE ON THE ALPHA FACTOR IN ECAPM*		
AUTHOR	RANGE OF ALPHA	PERIOD RELIED UPON
Black (1993)[1]	1% for betas 0 to 0.80	1931-1991
Black, Jensen and Scholes (1972)[2]	4.31%	1931-1965
Fama and McBeth (1972)	5.76%	1935-1968
Fama and French (1992)[3]	7.32%	1941-1990
Litzenberger and Ramaswamy (1979)[4]	5.32%	1936-1977
Litzenberger, Ramaswamy and Sosin (1980)	1.63% to 3.91%	1926-1978
Pettengill, Sundaram and Mathur (1995)[5]	4.6%	1936-1990

*The figures reported in this table are for the longest estimation period available and, when applicable, use the authors' recommended estimation technique. Many of the articles cited also estimate alpha for sub-periods and those alphas may vary.

[1]Black estimates alpha in a one step procedure rather than in an un-biased two-step procedure.

[2]Estimate a negative alpha for the subperiod 1931-39 which contain the depression years 1931-33 and 1937-39.

[3]Calculated using Ibbotson's data for the 30-day treasury yield.

[4]Relies on Lizenberger and Ramaswamy's before-tax estimation results. Comparable after-tax alpha estimate is 4.4%.

[5]Pettengill, Sundaram and Mathur rely on total returns for the period 1936 through 1990 and use 90-day treasuries. The 4.6% figure is calculated using auction averages 90-day treasuries back to 1941 as no other series were found this far back.

Sources:

Black, Fischer. 1993. Beta and Return. *The Journal of Portfolio Management* 20 (Fall): 8-18.

Black, F., Michael C. Jensen, and Myron Scholes. 1972. The Capital Asset Pricing Model: Some Empirical Tests, from Studies in the theory of Capital Markets. In *Studies in the Theory of Capital Markets*, edited by Michael C. Jensen, 79-121. New York: Praeger.

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Pettengill, Glenn N., Sridhar Sundaram and Ike Mathur. 1995. The Conditional Relation between Beta and Returns. *Journal of Financial and Quantitative Analysis* 30 (1): 101-116.

APPENDIX D

DISCOUNTED CASH FLOW METHODOLOGY AND RESULTS

Q1. What is the purpose of this appendix?

A1. This appendix reviews the principles behind the discounted cash flow or "DCF" methodology and the details of the cost-of-capital estimates obtained from this methodology.

I. DISCOUNTED CASH FLOW METHODOLOGY PRINCIPLES

Q2. How is this section of the appendix organized?

A2. The first part discusses the general principles that underlie the DCF approach. The second portion describes the strengths and weaknesses of the DCF model and why it is generally less reliable for estimating the cost of capital for the sample companies at the present time than the risk positioning method discussed in Appendix C.

A. Simple And Multi-Stage Discounted Cash Flow Models

Q3. Please summarize the DCF model.

A3. The DCF model takes the first approach to cost-of-capital estimation discussed with Figure 1 in Section II-A of my direct testimony. That is, it attempts to measure the cost of equity in one step. The method assumes that the market price of a stock is equal to the present value of the dividends that its owners expect to receive. The method also assumes that this present value can be calculated by the standard formula for the present value of a cash flow stream:

$$P = \frac{D_1}{(1+k)} + \frac{D_2}{(1+k)^2} + \frac{D_3}{(1+k)^3} + \cdots + \frac{D_T}{(1+k)^T} \qquad \textbf{(D-1)}$$

where "P" is the market price of the stock; "D_t" is the dividend cash flow expected at the end of period t; "k" is the cost of capital; and "T" is the last period in which a dividend cash flow is to be received. The formula just says that the stock price is equal to the sum of the expected future dividends, each discounted for the time and risk between now and the time the dividend is expected to be received.

Most DCF applications go even further, and make very strong (*i.e.*, unrealistic) assumptions that yield a simplification of the standard formula, which then can be rearranged to estimate the cost of capital. Specifically, if investors expect a dividend stream that will grow forever at a steady rate, the market price of the stock will be given by a very simple formula,

$$P = \frac{D_1}{(k-g)} \qquad \textbf{(D-2)}$$

where "D_1" is the dividend expected at the end of the first period, "g" is the perpetual growth rate, and "P" and "k" are the market price and the cost of capital, as before. Equation D-2 is a simplified version of Equation D-1 that can be solved to yield the well known "DCF formula" for the cost of capital:

$$\begin{aligned} k &= \frac{D_1}{P} + g \\ &= \frac{D_0 \times (1+g)}{P} + g \end{aligned} \qquad \textbf{(D-3)}$$

where "D_0" is the current dividend, which investors expect to increase at rate g by the end of the next period, and the other symbols are defined as before. Equation D-3 says that if Equation D-2 holds, the cost of capital equals the expected dividend yield plus the (perpetual) expected future growth rate of dividends. I refer to this as the simple DCF model. Of course, the "simple" model is simple because it relies on very strong (*i.e.*, very unrealistic) assumptions.

Q4. Are there other versions of the DCF models besides the "simple" one?

A4. Yes. If Equation D-2 and its underlying assumptions do not hold, sometimes other variations of the general present value formula, Equation D-1, can be used to solve for k in ways that differ from Equation D-3. For example, if there is reason to believe that investors do *not* expect a steady growth rate forever, but rather have different growth rate forecasts in the near term (e.g., over the next five or ten years as compared with subsequent periods), these forecasts can be used to specify the early dividends in Equation D-1. Once the near-term dividends are specified, Equation D-2 can be used to specify the share price value at the end of the near-term (e.g., at the end of five or ten years), and the resulting cash flow stream can be solved for the cost of capital using Equation D-1.

More formally, the "multistage" DCF approach solves the following equation for k:

$$P = \frac{D_1}{(1+k)} + \frac{D_2}{(1+k)^2} + \frac{D_3}{(1+k)^3} + \cdots + \frac{D_T + P_{TERM}}{(1+k)^T} \qquad \textbf{(D-4)}$$

The terminal price, P_{TERM} is estimated as

$$P_{TERM} = \frac{D_{T+1}}{(k - g_{LR})} \qquad \textbf{(D-5)}$$

where T is the last of the periods in which a near term dividend forecast is made and g_{LR} is the long-run growth rate. Thus, Equation D-4 defers adoption of the very strong perpetual growth assumptions that underlie Equation D-2 — and hence the simple DCF formula, Equation D-3 — for as long as possible, and instead relies on near term knowledge to improve the estimate of k. I examine both simple and multistage DCF results below.

Q5. Please describe the multi-stage DCF model you use.

A5. The multi-stage model I use is presented in Equations D-4 and D-5 above, and assumes that the long-term perpetual growth rate for all companies in the two samples is the forecast long-term growth rate of the GDP. This model allows growth rates to differ across companies during the first ten years before settling down to a single long-term growth rate. The growth rate for the first five years is the long-term growth rate derived from analysts' reports. After year five, the growth rate is assumed to converge linearly to the GDP growth rate. In other words, the growth rate in year 6 is adjusted by $1/6^{th}$ of the difference between each company's 5-year growth rate forecast and the GDP forecast. The growth rates in years 7 to 10 are adjusted by an additional $1/6^{th}$ so that the earning growth rate pattern converges on the long-term GDP growth rate forecast.

Q6. Why do you assume that the long-term growth rate of the sample companies will converge to the long-term growth rate of GDP?

A6. Recall that the DCF model assumes that dividends grow at a constant rate literally forever. If the growth rate of earnings (and therefore, dividends) were greater than (less than) the long-term growth rate of the economy, mathematically it would mean that the company (and the industry) would become an ever increasing (or decreasing) proportion of the economy. Therefore, the most logical assumption is that the company's earnings grow at the same rate as the economy on average over the long run.

Q7. What are the merits of the DCF model?

A7. The DCF approach is conceptually sound only if its assumptions are met. In actual practice one can run into difficulty because those assumptions are so strong, and hence so unlikely to correspond to reality. Two conditions are well-known to be necessary for the DCF approach to yield a reliable estimate of the cost of capital: the variant of the present value formula, Equation D-1, that is used must actually match the variations in investor expectations for the dividend growth path; and the growth rate(s) used in that formula must match current investor expectations. Less frequently noted conditions may also create problems.

The DCF model assumes that investors expect the cost of capital to be the same in all future years. Investors may not expect the cost of capital to be the same, which can bias the DCF estimate of the cost of capital in either direction.

The DCF model only works for companies for which the standard present value formula works. The standard formula does *not* work for companies that operate in industries or markets options (*e.g.*, puts and calls on common stocks), and so it will not work for companies whose stocks behave as options do. Option-pricing effects will be important for companies in financial distress, for example, which implies the DCF model will *understate* their cost of capital, all else equal.

In recent years even the most basic DCF assumption, that the market price of a stock in the absence of growth options is given by the standard present value formula (*i.e.*, by

Equation D-1 above), has been called into question by a literature on market volatility.[1] In any case, it is still too early to throw out the standard formula, if for no other reasons than that the evidence is still controversial and no one has offered a good replacement. But the evidence suggests that it must be viewed with more caution than financial analysts have traditionally applied. Simple models of stock prices may not be consistent with the available evidence on stock market volatility.

Q8. Normally DCF debates center on the right growth rate. What principles underlie that choice?

A8. Finding the right growth rate(s) is indeed the usual "hard part" of a DCF application. The original approach to estimation of g relied on average historical growth rates in observable variables, such as dividends or earnings, or on the "sustainable growth" approach, which estimates g as the average book rate of return times the fraction of earnings retained within the firm. But it is highly unlikely that historical averages over periods with widely varying rates of inflation, interest rates and costs of capital, such as in the relatively recent past, will equal current growth rate expectations.

A better approach is to use the growth rates currently expected by investment analysts, if an adequate sample of such rates is available. Analysts' forecasts are superior to time series forecasts based upon single variable historical data as has been documented and confirmed extensively in academic research.[2] If this approach is feasible and if the

[1] See for example, Robert J. Shiller (1981), "Do Stock Prices Move Too Much to be Justified by Subsequent Changes in Dividends?," *The American Economic Review*, Vol. 71, No. 3, pp. 421-436. John Y. Campbell and Robert J. Shiller (1988), "The Dividend-Price Ratio and Expectations of Future Dividends and Discount Factors," *The Review of Financial Studies*, Vol. 1, No. 3, pp. 195-228. Lucy F. Ackert and Brian F. Smith (1993), "Stock Price Volatility, Ordinary Dividends, and Other Cash Flows to Shareholders," *Journal of Finance*, Vol. 48, No. 1, pp. 1147-1160. Eugene F. Fama and Kenneth R. French (2001), "Disappearing Dividends: Changing Firm Characteristics or Lower Propensity to Pay?," *Journal of Financial Economics*, Vol. 60, pp. 3-43. Borja Larrain and Motohiro Yogo (2005), "Does Firm Value Move Too Much to be Justified by Subsequent Changes in Cash Flow?," Federal Reserve Bank of Boston, *Working Paper*, No. 05-18.

[2] Lawrence D. Brown and Michael S. Rozeff (1978), "The Superiority of Analyst Forecasts as Measures of Expectations: Evidence from Earnings," *Journal of Finance*, Vol. XXXIII, No. 1, pp. 1-16. J. Cragg and B.G. Malkiel (1982), *Expectations and the Structure of Share Prices*, National Bureau of Economic Research, University of Chicago Press. R.S. Harris (1986), "Using Analysts' Growth Forecasts to Estimate Shareholder Required Rates of Return," *Financial Management*, Spring Issue, pp. 58-67. J. H. Vander

person estimating the cost of capital is able to select the appropriate version of the DCF formula, the DCF method should yield a reasonable estimate of the cost of capital for companies not in financial distress and without material option-pricing effects (always subject to recent concerns about the applicability of the basic present value formula to stock prices as well as issues of optimism bias). However, for the DCF approach to work, the basic stable-growth assumption must become reasonable and the underlying stable-growth rate must become determinable *within the period for which forecasts are available.*

Q9. What is the so called "optimism bias" in the earnings growth rate forecasts of security analysts and what is its effect on the DCF analysis?

A9. Optimism bias is related to the observed tendency for analysts to forecast earnings growth rates that are higher than are actually achieved. This tendency to over estimate growth rates is perhaps related to incentives faced by analysts that provide rewards not strictly based upon the accuracy of the forecasts. To the extent optimism bias is present in the analysts' earnings forecasts, the cost-of-capital estimates from the DCF model would be too high.

Q10. Does optimism bias mean that the DCF estimates are completely unreliable?

A10. No. The effect of optimism bias is least likely to affect DCF estimates for large, rate regulated companies in relatively stable segments of an industry. Furthermore, the magnitude of the optimism bias (if any) for regulated companies is not clear. This issue is addressed in a paper by Chan, Karceski, and Lakonishok (2003)[3] who sort companies on the basis of the size of the I/B/E/S forecasts to test the level of optimism bias. Utilities constitute 25 percent of the companies in lowest quintile, and by one measure the level of optimism bias is 4 percent. However, the 4 percent figure does not represent the

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Weide and W. T. Carleton (1988), "Investor Growth Expectations: Analysts vs. History," *Journal of Portfolio Management*, spring, pp. 78-82. T. Lys and S. Sohn (1990), "The Association Between Revisions of Financial Analysts Earnings Forecasts and Security Price Changes," *Journal of Accounting and Economics*, vol 13, pp. 341-363.

[3] L. K.C. Chan, J. Karceski, and J. Lakonishok, 2003, "The Level and Persistence of Growth Rates," *Journal of Finance* 58(2):643-684.

complete characterization of the results in the paper. Table IX of the paper shows that the median I/B/E/S forecast for the first (lowest) quintile averages 6.0 percent. The realized "Income before Extraordinary Items" is 2.0 percent (implying a four percent upward bias in I/B/E/S forecasts), but the "Portfolio Income before Extraordinary Items" is 8.0 percent (implying a two percent downward bias in I/B/E/S forecasts).

The difference between the "Income before Extraordinary Items" and "Portfolio Income before Extraordinary Items" is whether individual firms or a portfolio are used in estimating the realized returns. The first is a simple average of all firms in the quintile while the second is a market value weighted-average. Although both measures of bias have their own drawbacks according to the authors,[4] the Portfolio Income measure gives more weight to the larger firms in the quintile such as regulated utilities. In addition, the paper demonstrates that "analysts' forecasts as well as investors' valuations reflect a wide-spread belief in the investment community that many firms can achieve streaks of high growth in earnings."[5] Therefore, it is not clear how severe the problem of optimism bias may be for regulated utilities or even whether there is a problem at all.

Finally, the two-stage DCF model also adjusts for any over optimistic (or pessimistic) growth rate forecasts by substituting the long-term GDP growth rate for the 5-year growth rate forecasts of the analysts in the years beginning in year 11. I linearly trend the 5-year forecast growth rate to the GDP forecast growth rate in years 6 to 10.

Q11. What about the reforms by the National Associate of Security Dealers (NASD) that were designed to reduce the conflicts of interest and pressures brought against security analysts? Have those reforms been generally successful?

A11. Yes. The conclusion from the Joint Report by NASD and the New York Stock Exchange ("NYSE") on the reforms states

> … the SRO Rules have been effective in helping restore integrity to research by minimizing the influences of investment banking and

[4] Chan, Karceski, and Lakonishok, *op. cit.*, p. 675.

[5] Chan, Karceski, and Lakonishok, *op. cit.*, p. 663.

> promoting transparency of other potential conflicts of interest. Evidence also suggests that investors are benefiting from more balanced and accurate research to aid their investment decisions.[6]

The report does note additional reforms are advisable, but the situation is far different today than during the height of the tech bubble when analyst objectivity was clearly suspect.

B. Conclusions About DCF

Q12. Please sum up the implications of this part of the appendix.

A12. The unavoidable questions about the DCF model's strong assumptions — whether the basic present value formula works for stocks, whether option pricing effects are important for the company, whether the right variant of the basic formula has been found, and whether the true growth rate expectations have been identified. Because the growth rates for the water companies fluctuate substantially and some have engaged in recent merger and acquisition activity, I believe the DCF method for those companies in less reliable than the risk positioning method. However, the gas LDC companies are substantially more stable and there for the DCF method is more reliable for gas LDC companies than for water companies.

II. EMPIRICAL DCF RESULTS

Q13. How is this part of the appendix organized?

A13. This section presents the details of my DCF analyses for the water and gas LDC samples, which are summarized in my written testimony.

Implementation of the simple DCF models described above requires an estimate of the current price, the dividend, and near-term and long-run growth rate forecasts. The simple DCF model relies only on a single growth rate forecast, while the multistage DCF model

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6 Joint Report by NASD and NYSE on the Operation and Effectiveness of the Research Analyst Conflict of Interest Rules, December 2005, p. 44.

employs both near-term individual company forecasts and long-run GDP growth rate forecasts. The remaining parts of this section describe each of these inputs in turn.

A. Preliminary Matters

Q14. In Appendix C you discuss estimating cost of capital and implied cost of equity using the risk positioning methodology. What, if anything, is different when you use the DCF method?

A14. The timing of the market value capital structure calculations is different in the DCF method than in the equity risk premium method. The equity risk premium method relies on the average capital structure over the five-year period *Bloomberg* uses to estimate beta while the DCF approach uses only current data, so the relevant market value capital structure measure is the most recent that can be calculated. This capital structure for the water sample companies is reported in columns [1]-[3] of Table No. BV-4, and for the gas LDC sample companies in columns [1]-[3] of Table No. BV-16.

B. Growth Rates

Q15. What growth rates do you use?

A15. For reasons discussed above, historical growth rates today are not useful as forecasts of current investor expectations for the water utility industry. I therefore use rates forecasted by security analysts.

The ideal in a DCF application would be a detailed forecast of future dividends, year by year well into the future, based on a large sample of investment analysts' expectations. I know of no source of such data. Dividends are ultimately paid from earnings, however, and earnings forecasts are available for a few years. Investors do not expect dividends to grow in lockstep with earnings, but for companies for which the DCF approach can be used reliably (*i.e.*, for relatively stable companies whose prices do not include the option-like values described previously), they do expect dividends to track earnings over the long-run. Thus, use of earnings growth rates as a proxy for expectations of dividend growth rates is a common practice.

Accordingly, the first step in my DCF analysis is to examine a sample of investment analysts' forecasted earnings growth rates. In particular, I utilize Bloomberg's BEst and *Value Line's* forecasted earnings growth.[7] The projected earnings growth rates for the water sample companies are in Table No. BV-5, and those for the gas LDC sample companies are in Table No. BV-17. Column [1] reports Bloomberg's BEst analysts' forecasts of the long-term earnings growth for the sample companies. Column [2] reports the number of analysts that provided a forecast. Columns [3] and [4] report *Value Line's* forecasted earnings per share ("EPS") value for each company for 2010 and 2013-2015 respectively. Column [5] provides *Value Line's* implied long-term growth rate forecast, and column [6] provides a weighted average growth rate for each company across the two sources. (I treat the *Value Line* forecasts as though they overlap exactly with the forecasts from Bloomberg.) These growth rates underlie my simple and multistage DCF analyses.

In the simple DCF, I use the five-year average annual growth rate as the perpetual growth rate.[8] In the multistage model, I rely on the company-specific growth rate through the third quarter of 2015 and on the long-term GDP forecast from the fourth quarter of 2020 onwards. During the intervening five-year period, I assume the growth rate converges linearly towards the long-term GDP forecast.[9]

Q16. Do these growth rates correspond to the ideal you mentioned above?

A16. No. While forecasted growth rates are the quantity required in principle, the forecasts need to go far enough out into the future so that it is reasonable to believe that investors expect a stable growth path afterwards. As can be seen from Table No. BV-5 and Table No. BV-17, the growth rate forecasts vary widely from company to company. For example, the *Value Line's* growth forecast for Southwest Water as the 93.4% are driven

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7 The BEst growth rates were downloaded from Bloomberg on September 15, 2010 for the gas LDC sample and on September 30, 2010 for the water sample. *Value Line* estimates are from the most recent report available, dated July 23, 2010 for the water sample utilities, and September 10, 2010 for the gas LDCs.

8 This growth rate is in column [6] of Table No. BV-5 (Table No. BV-17 for the gas LDC sample).

9 I use the long-term U.S. GDP growth forecast from *Blue Chip Economic Indicators* (March 10, 2010). *Blue Chip* only issues long-term GDP growth forecasts in March and October each year.

by the very low earnings estimate for 2010. Further, Southwest Water currently pays no dividend, so a standard DCF analysis is not feasible. At the same time Middlesex Water's growth rate was estimated at 1.1%.[10] The variation in growth estimates among the gas LDC companies is much lower and range form 3.0% to 7.5%.

Q17. How well are the conditions needed for DCF reliability met at present?

A17. The requisite conditions for especially the water companies are not fully met at this time; where only half of the companies have a growth estimate from BEst and several of the companies for which *Value Line* did not report growth estimates a year ago, now have either very low or very high estimates.[11] The volatility in the water companies' growth estimates make an interpretation of this sample's DCF estimates difficult. Of particular concern for this proceeding is the uncertainty about what investors truly expect the long-run outlook for the sample companies to be. The longest time period available for growth rate forecasts of which I am aware is five years. The long-run growth rate (*i.e.*, the growth rate after the industry settles into a steady state, which is certainly *beyond* the next five years for water industry) drives the actual results one gets with the DCF model. Unfortunately, this implies that if the company or industry in question is in transition, then the growth forecast may not be representative for the company's long-term growth.

This is a problem at present because it is hard to imagine that today's water industry would accurately be described as stable. There is great uncertainty about the costs required to undertake the large investments in infrastructure forecasted for the industry. Indeed, *Value Line* notes the need for investments aimed at replacing the aging infrastructure and complying with increasingly stringent water safety regulations, partially driven by increased fear of bioterrorism. The American Society of Civil Engineers recently estimated that that the drinking water and wastewater shortfall in infrastructure investments needs are $255 billion over the next five years while the

[10] See Table No. BV-5.

[11] For example, in April 2009, neither Middlesex Water nor SJW Corp. had growth forecasts from Value Line, but in its July 2010 issue, Value Line growth estimates for Middlesex Water is 1.1%, while the estimate for SJW Corp. is 14.7%.

expected spending (including the American Recovery and Reinvestment act) is $146.4 for a shortfall of about $108.6 billion.[12] The water industry also has seen a number of mergers and acquisitions, which affects the companies' earnings growth rate estimates. This is one reason why companies heavily involved in mergers and acquisitions are normally excluded from the sample. Taken together, these factors mean that it may be some time before the water industry settles into anything investors will see as a stable equilibrium.

Such circumstances imply that a regulator may often be faced with a wide range of DCF numbers, none of which can be well grounded in objective data on true long-run growth expectations, *because no such objective data now exist.* DCF for firms or industries in flux is *inherently* subjective with regard to a parameter (the long-run growth rate) that drives the answer one gets.

It is clear that much longer detailed growth rate forecasts than currently available from Bloomberg and *Value Line* would be needed to implement the DCF model in a completely reliable way for the water sample at this time; however, the general stability of the 5-year growth rate forecasts for the gas LDC sample indicates a substantially higher degree of reliability than for the water sample at this time.

C. DIVIDEND AND PRICE INPUTS

Q18. What values do you use for dividends and stock prices?

A18. Dividends are the most recent recorded dividend payments as reported by Bloomberg. For most companies this is the third quarter 2010 dividend, but for some it is the 4th quarter 2010. The most recent dividend is grown at the estimated growth rate and divided by the price described below to estimate the dividend yield for the simple and multistage DCF models.

[12] Report Card for America's Infrastructure, The American Society of Civil Engineers, 2009, p. 7.

Stock prices are the average of the closing stock prices for the 15 trading days ending on the day the BEst forecasts were released (September 15, 2010). Using these dates ensures that the information in growth rates and stock prices are contemporaneous. I use a 15-day average as a compromise. Using a longer period would be inconsistent with the principles that underlie the DCF formula. The DCF approach assumes the stock price is the present value of future expected dividends. Stock prices six months or a year ago reflect expectations at that time, which are different from those that underlie the currently available growth forecasts. At the same time, use of an average over a brief period helps guard against a company's price on a particular day price being unduly influenced by mistaken information, differences in trading frequency, and the like.

The closing stock price is used because it is at least as good as any other measure of the day's outcome, and may be better for DCF purposes. In particular, if there were any single price during the day that would affect investors' decisions to buy or sell a stock, I would suspect that it would be each day's closing price, not the high or low during the day. The daily price changes reported in the financial pages, for example, are from close to close, not from high to high or from low to low.

D. COMPANY-SPECIFIC DCF COST-OF-CAPITAL ESTIMATES

Q19. What DCF estimates do these data yield?

A19. The cost-of-equity results for the simple and multistage DCF models are shown in Table No. BV-6 for the water utility sample and in Table No. BV-18 for the gas LDC sample. In both tables, Panel A reports the results for the simple DCF method while Panel B reports the results for the multistage DCF method using the long-term GDP growth rate as the perpetual growth rate.

Q20. What overall cost-of-capital estimates result from the DCF cost-of-equity estimates?

A20. The capital structure, DCF cost of equity, and cost of debt estimates are combined to obtain the overall after-tax weighted-average cost of capital for each sample company. These results are presented in Table No. BV-7 for the water sample and in Table No. BV-

19 for the gas LDC sample. Again, Panel A relies on the simple DCF cost-of-equity results while Panel B relies on the multistage DCF cost-of-equity results.

Q21. What information do you report in Table No. BV-8 and in Table No. BV-20?

A21. These tables report, for each sample, the return on equity consistent with that sample's estimated overall after-tax weighted-average cost of capital and the proposed equity thickness of 45 percent for Arizona-American Water. For both the simple DCF and multistage DCF methods, the sample's average ATWACC is reported in column [1]. Column [6] reports the return on equity as if the sample companies' average market value capital structure had been that currently proposed for Arizona-American Water.

Q22. What are the implications of these results?

A22. The implication of these numbers is discussed in my direct testimony, along with the findings of the equity risk premium approach.

APPENDIX E

EFFECT OF DEBT ON THE COST OF EQUITY

Q1. What is the purpose of this Appendix?

A1. In this appendix, I provide details on the effects of debt on the cost of equity. First, I summarize a fairly large body of financial research on capital structure. Second, I provide an extended example to illustrate the effect of debt on the cost of equity.

I. AN OVERVIEW OF THE ECONOMIC LITERATURE

Q2. What is the focus of the economic literature on the effects of debt?

A2. The economic literature focuses on the effects of debt on the value of a firm. The standard way to recognize one of these effects, the impact of the fact that interest expense is tax-deductible, is to discount the all-equity after-tax operating cash flows generated by a firm or an investment project at a weighted average cost of capital, typically known in textbooks as the "WACC." The textbook WACC equals the *market*-value weighted average of the cost of equity and the *after-tax, current* cost of debt. However, rate regulation in North America has a legacy of working with another weighted-average cost of capital, the *book*-value weighted average of the cost of equity and the *before-tax, embedded* cost of debt. To distinguish the concepts, I refer to the after-tax weighted-average cost of capital as ATWACC.

Q3. How is this section of the appendix organized?

A3. It starts with the tax effects of debt. It then turns to other effects of debt.

A. TAX EFFECTS

Q4. What are the key findings in the literature regarding tax effects?

A4. Three seminal papers are vital for this literature. The first assumes no taxes and risk-free debt. The second adds corporate income taxes. The third adds personal income taxes.

1. Base Case: No Taxes, No Risk to High Debt Ratios

Q5. Please start by explaining the simplest case of the effect of debt on the value of a firm.

A5. The "base case," no taxes and no costs to excessive debt, was worked out in a classic 1958 paper by Franco Modigliani and Merton Miller, two economists who eventually won Nobel Prizes in part for their body of work on the effects of debt.[1] Their 1958 paper made what is in retrospect a very simple point: if there are no taxes and no risk to the use of excessive debt, use of debt will have no effect on a company's operating cash flows (i.e., the cash flows to investors as a group, debt plus equity combined). If the operating cash flows are the same regardless of whether the company finances mostly with debt or mostly with equity, then the value of the firm cannot be affected at all by the debt ratio. In cost-of-capital terms, this means the overall cost of capital is constant regardless of the debt ratio, too.

In the base case, issuing debt merely divides the cash flows into two pools, one for bondholders and one for shareholders. If the divided pools have different priorities in claims on the cash flows, the risks and costs of capital will differ for each pool. But the risk and overall cost of capital of the entire firm, the sum of the two pools, is constant regardless of the debt ratio. Thus,

$$r_1^* = r_{A1} \qquad \text{(E-1a)}$$

where r_1^* is the overall after-tax cost of capital at any particular capital structure and r_{A1} is the all-equity cost of capital for the firm. (The "1" subscripts distinguish the case where there are no taxes from subsequent equations that consider first corporate and then both corporate and personal taxes.) With no taxes and no risk to debt, the overall cost of capital does not change with capital structure.

This implies that the relationship of the overall cost of capital to the component costs of debt and equity is

[1] Franco Modigliani and Merton H. Miller (1958), "The Cost of Capital, Corporation Finance and the Theory of Investment," *American Economic Review*, 48, pp. 261-297.

$$r_{E1} \times \left(\frac{E}{V}\right) + r_{D1} \times \left(\frac{D}{V}\right) = r_1^* \qquad \text{(E-1b)}$$

with the overall cost of capital (r^*) on the *right* side, as the *independent* variable, and the costs of equity (r_E) and debt (r_D) on the left side, as *dependent* variables determined by the overall cost of capital and by the capital structure (i.e., the shares of equity (E) and debt (D) in overall firm value ($V = E + D$) that the firm happens to choose. Note that if equation (E-1a) were correct, the equation that solved it for the cost of equity would be,

$$r_{E1} = r_1^* + (r_1^* - r_D) \times \left(\frac{D}{E}\right) \qquad \text{(E-1c)}$$

Note also that (D/E) gets exponentially higher in this equation as the debt-to-value ratio increases[2] i.e., the cost of equity increases exponentially with leverage.

2. Corporate Tax Deduction for Interest Expense

Q6. What happens when you add corporate taxes to the discussion?

A6. If corporate taxes exist with risk-free debt (and if only taxes at the corporate level matter, not taxes at the level of the investor's personal tax return), the initial conclusion changes. Debt at the corporate level reduces the company's tax liability by an amount equal to the marginal tax rate times the interest expense. All else equal, this will add value to the company because more of the operating cash flows will end up in the hands of investors as a group. That is, if only corporate taxes mattered, interest would add cash to the firm equal to the corporate tax rate times the interest expense. This increase in cash would increase the value of the firm, all else equal. In cost-of-capital terms, it would reduce the overall cost of capital.

How much the value of the firm would rise and *how far* the overall cost of capital would fall would depend in part on how often the company adjusts its capital structure, but this is a second-order effect in practice. (The biggest effect would be if companies could

[2] For example, at 20-80, 50-50, and 80-20 debt-equity ratios, (D/E) equals, respectively, (20/80) = 0.25, (50/50) = 1.0, and (80/20) = 4.0. The extra 30 percent of debt going from 20-80 to 50-50 has much less impact on (D/E) [i.e., by moving it from 0.25 to 1.0] than the extra 30 percent of debt going from 50-50

issue riskless perpetual debt, an assumption Profs. Modigliani and Miller explored in 1963, in the second seminal paper;[3] this assumption could *not* be true for a real company.) Prof. Robert A. Taggart provides a unified treatment of the main papers in this literature and shows how various cases relate to one another.[4] Perhaps the most useful set of benchmark equations for the case where only corporate taxes matter are:

$$r_2^* = r_{A2} - r_D \times t_C \times \left(\frac{D}{V}\right) \tag{E-2a}$$

$$r_2^* = r_{E2} \times \left(\frac{E}{V}\right) + r_D \times \left(\frac{D}{V}\right) \times (1 - t_C) \tag{E-2b}$$

which imply for the cost of equity,

$$r_{E2} = r_{A2} + (r_{A2} - r_D) \times \left(\frac{D}{E}\right) \tag{E-2c}$$

where the variables have the same meaning as before but the "2" subscripts indicate the case that considers corporate but not personal taxes.

Note that Equation (E-2a) implies that when only corporate taxes matter, the overall after-tax cost of capital declines steadily as more debt is added, until it reaches a minimum at 100 percent debt (i.e., when $D/V = 1.0$). Note also that Equation (E-2c) still implies an exponentially increasing cost of equity as more and more debt is added. In fact, except for the subscript, Equation (E-2c) looks just like Equation (E-1c). However, whether any value is added and whether the cost of capital changes at all also depends on the effect of taxes at the personal level.

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to 80-20 [i.e., by moving it from 1.0 to 4.0]. Since the cost of equity equals a constant risk premium times the debt-equity ratio, the cost of equity grows ever more rapidly as you add more and more debt.

[3] Franco Modigliani and Merton H. Miller (1963), "Corporate Income Taxes and the Cost of Capital: A Correction," *American Economic Review*, 53, pp. 433-443.

[4] Robert A. Taggart, Jr. (1991), "Consistent Valuation and Cost of Capital Expressions with Corporate and Personal Taxes," *Financial Management* 20, pp. 8-20.

3. Personal Tax Burden on Interest Expense

Q7. How do personal taxes affect the results?

A7. Ultimately, the purpose of investment is to provide income for consumption, so personal taxes affect investment returns. For example, in the U.S., municipal bonds have lower interest rates than corporate bonds because their income is taxed less heavily at the personal level. In general, capital appreciation on common stocks is taxed less heavily than interest on corporate bonds because (1) taxes on unrealized capital gains are deferred until the gains are realized, and (2) the capital gains tax rate is lower. Dividends are currently taxed less heavily than interest. However, the current legislation regarding personal taxes on dividend income is set to expire at the end of 2010 and unless a new law or an extension of the existing rules is passed, the tax rate on dividend income will increase.[5] The effects of personal taxes on the cost of common equity are hard to measure, however, because common equity is so risky.

Professor Miller explored how personal taxes affect the overall cost of capital.[6] He found that personal tax effects could offset the effect of corporate taxes entirely.

Q8. Does the effect of personal taxes neutralize the effect of corporate taxes?

A8. The likelihood hereof would be increased if the current federal tax reductions on dividends and capital gains became permanent rather than expiring in 2010. However, personal taxes are important even if they do not make the corporate tax advantage on interest vanish entirely. Capital gains and dividend tax advantages definitely convey some personal tax advantage to equity, and even a partial personal advantage to equity reduces the corporate advantage to debt.

The Taggart paper explores the case of a partial offset, also. With personal taxes, the risk-free rate on the security market line is the after-personal-tax rate, which must be

[5] According to Edison Electric Institute, "Raising Dividend Tax Rates Will Cause Unintended Consequences," June 2010, the dividend income tax rate would increase from the current 15% to 39.6%.

[6] Merton H. Miller (1977), "Debt and Taxes," *The Journal of Finance*, 32: 261-276, the third of the seminal papers mentioned earlier.

equal for risk-free debt and risk-free equity.[7] Therefore, the pre-personal-tax risk-free rate for equity will generally not be equal to the pre-personal-tax risk-free rate for debt. In particular, $r_{fE} = r_{fD} \times [(1-t_D)/(1-t_E)]$, where r_{fE} and r_{fD} are the risk-free costs of equity and debt and t_E and t_D are the personal tax rates for equity and debt, respectively. In terms of the cost of debt, the Taggart paper's results imply that a formal statement of these effects can be written as:[8]

$$r_3^* = r_{A3} - r_D \times t_N \times \left(\frac{D}{V}\right) \tag{E-3a}$$

$$= r_{E3} \times \left(\frac{E}{V}\right) + r_D \times \left(\frac{D}{V}\right) \times (1 - t_C) \tag{E-3b}$$

which imply

$$r_{E3} = r_{A3} + \left[r_{A3} - r_D \times \left(\frac{1-t_D}{1-t_E}\right)\right] \times \left(\frac{D}{E}\right) \tag{E-3c}$$

Suppose, for example, that t_C = 35 percent, t_E = 7.7 percent and t_D = 40 percent. Then, $[(1-t_D)/(1-t_E)] = 0.65 = (1-t_C)$. That condition corresponds to Miller's 1977 paper, in which the net personal tax advantage of equity fully offsets the net corporate tax advantage of debt. Note also that in that case, $t_N = 0$.[9] Therefore, if the personal tax advantage on equity fully offsets the corporate tax advantage on debt, Equation (E-3a) confirms that the overall after-tax cost of capital is a constant.

However, it is unlikely that the personal tax advantage of equity fully offsets the corporate tax advantage of debt. If taxes were all that mattered (i.e., if there were no

[7] As Prof. Taggart notes (his footnote 9), it is not necessary that a specific, risk-free equity security exist as long as one can be created synthetically, through a combination of long and short sales of traded assets. Such constructs are a common analytical tool in financial economics.

[8] The net all-tax effect of debt on the overall cost of capital, t_N, equals $\{[t_C+t_E-t_D-(t_C \times t_E)] / (1-t_E)\}$, where t_D is the personal tax rate on debt, as before. This measure of net tax effect is designed for use with the cost of debt in Equation (E-3a), which seems more useful in the present context. The Taggart paper works with a similar measure, but one which is designed for use with the cost of risk-free equity in the equivalent Taggart equation.

[9] In the above example, $t_N = \{[0.35+0.077-0.4-(0.35 \times 0.077)] / (1.0-0.077)\} = 0.0/0.923 = 0$.

other costs to debt), the overall after-corporate-tax cost of capital would still fall as debt was added, just not as fast.

Finally, note that the overall after-tax cost of capital, Equation (E-3b), still uses the corporate tax rate even when personal taxes matter. Equations (E-2b) and (E-3b) both correspond to the usual formula for the ATWACC. Personal taxes affect the way the cost of equity changes with capital structure – Equation (E-3c) – but not the formula for the overall after-tax cost of capital given that cost of equity.

B. NON-TAX EFFECTS

Q9. Please describe the non-tax effects of debt.

A9. If debt is truly valuable, firms should use as much as possible, and competition should drive firms in a particular industry to the same, optimal capital structure for the industry. If debt is harmful on balance, firms should avoid it. Neither picture corresponds to what we actually see. A large economic literature has evolved to try to explain why.

Part of the answer clearly is the costs of excessive debt. Here the results cannot be reduced to equations, but they are no less real for that fact. As companies add too much debt, the costs come to outweigh the benefits. Too much debt reduces or eliminates financial flexibility, which cuts the firm's ability to take advantage of unexpected opportunities or weather unexpected difficulty. Use of debt rather than internal financing may be taken as a negative signal by the market.

Even if the company is generally healthy, more debt increases the risk that the company cannot use all of the interest tax shields in a bad year. As debt continues to grow, this problem grows and others may crop up. Management begins to worry about meeting debt payments instead of making good operating decisions. Suppliers are less willing to extend trade credit, and a liquidity shortage can translate into lower operating profits.

Ultimately, the firm might have to go through the costs of bankruptcy and reorganization. Collectively, such factors are known as the costs of "financial distress."[10]

The net tax advantage to debt, if positive, is affected by costs such as a growing risk that the firm might have to bear the costs of financial distress. First, the expected present value of these costs offsets the value added by the interest tax shield. Second, since the likelihood of financial distress is greater in bad times when other investments also do poorly, the possibility of financial distress will increase the risks investors bear. These effects increase the variability of the value of the firm. Thus, firms that use too much debt can end up with a higher overall cost of capital than those that use none.

Other parts of the answer include the signals companies send to investors by the decision to issue new securities, and by the type of securities they issue. Other threads of the literature explore cases where management acts against shareholder interests, or where management attempts to "time" the market by issuing specific securities under different conditions. For present purposes, the important point is that no theory, whether based on taxes or on some completely different issue, has emerged as "the" explanation for capital structure decisions by firms. Nonetheless, despite the lack of a single "best" theory, there is a great deal of relevant empirical research.

Q10. What does that research show?

A10. The research does not support the view that debt makes a material difference in the value of the firm, at least not once a modest amount of debt is in place. If debt were truly valuable, competitive firms should use as much debt as possible short of producing financial distress, and competitive firms that use less debt ought to be less profitable. The research shows exactly the opposite.

[10] See, for example, Section 19.3 of Brealey, Myers and Allen, *Principles of Corporate Finance*, 9th Edition, McGraw-Hill/Irwin, 2008.

For example, Kester[11] found that firms in the same industry in both the U.S. and Japan do not band around a single, "optimal" capital structure, and the most profitable firms are the ones that use the *least* debt. This finding comes despite the fact that both countries at the time (unlike the U.S. currently) had fully "classical" tax systems, in which dividends are taxed fully at both the corporate and personal level. Wald[12] confirms that high profitability implies low debt ratios in France, Germany, Japan, the U.K., and the U.S. Booth *et al.* find the same result for a sample of developing nations.[13] Fama and French[14] analyze over 2000 firms for 28 years (1965-1992, inclusive) and conclude, "Our tests thus produce no indication that debt has net tax benefits."[15] A paper by Graham[16] carefully analyzes the factors that might have led a firm not to take advantage of debt. It confirms that a large proportion of firms that ought to benefit substantially from use of additional debt, including large, profitable, liquid firms, appear not to use it "enough."

This research leaves us with only three options: either (1) apparently good, profit-generating managers are making major mistakes or deliberately acting against shareholder interests, (2) the benefits of the tax deduction on debt are less than they appear, or (3) the non-tax costs to use of debt offset the potential tax benefits. Only the first of these possibilities is consistent with the view that the tax deductibility of debt conveys a material cost advantage. Moreover, if the first explanation were interpreted to mean that otherwise good managers are acting against shareholder interests, either deliberately or by mistake, it would require the additional assumption that their competitors (and potential acquirers) let them get away with it.

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[11] Carl Kester (1986), "Capital and Ownership Structure: A Comparison of United States and Japanese Manufacturing Concerns," *Financial Management*, 15:5-16.

[12] John K. Wald (1999), "How Firm Characteristics Affect Capital Structure: An International Comparison," *Journal of Financial Research*, 22:161-167.

[13] Laurence Booth *et al.* (2001), "Capital Structures in Developing Countries," *The Journal of Finance* Vol. LVI, pp. 87-130, finds at p. 105 that "[o]verall, the strongest result is that profitable firms use less total debt. The strength of this result is striking ..."

[14] Eugene F. Fama and Kenneth R. French (1998), "Taxes, Financing Decisions and Firm Value," *The Journal of Finance*, 53:819-843.

[15] *Ibid.*, p. 841.

[16] John R. Graham (2000), "How Big Are the Tax Benefits of Debt," *The Journal of Finance*, 55:1901-1942.

Q11. Are there any explanations in the financial literature for this puzzle other than stupid or self-serving managers at the most profitable firms?

A11. Yes. For example, Stewart C. Myers, a leading expert on capital structure, made it the topic of his Presidential Address to the American Finance Association.[17] The poor performance of tax-based explanations for capital structure led him to propose an entirely different mechanism, the "pecking order" hypothesis. This hypothesis holds that the net tax benefits of debt (i.e., corporate tax advantage over personal tax disadvantage) are at most of a second order of importance relative to other factors that drive actual debt decisions.[18] Similarly, Baker and Wurgler (2002)[19] observe a strong and persistent impact that fluctuations in market value have on capital structure. They argue that this impact is not consistent with other theories. The authors suggest a new capital structure theory based on market timing -- capital structure is the cumulative outcome of attempts to time the equity market.[20] In this theory, there is no optimal capital structure, so market timing financing decisions just accumulate over time into the capital structure outcome. (Of course, this theory only makes sense if investors do not recognize what managers are doing.)

Q12. Do inter-firm differences within an industry explain the wide variations in capital structure across the firms in an industry?

A12. No. This view is contradicted by the empirical research. As mentioned before, it has long been found that the most profitable firms in an industry, i.e., those in the best position to take advantage of debt, use the least.[21] Graham (2000) carefully examines differences in firm characteristics as possible explanations for why firms use "too little"

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[17] Stewart C. Myers (1984), "The Capital Structure Puzzle," *The Journal of Finance*, 39: 575-592. See also S. C. Myers and N. S. Majluf (1984), "Corporate Financing Decisions When Firms Have Information Investors Do Not Have," *Journal of Financial Economics* 13:187-222.

[18] See also Stewart C. Myers (1989), "Still Searching for Optimal Capital Structure," *Are the Distinctions Between Debt and Equity Disappearing?*, R.W. Kopke and E. S. Rosengren, eds., Federal Reserve Bank of Boston.

[19] Malcolm Baker and Jeffrey Wurgler (2002), "Market Timing and Capital Structure," *The Journal of Finance* 57:1-32.

[20] *Ibid.*, p. 29.

[21] For example, Kester, *op. cit.* and Wald, *op. cit.*

debt and concludes that such differences are *not* the explanation: firms that ought to benefit substantially from more debt by all measurable criteria, if the net tax advantage of debt is truly valuable, voluntarily do not use it.[22]

Nor does the research support the view that firms are constantly trying to adjust their capital structures to optimal levels. Additional research on the pecking order hypothesis demonstrates that firms do not tend towards a target capital structure, or at least do not do so with any regularity, and that past studies that seemed to show the contrary actually lacked the power to distinguish whether the hypothesis was true or not.[23] In the words of the Shyam-Sunder - Myers paper p. 242, "If our sample companies did have well-defined optimal debt ratios, it seems that their managers were not much interested in getting there."

II. EXPANDING THE EXAMPLE FROM THE DIRECT TESTIMONY

Q13. What topics do you cover in this section?

A13. My direct testimony did not detail the impact of different starting points for the level of debt nor did it address income earned on the investment, interest expense, or taxes. This section covers these topics. First, it discusses how the level of debt affects the cost of equity. Second, it addresses the influence of income and interest on the investment. Third, it explains the impact of taxes on capital structure decisions. The final topic covered in this section is the combined consequence of tax and non-tax effects of debt.

[22] While not contradicting Graham's finding that differences in firm characteristics do not explain capital structure differences, Nengjiu Ju, Robert Parrino, Allen M. Poteshman, and Michael S. Weisbach, "Horses and Rabbits? Trade-Off Theory and Optimal Capital Structure," *Journal of Financial and Quantitative Analysis*, June 2005, pp. 1-24, looks at the issue in a different manner. Their paper uses a dynamic rather than static model to analyze the tradeoff between the tax benefits of debt and the risk of financial distress. It finds that bankruptcy costs by themselves are enough to explain observed capital structures, once dynamic effects are considered. This means debt is not as valuable as suggested by the traditional static analysis (of the sort used by Graham).

[23] Lakshmi Shyam-Sunder and Stewart C. Myers (1999), "Testing static tradeoff against pecking order models of capital structure," *Journal of Financial Economics* 51:219-244.

A. Details Of Different Levels Of Debt

Q14. Please repeat briefly the setup in the example discussed in the direct testimony.

A14. The example considered an investor who purchases $100,000 in real estate. The future value of the real estate is uncertain. Figures 2 and 3 in my direct testimony show how the return on equity to the investor differs if he finances the purchase with 100 percent equity, and if he finances it with 50 percent equity and 50 percent mortgage debt. The example illustrates the fact that debt adds risk to equity.

Q15. What happens if the investor finances the real estate purchase with different proportions of debt?

A15. The equity return becomes more variable when the mortgage percentage is a greater proportion of the initial price. Table E-1 below calculates the return on equity when real estate prices increase by 10 percent when mortgages are 0 percent, 30 percent, 50 percent, and 70 percent of the initial price.

Table E-1: The Impact of Leverage on the Return on Equity

	100% Equity	70% Equity	50% Equity	30% Equity
Debt	$0	$30,000	$50,000	$70,000
Original Equity Investment	$100,000	$70,000	$50,000	$30,000
Increase in Market Value of Equity	$10,000	$10,000	$10,000	$10,000
Return on Equity Investment	10%	14.3%	20%	33.3%

Note that going from 70 percent equity down to 50 percent equity increases the return on the equity investment by 5.7 percent while going from 50 percent equity to 30 percent equity increases the return on equity by 13.3 percent. This illustrates a general point; the rate of return on equity increases more quickly at higher levels of debt than at lower levels. Investors demand a higher equity rate of return to bear more risk and debt magnifies equity's risk at an ever increasing rate. Therefore, the required equity rate of return goes up at an ever increasing rate as debt is added. This is not only basic finance theory, it is the everyday experience of anyone who buys a home. The bigger the mortgage, the more percentage risk the equity faces from changes in housing prices.

B. THE IMPACT OF INCOME AND INTEREST

Q16. How does earning income from the investment and paying interest on debt affect the results?

A16. In the following explanation, I ignore income taxes which I deal with in Section C below. Assume the investor is receiving income, e.g., rent, from the real estate. Specifically, assume the investor receives $500 per month in income after all non-interest expenses ($6,000 per year). Also, assume that the expected appreciation is 5 percent per year, so the expected market value is $105,000 after one year. Then the expected rate of return from the real estate with all equity financing is:

$$\text{Expected Return on Equity @ 0\% debt} = \frac{\text{Expected Net Income + Expected Appreciation}}{\text{Initial Investment}}$$

$$= \frac{\$6,000 + (\$105,000 - \$100,000)}{\$100,000}$$

$$= 11\%$$

Now suppose that the mortgage interest rate were 5 percent. Then at a mortgage equal to 50 percent, or $50,000, interest expense would be ($50,000 x 0.05), or $2,500. The expected equity rate of return would be:

$$\text{Expected Return on Equity @ 50\% debt} = \frac{\text{Expected (Net Income + Appreciation) – Int. Expense}}{\text{Initial } \textit{Equity} \text{ Investment}}$$

$$= \frac{\$6,000 + \$5,000 - \$2,500}{\$50,000}$$

$$= 17\%$$

Notice that the expected return on equity is higher as is the risk carried by equity.

Q17. Can you provide a more general illustration?

Yes. Figure E-1 uses these assumptions at different mortgage levels to plot both (i) the expected rate of return on the equity in the real estate, and (ii) the realized rate of return on that equity in a year if the real estate value increases by 10 percent more than the expected 5 percent rate (i.e., if the value increases by 15 percent) or by 10 percent less than expected (i.e., if it decreases by 5 percent).[24]

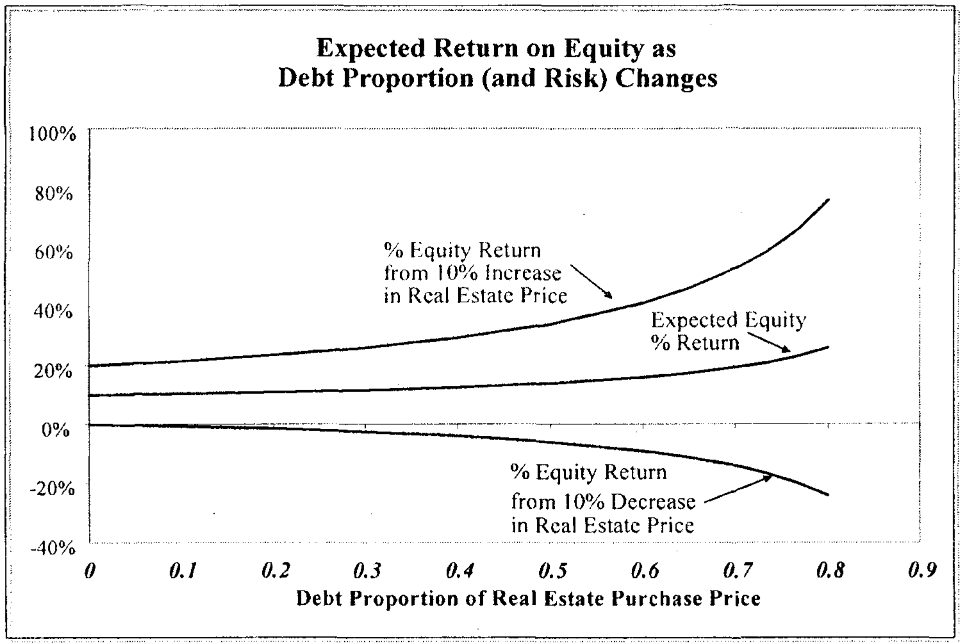

Figure E-1

The expected rate of return on equity increases at an increasing rate as the investor finances more and more of the real estate through loans (e.g., with a mortgage). Since equity bears all the risk of increases or decreases in real estate values (absent financial distress or bankruptcy), the amount of risk the buyer bears grows at an ever increasing rate as the mortgage percentage also increases.

[24] For simplicity, the figure assumes the debt's interest rate is independent of the debt proportion. This might not always be true, and in general would not be true for a corporation that issued debt. However, the general shape of the graphs remains the same.

Q18. What are the implications of this example?

A17. When a company uses debt to finance part an investment, the risk magnifies. For example, if an investor buys stocks "on margin" -- by borrowing part of the money used to buy the stock -- the expected rate of return will be higher as will the risks the investor carries. As an everyday example, imagine investing your retirement savings in a stock portfolio bought with as much margin as possible. If you were lucky, you could end up living very well in retirement. However, it is very risky and likely you would have lost substantial value over the past year. Specifically, your portfolio could decline by more than 100 percent of your initial investment. The same risk-magnifying effects happen when companies borrow to finance part of their investments.

C. THE EFFECT OF TAXES

Q19. What is the impact of taxes?

A18. Analyzing the net effect of taxes in capital structure decisions by corporations is an important part of the financial research. The bottom line is that taxes complicate the picture without changing the basic conclusion.

Q20. Please describe the potential impact of taxes.

A19. Interest expense is tax-deductible for corporations. That increases the pool of cash the corporation gets to keep out of its operating earnings (i.e., its earnings before interest expense). With no debt, 100 percent of operating income is subject to taxes. With debt, only the equity part of the operating income is subject to taxes. All else equal, the extra money kept from operating income increases the value of the corporation. The standard way to recognize that increase in value is to use an after-tax weighted-average cost of capital as a discount rate when valuing a company's operating cash flows.

Q21. Do personal taxes affect the value of debt, too?

A20. Yes, but in the other direction. One offset to debt's tax benefits at the corporate level is its higher tax burden at the personal level. Investors care about the money they get to keep after all taxes are paid, and while the corporation saves taxes by opting for debt over equity, individuals pay more taxes on interest than on capital gains from equity (and for now, on dividends as well).

Q22. Are there factors other than taxes matter?

A21. Yes. The "all else" does not remain equal as more debt is added. The more debt, the more the non-tax effects of debt offset the tax benefits. Other costs include such effects as a loss of flexibility, the possibility of sending negative signals to investors, and a host of costs and risks associated with the danger of financial distress.

Q23. Does the tradeoff between the tax and non-tax effects of debt mean that firms have well-defined, optimal capital structures?

A22. No, the "tradeoff" model does not explain actual corporate behavior. Economic research confirms that real-world corporations act as if, after a moderate amount of debt is in place, the tax benefits of debt are not worth debt's other costs. In country after country and in industry after industry, the most profitable corporations in an industry tend to use the least debt. Economic research finds that the most profitable companies tend to use the least debt in a given industry. Yet these are the companies with the most operating income to shield from taxes, who would benefit most if interest tax shields were truly valuable net of debt's other costs. They also presumptively are the best-managed on average (else why are they the most profitable?). This means it is unrealistic to suppose that more debt is always better, or that greater tax savings due to higher interest expense always add value to the firm on balance.

Q24. If the tradeoff model doesn't explain capital structure decisions by firms, is there a model that does?

A23. No single model has (yet) emerged as 'the" explanation of capital structure. However, several alternative models attempt to model the tradeoff (e.g., the "pecking order" hypothesis and "agency cost" explanations).

Q25. What does the absence of an agreed theory of capital structure in the financial literature imply about the overall effect of debt on the value of the firm?

A24. The findings of the financial literature mean that within an industry, there is no well-defined optimal capital structure. The use of some debt does convey some value advantage in most industries, but that advantage is offset by other costs as firms add more debt.[25] The range of capital structures over which the value of the firm in any industry is maximized is wide and should be treated as flat. The location and level of that range, however, does vary from industry to industry, just as the overall cost of capital varies from industry to industry.

Figure E-2 illustrates the picture that emerges from the research. This figure shows the present value of an investment in each of four different industries. For simplicity, the investment is expected to yield $1.00 per year forever. For firms in relatively high-risk industries (Industry 1 in the graph, the lowest line), the $1.00 perpetuity is not worth much and any use of debt decreases firm value. For firms in relatively low-risk industries (Industry 4 in the graph), the perpetuity is worth more and substantial amounts of debt make sense. Industries 2 and 3 are intermediate cases.

The maximum net rate at which taxes can increase value in this figure equals 20 percent of interest expense, representing a balance between the corporate tax advantage to debt and the personal tax disadvantage. The figure plots the maximum possible impact of taxes on value as a separate line, starting at the all-equity value of the lowest-risk industry (Industry 4).

[25] Note that if debt did increase the value of the firm materially, competition would tend to take that value away, since issuing debt is an easy-to-copy competitive strategy. Prices would fall as firms copied the strategy, lowering operating earnings and passing the net tax advantages to debt through to customers (just as happens under rate regulation). Therefore, if also there were a narrow range of optimal capital structures within an industry, competition would drive all firms in the industry to capital structures within that range. This does not happen in practice, which contradicts one or both of the assumptions, i.e., (1) that debt adds material value on balance, and/or (2) that there is a narrow range of optimal capital structures.

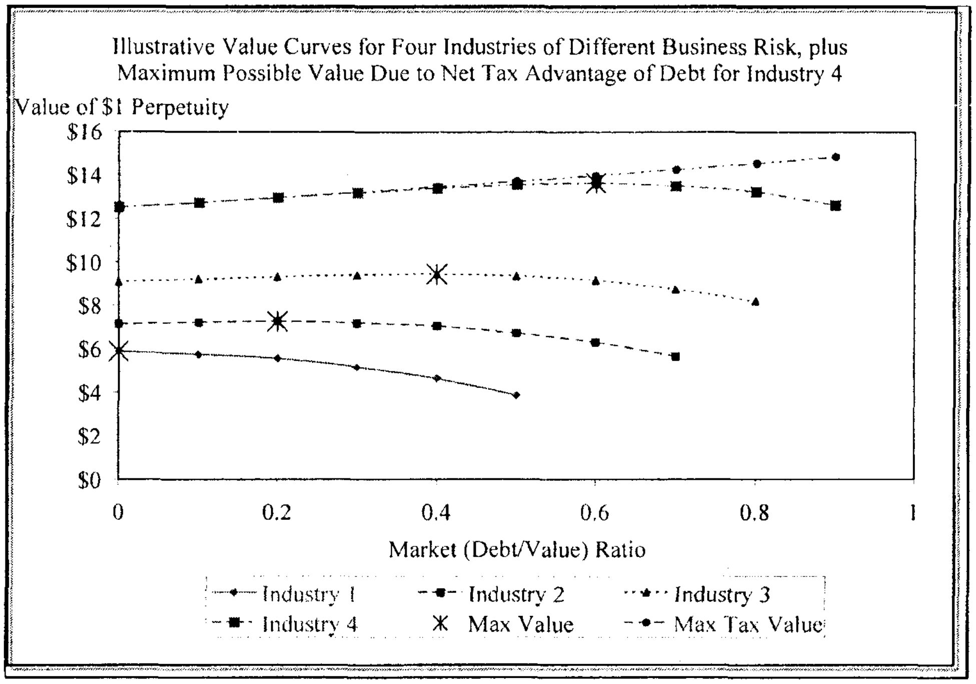

Figure E-2

Figure E-2 identifies a particular point as the maximum value on each of the four curves. However, the research shows that reliable identification of this maximum point, except in the extreme case where no debt should be used, is impossible. In accord with the research, the graph is prepared so that in none of the industries does a change in capital structure make much difference near the top of the curve. Even Industry 4, which increases in value at the maximum rate as quite a lot of debt is added, eventually must reach a broad range where changes in the debt ratio make little difference to firm value, given the research. For Industry 4, debt makes less than a 2 percent difference in the total value of the firm for debt-to-value ratios between 40 and 70 percent.

Q26. What does this imply for the overall cost of capital?

A25. Figure E-3 plots the after-tax weighted-average costs of capital ("ATWACCs") that correspond to the value curves in Figure E-2. This picture just turns Figure E-2 upside down. All the same conclusions remain, except that they are stated in terms of the overall cost of capital instead of the overall firm value. In particular, except for high-risk industries, the overall cost of capital is essentially flat across a broad middle range of capital structures for each industry, which is the only outcome consistent with the research. For Industry 4, for example, the ATWACC changes by less than 15 basis points for debt-to-value ratios between 40 and 70 percent.

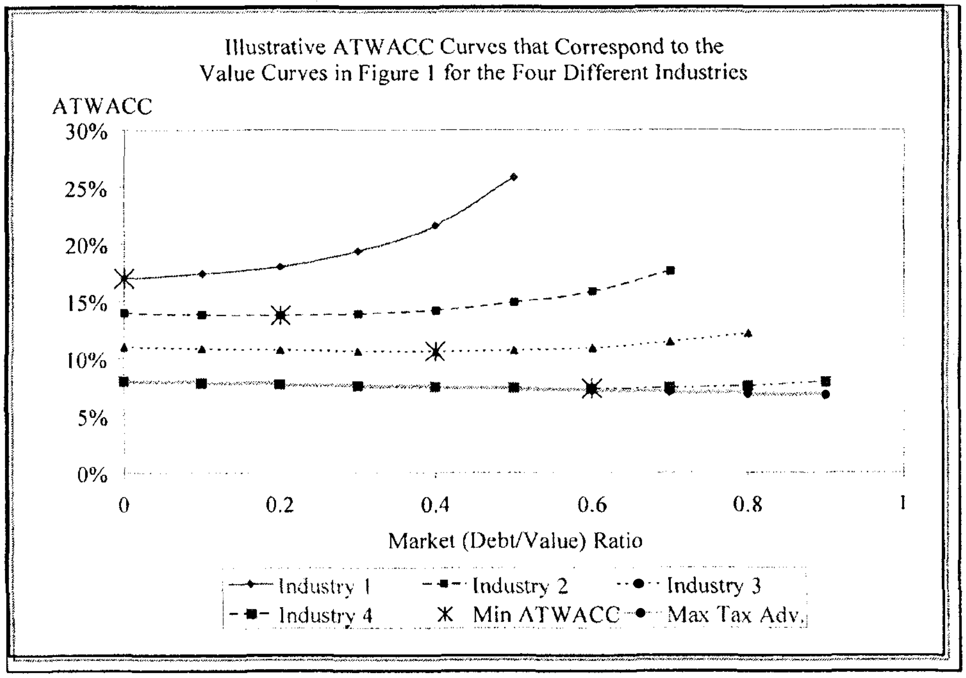

Figure E-3

Q27. How does this discussion relate to estimation of the right cost of equity for ratemaking purposes?

A26. When an analyst estimates the cost of equity for a sample of companies, s/he does so at the sample's actual market-value capital structure. That is, the sample evidence corresponds to ATWACCs that are already out somewhere in the broad middle range in which changes in the debt ratio have little or no impact on the overall value of the firm or the ATWACC.

The ATWACC curve is therefore virtually flat in a broad middle range. This assumption provides the tradeoff between the cost of equity and capital structure.

D. COMBINED EFFECTS

Q28. Please summarize the implications for the combined impact of the tax and non-tax effects of debt.

A27. The most profitable firms do not behave as if the precise amount of debt they use makes any material difference to value, and competition does not force them into an alternative decision, as it would if debt were genuinely valuable. The explanation that fits the facts and the research is that within an industry, there is no well-defined optimal capital structure. Use of some debt does convey an advantage in most industries, but that advantage is offset by other costs as firms add more debt. The range of capital structures over which the value of the firm in any industry is maximized is wide and should be treated as flat. The location and level of that range, however, does vary from industry to industry, just as the overall cost of capital varies from industry to industry. To conclude that more debt does add more value, once the firm is somewhere in the normal range for the industry, is to conclude that corporate management in general is either blind to an easy source of value or otherwise incompetent (and that their competitors let them get away with it).

The finding that there is no narrowly defined optimal capital structure implies that the ATWACCs for a sample of companies in a given industry is independent of capital structure (at least within a broad middle range of capital structures). The cost of equity for a rate-regulated company in the same industry is the number that yields the same ATWACC at the capital structure used to set the revenue requirement, since that is the cost of equity that (estimation problems aside) the sample companies would have had if their market-value capital structures had been equal to the regulatory capital structure.

EXHIBIT
A-42

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

GARY PIERCE, Chairman
BOB STUMP
PAUL NEWMAN
SANDRA D. KENNEDY
BRENDA. BURNS

IN THE MATTER OF THE APPLICATION OF ARIZONA-AMERICAN WATER COMPANY, AN ARIZONA CORPORATION, FOR A DETERMINATION OF THE CURRENT FAIR VALUE OF ITS UTILITY PLANT AND PROPERTY AND FOR INCREASES IN ITS RATES AND CHARGES BASED THEREON FOR UTILITY SERVICE BY ITS AGUA FRIA WATER, HAVASU WATER AND MOHAVE WATER DISTRICTS	DOCKET NO. W-01303A-10-0448

REBUTTAL TESTIMONY
OF
DR. BENTE VILLADSEN
ON BEHALF OF
ARIZONA-AMERICAN WATER COMPANY
JULY 15, 2011

**REBUTTAL TESTIMONY
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JULY 15, 2011**

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EXECUTIVE SUMMARY

Dr. Villadsen rebuts the cost of capital testimony provided by Staff witness, Juan Manrique, RUCO witness, William Rigsby, and Sun City Grand Community Association witness, Michael Arndt.

Dr. Villadsen also testifies regarding the implication to Arizona-American of the low returns recommended by these parties.

I. INTRODUCTION AND SUMMARY

Q. ARE YOU THE SAME BENTE VILLADSEN WHO FILED DIRECT TESTIMONY ON BEHALF OF ARIZONA-AMERICAN WATER COMPANY IN NOVEMBER 2010?

A. Yes.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. I have been asked by Arizona-American Water Company (Arizona-American Water or the Company) to review and comment on the testimonies filed by Mr. Juan C. Manrique on behalf of the Utilities Division of the Arizona Corporation Commission ("Manrique Testimony"), Mr. Michael L. Arndt on behalf of Sun City Grand Community Association ("Arndt Testimony") and Mr. William A. Rigsby on behalf of Residential Utility Consumer Office ("Rigsby Testimony"). Specifically, I have been asked to address these three testimonies cost of capital estimates including the cost of equity, the cost of debt and the relationship between the cost of equity and capital structure. In addition, I have been asked to comment on the implications for Arizona-American Water Company of being allowed to earn a return as low as 6.19 percent on its rate base.

Q. HAVE YOU CHANGED YOUR RECOMMENDED ROE?

A. No. However, should a decision be made to rely on a capital structure with less equity than that filed by the Company, I find that a higher return on equity is merited. Specifically, should a decision be made to use a capital structure with 40% equity and 60% debt, I recommend a return of equity of no less than 12 percent.

Q. WHAT ARE YOUR CONCLUSIONS?

A. The Arndt Testimony and the Rigsby Testimony recommends an overall return on capital as low as 6.2 percent recommending a low return on equity, a low equity percentage, an unusually high percentage of short-term debt and an extremely low cost of short-term debt. With these parameters the Company is unlikely to be able to improve its currently very weak financial metrics. As short-term debt needs to be replaced, rolled over, or otherwise modified within a short time horizon, the inclusion of substantial short-term debt exposes the Company to interest rate risk. This risk is high because indications are that interest rates will increase. Further, the combination of the low recommended equity return, high debt and short-term debt percentage and the low cost of short-term debt, the overall cost of capital that the Arndt, Manrique and Rigsby Testimonies recommend is below the overall cost of capital that has recently been allowed comparable water utilities in Arizona as well as below the overall cost of capital that has been allowed in other jurisdictions for water utilities or gas distribution companies. Specifically, the Rigsby Testimony recommends an overall cost of capital of only 6.2 percent while the Manrique Testimony recommends 6.8 percent. At the same time a range of comparable utilities have averaged an allowed return on capital of a bit over 8 percent. Therefore, the recommended cost of capital is simply too low.

In addition, I have several issues with the methodology applied in the submitted testimonies. First, the Arndt Testimony fails to perform an analysis of the current cost of capital and should therefore be ignored. Second, the Manrique Testimony's reliance on historical growth rates in the DCF model as well as its recommended of a large amount of short-term debt with a low allowed cost lead to an underestimation of the overall cost of capital. The Manrique Testimony also underestimated the degree to which the cost of equity increases with leverage. Third, the Rigsby Testimony substantially underestimates the cost of capital for several reasons. The Rigsby Testimony fails to adequately adjust the cost of equity for the additional financial risk that Arizona-American is exposed to due to the inclusion of a large amount of short and long-term debt with the short-term debt adding interest rate risk. In addition, the Rigsby Testimony's implementation of the Capital Asset Pricing Model (CAPM) and DCF model is non-standard. The CAPM implementation relies on a market risk premium that uses a geometric market risk premium (MRP), which the academic literature recommends against. Further, the MRP is calculated using total returns on the government bonds, while the literature recommends using the income return of these bonds. The result is a substantial downward bias in the CAPM estimates. Similarly, the Rigsby Testimony relies on a non-standard version of the DCF model using a mix of historical and forecasted growth rates. These non-standard features substantially downward bias the cost of equity estimate.

If I modify the implementation of the DCF model and CAPM in the Rigsby and Manrique Testimonies, I find that the recommended cost of equity estimates is downward biased by 70 basis points or more. In addition, the financial leverage impact is under estimated in both the Manrique and the Rigsby Testimonies by as much as 100 basis points.

Q. HOW IS THE REMAINDER OF YOUR REBUTTAL TESTIMONY ORGANIZED?

A. Section II summarizes the cost of capital recommendations in this proceedings and also reflect on the reasonableness of the recommended cost of debt, cost of equity, and capital structure. Section III addresses the lack of an independent assessment in the Arndt Testimony and the implementation of the Discounted Cash Flow ("DCF") and Capital Asset Pricing Model ("CAPM") in the Manrique and Rigsby Testimony. Finally, Section IV concludes.

II. COST OF CAPITAL FOR ARIZONA-AMERICAN WATER COMPANY

Q. PLEASE SUMARIZE THE COST OF CAPITAL RECOMMENDATIONS IN THIS CASE.

A. Table 1 below shows the cost of capital and capital structure recommendations of the various parties that have provided cost of capital estimates in this matter including the Company and myself.

	Manrique / Staff	Rigsby / RUCO	Villadsen / Company
ROE	10.30%	9.50%	11.50%
% Equity	40%	37.46%	45.34%
Cost of Debt	4.40%	-	-
Short-Term Debt	-	0.45% (17.38%)	na
Long-term Debt	-	5.66% (45.16%)	5.66%
% Debt	60%	62.54%	54.66%
Cost of Capital	6.80%	6.19%	8.30%

Table 1: Summary of Recommendations[1]

It is evident from the table that substantial disagreement exists on not only the cost of equity but also on the cost of debt and the capital structure. I note the Manrique, Rigsby, and Arndt Testimonies rely on short-term debt and the cost of short-term debt to determine the cost of capital, while the rate base for Arizona-American Water Company consists of long-lived assets. Further, the short-term debt is assigned a cost rate of only 0.45%. Such a low cost of debt has only been experienced for a very short period in the last 10 years and it is implausible that Arizona-American Water Company can replace its current short-term debt with debt at such a low cost. Further, Arizona-American Water Company has been reducing its reliance on short-term debt and I note that both the Rigsby Testimony and the Arndt Testimony rely on outdated figures for the capital structure and the cost of debt. More recent data shows a lower reliance on short-term debt.[2]

Q. WHAT IS YOUR REACTION TO THE COST OF CAPITAL RECOMMENDATIONS IN THE ARNDT, MANRIQUE AND RIGSBY TESTIMONIES?

1 Sources: Manrique Testimony, Executive Summary; Rigsby Testimony pp. 7-8; Direct Testimony of Thomas M. Broderick on behalf of Arizona-American Water Company ("Broderick Direct"), Executive Summary; and Direct Testimony of Bente Villadsen on behalf of Arizona-American Water Company ("Villadsen Direct"), Executive Summary. The Arndt Testimony does not provide a cost of capital estimate but largely agrees with the cost of capital recommendation of RUCO.

2 See, for example, Manrique Testimony p. 7.

A. Overall, the recommended cost of capital is too low. The recommendations range from an overall cost of capital of 6.19 to 6.80 percent. In comparison, the allowed cost of capital for, for example, gas utilities in 2010 was approximately 8 percent.[3] While I know of no source for the allowed cost of capital for water utilities, the average allowed overall cost of capital in 23 recent Commission decisions for water utilities was 8.1 to 8.5 percent[4] and, for example, the California Public Utilities Commission allowed a cost of capital of 8.0 to 8.9 percent in its generic proceeding.[5] Given that Arizona-American Water Company exhibits a weak financial metric and has in recent years earned way below its allowed ROE. As a result a cost of capital as low as 6.19 percent could severely impact the Company's ability to attract capital.

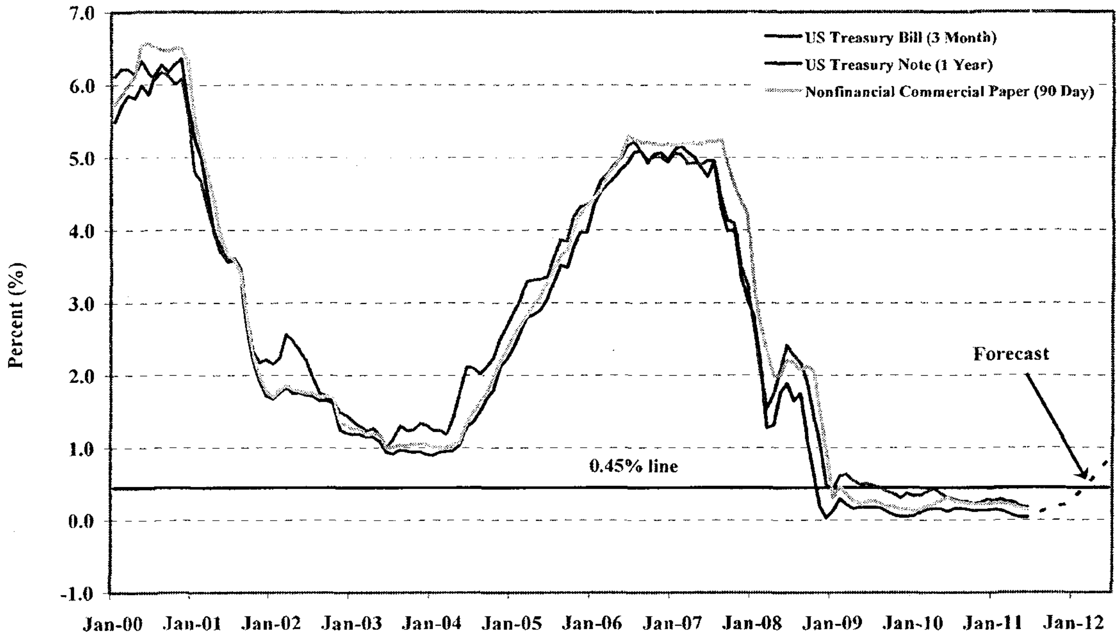
A. Cost of Debt

Q. PLEASE SUMMARIZE THE COST OF DEBT DURING THE PAST 10 YEARS.

A. Figure 1 below shows the yield on 3-month government bills, 1-year government bonds, and commercial (non-financial) paper since 2000.

[3] See Section II.B below for details.
[4] See Table 3 below.
[5] See Table No. BV R-1 attached to this rebuttal testimony.

US Short Term Treasury and Commercial Paper Yields



Source: Bloomberg as of July 5, 2011, Survey of Professional Forecasters released May 13, 2011, and Board of Governors of the Federal Reserve System updated July 7, 2011.

Figure 1

As is evident from the figure above, the cost of short-term risk-free government debt and 90-day commercial paper has generally been higher than the 0.45% that the Manrique, Rigsby, and Arndt Testimonies are using for Arizona-American Water Company's short-term debt. For example, the average yield on 90-day T-bills has been 1.75 and 1.96 percent over the last 5 and 10 years, respectively while the yield on non-financial commercial paper averaged 2.0 and 2.1 percent over the same period.[6] Equally important is the fact that the interest on short-term risk-free government debt is expected to exceed 0.45% in less than a year.

However, because the debt in question is short-term, it necessarily will need to be refinanced and because interest rates on utility debt necessarily is higher than the interest rate on risk-free government debt, Arizona-American Water Company cannot refinance

[6] Data from Bloomberg and the Federal Reserve.

its current debt at the same rates as that of risk-free government debt. Further, the interest on government debt (both short and long-term) is expected to increase substantially over the next 1-2 years with the Federal Reserve of Philadelphia's current survey indicating that the rate on 3-month T-bills will be at 1.1 to 3.0% and 10-year government bonds will be at 4.2 – 5.1% during the 2012 – 2014 period.[7] There is no way Arizona-American Water Company can refinance its debt at the same rates as the government, so naturally any debt that is refinanced can be expected to be somewhat higher than these figures with the historical average indicating that Baa-rated utility bonds require a premium of more than 200 basis points over the 10-year government bond yields.[8] The average yields on A and Baa-rated utility bonds are displayed in Figure 2 below, which also includes the yield on 20-year government bonds for comparison.[9]

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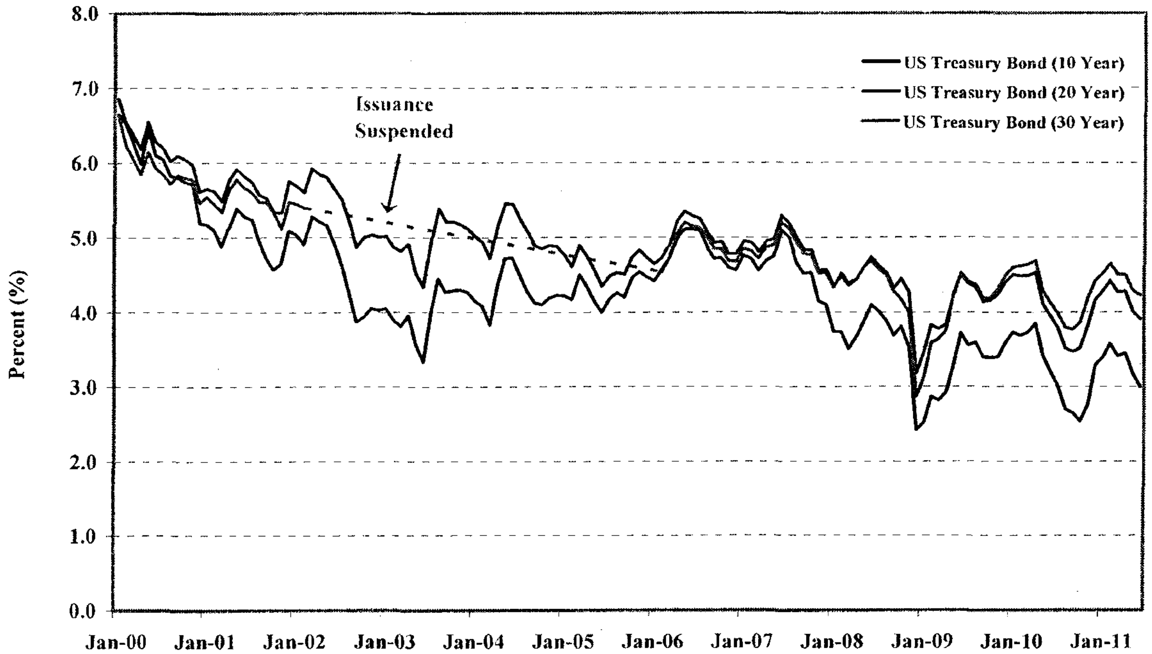
7 Federal Reserve Bank of Philadelphia, "Survey of Professional Forecasters," May 13, 2011.

8 According to Bloomberg, the difference between Moody's Baa-rated utility bond yields and the yield on 10-year government bonds averaged 220 basis points during the 2002-2007 period (prior to the financial crisis).

9 Moody's utility bond index include bonds with a maturity as close to 30 years as possible and bonds are dropped when the term to maturity falls below 20 years. As the 30-year government bond was not traded during the 2002-06 period, I choose the 20-year government bond yields for comparison. Source: Bloomberg.

US Long Term Treasury Yields



Source: Bloomberg as of July 5, 2011 and Survey of Professional Forecasters released May 13, 2011.

Figure 2

Q. WHAT ARE THE IMPLICATIONS OF THE DISCUSSION ABOVE?

A. There are several important points regarding the current short-term debt and its cost. First, the short-term debt that is outstanding will necessarily need to be refinanced, rolled over or otherwise modified in the short term - - because it is short term. Second, it is not viable to permanently finance long-lived assets permanently with short-term debt, so naturally some of the short-term debt will at some point in time be replaced by longer term debt or equity. Third, any replacement debt will likely be at a cost much higher than 0.45%.[10] Fourth, the substantial reliance on short-term debt exposes Arizona-American Water to interest rate risk. Therefore, if Arizona-American Water Company is allowed to recover only 0.45% on 14-17% of its rate base, it will be exposed interest rate risk and/or

[10] The yield on 3-month treasury bills is expected to exceed 1% in 2012 and 3% in 2014 (Federal Reserve of Philadelphia, "Survey of Professional Forecasters," May 13, 2011, p. 8).

may experience substantial cash flow shortfall until the replacement cost of debt can be recovered. Both of these features are worsened by two factors: (i) Arizona-American Water Company already has weak credit metrics[11] and (ii) as noted above, surveys indicate that interest rates are likely to increase substantially.[12] Because of the interest rate risk, which is asymmetric in the sense that it is more likely interest rates will increase than decrease; shareholders of Arizona-American Water are exposed to asymmetric risk. As a result of the asymmetry shareholders cannot expect to earn their allowed return on equity.[13] To ensure that shareholders can expect to earn the allowed return on equity in an asymmetric world, it is necessary to either (i) eliminate the asymmetry or (ii) raise the return on equity.

B. Cost of Equity and Capital Structure

Q. WHAT IS YOUR REACTION TO THE RECOMMENDATIONS FOR AN ALLOWED ROE?

A. Allowing an ROE as low as 9.5% on 37.5% equity is simply too low. In comparison, gas distribution companies were on average allowed an ROE of 10.2% in 2010 and the average gas distribution company has approximately 53.3% book equity.[14] Thus, if we use the average 2010 yield on a Baa-rated utility bond of 5.96%, the weighted average cost of capital is approximately 8.2%, which is comparable to the Company's request.[15] As I know of no source that provides a list of water utility decisions, I cannot provide a similar figure for U.S. water utilities. However, looking to the recent Commission decisions on water utilities, I find the average allowed cost of capital was 8.1 percent[16] and in California's most recent generic cost of capital the average allowed cost of capital

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[11] Direct Testimony of Paul G. Townsley on behalf of Arizona-American Water Company in Docket No. W-01303A-10-0448 ("Townsley Direct") pp. 3-6.

[12] Federal Reserve Bank of Philadelphia, "Survey of Professional Forecasters," May 13, 2011.

[13] In a symmetric situation, shareholders will with equal likelihood expect to earn above and below the allowed return on equity and therefore expect to earn the allowed return on equity.

[14] Public Utilities Fortnightly, "Utilities ROE Survey," July 7, 2011 and Value Line Investment Survey, "*Natural Gas Utility*," June 10, 2011.

[15] Calculated as: 10.2% × 53.3% + 5.96% × (1 – 53.3%) = 8.2%.

[16] See Table 3 below.

was 8.5 percent.[17] Thus, these decisions show that the Manrique, and Rigsby overall cost of capital is below that recently allowed in many jurisdictions.[18] Allowing a reasonable return on equity is especially important for a company such as Arizona-American Water Company, which has earned far below its allowed ROE since 2001.[19] This is important because both debt and equity investors expect to earn a return consistent with that available in competitive markets.

Q. PLEASE REFLECT ON THE NUMBERS PRESENTED BY THE ARNDT, MANRIQUE AND RIGSBY TESTIMONIES IN RELATION TO RECENTLY ALLOWED RETURNS IN ARIZONA.

A. My direct testimony presented data on the allowed return for water utilities in Arizona[20] and related these allowed returns to the capital structure proposed by the Company in this proceeding. As the Manrique and Risgby Testimonies suggest a different capital structure, I re-calculated the comparable ROE using the equity percentages proposed in the above mentioned testimonies. In addition, I added a recent decision for Rio Rico (Liberty Water). First, in Table 2 I show the common equity and allowed return on equity for a number of water utility decisions in Arizona.

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17 See Table BV R-1 attached to this rebuttal testimony.

18 As the Arndt Testimony provides no estimation of the cost of capital, but recommends an cost of capital similar to that of the Rigsby Testimony, I shall not specifically reference the Arndt Testimony in my discussions going forward.

19 Townsley Direct p. 3.

20 Villadsen Direct, Tables 8-9.

Company	Decision [1]	Date [2]	Common Equity [3]	Allowed Rate of Return on Equity [4]
Bella Vista Water Company	65350	11/1/2002	68.1%	9.1%
Clearwater Utilities	66782	2/13/2004	100.0%	9.1%
Arizona Water Company	66849	3/19/2004	66.2%	9.2%
AZ-American Water Co. (Citizens)	67093	6/30/2004	39.9%	9.0%
Rio Rico Utilities	67279	10/5/2004	100.0%	8.7%
Las Quintas Serenas Water Co.	67455	1/4/2005	100.0%	8.1%
Forest Highlands	67983	7/18/2005	100.0%	8.1%
Pineview Water Co.	67989	7/18/2005	51.0%	8.9%
Chaparral City Water	68176	9/30/2005	58.8%	9.3%
Arizona Water Company	68302	11/14/2005	73.4%	9.1%
AZ-American Water Co. (PV)	68858	7/28/2006	36.7%	10.4%
Black Mountain Sewer	69164	12/5/2006	100.0%	9.6%
Far West Water & Sewer Co.	69335	2/20/2007	56.0%	9.3%
Goodman Water Co.	69404	4/16/2007	100.0%	9.3%
AZ-American Water Co. (Mohave)	69440	5/1/2007	40.0%	10.7%
Gold Canyon Sewer Company	69664	6/28/2007	100.0%	9.2%
Utility Source	70140	1/23/2008	100.0%	8.9%
Cordes Lakes Water Company	70710	2/27/2008	100.0%	10.0%
AZ -American (Sun City Wastewater)	70209	3/20/2008	38.5%	10.6%
AZ-American (Anthem)	70372	6/13/2008	39.2%	8.8%
Arizona Water Company	71845	8/24/2010	45.9%	9.5%
Global Water	71878	9/14/2010	55.5%	9.0%
Rio Rico Utilities	72059	1/6/2011	80.0%	9.5%
Average			71.7%	9.3%
Average *			61.7%	9.2%

*** Excluding Arizona-American Water and companies with 100% equity.**

Table 2: Allowed Return on Equity and Equity Percentage in Recent AZ Water Decisions

Second, I calculate the corresponding overall cost of capital and the return on equity Arizona-American Water's at the capital structure requested by Arizona-American Water Company as well as at the capital structure proposed by the Manrique and Rigsby Testimony. Because the Manrique Testimony and the Rigsby Testimony propose less equity than the Company requested, the financial risk of the Company is higher and consequently its cost of equity capital is higher. As Arizona-American Water has less equity, a smaller fraction of its rate base gets an equity return while a larger fraction of the rate base gets a debt return. Henceforth, the weighted average cost of capital or overall return is not higher than that of other entities.

As can be seen from Table 3 below, on an *apples-to-apples* comparison, the average allowed overall cost of capital (WACC) ranged from 7.8 to 8.4 percent depending on the companies included in the average. At the same time, the return on equity allowed by the Commission at Arizona-American Water's targeted capital structure was 11.6 percent when companies with 100% equity and Arizona-American Water companies are removed. However, if the regulatory capital structure includes only 40 percent equity, then the past decisions, on an apples-to-apples comparison, corresponds to a return on equity of almost 14 percent. Therefore, a return on equity of only 9.5 percent on less than 40 percent equity substantially below what the Commission has allowed in the past.

		Implied ROE at AZ-Am Equity %		
Company	Implied RoR	Villadsen / Company [12]	Manrique / Staff [13]	Rigsby / RUCO [14]
Bella Vista Water Company	8.1%	12.0%	14.3%	15.3%
Clearwater Utilities	9.1%	15.9%	18.7%	20.0%
Arizona Water Company	9.0%	13.5%	16.0%	17.0%
AZ-American Water Co. (Citizens)	6.5%	7.6%	9.4%	10.0%
Rio Rico Utilities	8.7%	15.0%	17.7%	18.9%
Las Quintas Serenas Water Co.	8.1%	13.7%	16.2%	17.3%
Forest Highlands	8.1%	13.7%	16.2%	17.3%
Pineview Water Co.	7.2%	9.4%	11.4%	12.2%
Chaparral City Water	7.6%	10.7%	12.8%	13.7%
Arizona Water Company	8.9%	13.6%	16.1%	17.2%
AZ-American Water Co. (PV)	7.2%	8.9%	10.7%	11.5%
Black Mountain Sewer	9.6%	17.0%	19.9%	21.3%
Far West Water & Sewer Co.	7.8%	10.8%	12.9%	13.8%
Goodman Water Co.	9.3%	16.3%	19.2%	20.5%
AZ-American Water Co. (Mohave)	7.7%	9.9%	11.9%	12.7%
Gold Canyon Sewer Company	9.2%	16.1%	18.9%	20.2%
Utility Source	8.9%	15.4%	18.2%	19.4%
Cordes Lakes Water Company	10.0%	17.9%	20.9%	22.4%
AZ -American (Sun City Wastewater)	7.5%	9.4%	11.3%	12.1%
AZ-American (Anthem)	6.7%	7.9%	9.6%	10.3%
Arizona Water Company	7.7%	10.0%	12.0%	12.8%
Global Water	7.9%	10.7%	12.8%	13.7%
Rio Rico Utilities	8.7%	14.1%	16.7%	17.8%
Average #	8.2%	12.6%	15.0%	16.0%
Average without AZ-Am #	8.5%	13.7%	16.2%	17.3%
Average without AZ-Am and Companies with 100% Equity #	8.1%	11.6%	13.9%	14.8%

Table 3: Comparing Recent WACC and Cost of Equity from Arizona Decisions

III. COST OF CAPITAL IMPLEMENTATION

Q. DO YOU HAVE ANY PRELIMINARY COMMENTS ON THE METHODS RELIED UPON BY THE WITNESSES TO OBTAIN THEIR RECOMMENDED ROE?

A. Yes. First, the Arndt Testimony did not provide an independent analysis of the cost of capital, but relied exclusively on the Commission's most recently allowed ROE for two of the Company's districts. The exclusive reliance on previously allowed ROE numbers is circular in that it uses the Company's return, which affects its value to estimate its return. Further, the Arndt Testimony fails to consider whether the recommended ROE is comparable to the return available to equity investments in other enterprises of comparable risk. In contrast both the Manrique Testimony and the Rigsby Testimony supported their recommended ROE by analyses of the current cost of equity capital for water utilities and (in the Rigsby Testimony) gas distribution utilities.

Q. ARE THERE OTHER PRELIMINARY ISSUES?

A. Yes. Logically, cost of equity is higher than the cost of debt, so estimates of the cost of equity that are below the current yield on investment grade utility bonds do not make economic sense. Looking at the Rigsby Testimony, the estimated cost of common equity using the CAPM methodology range from 4.91 to 6.71 percent and average 5.77 percent.[21] In comparison, the Rigsby Testimony reports that the current yield on Baa-rated utility bonds is 5.69 percent,[22] so the estimated cost of common equity is only eight, 0.08%, higher than the cost of utility debt of the same rating as that of American Water. It is not plausible that an investor will accept a premium of only 0.08% to invest in equity rather than Baa-rated utility bonds.

Further, the amount of financial risk that shareholders are facing depends on leverage and investors' expected return, the cost of equity, increases with leverage. Table BV R-3 attached to this rebuttal testimony illustrates the degree to which the cost of equity

[21] Rigsby Testimony Schedule WAR-1, p. 3.
[22] Rigsby Testimony Schedule WAR-8.

increases with leverage. In Table BV R-3, the first line in each scenario calculates the after-tax weighted-average cost of capital is calculated for a sample, while the second line calculate the equivalent cost of equity for a company that is similar except it has a different capital structure. The example demonstrates that if the cost of equity for sample companies having 50% equity is 10%, then the cost of equity for a company with only 40% equity is 11.5%. Scenarios II and III relies on the recommended ROE and capital structure in the Manrique and the Rigsby Testimony, respectively and shows that Arizona-American Water's higher leverage merits an increase in the cost of equity of more than 100 basis points even if the sample companies' book value capital structure is relied upon.[23]

A. Sample Selection

Q. PLEASE COMPARE THE SAMPLES RELIED UPON IN THE MANRIQUE TESTIMONY, THE RIGSBY TESTIMONY AND YOUR DIRECT TESTIMONY.

A. All three testimonies rely on a water utility sample selected from companies that Value Line follow. In addition, Mr. Rigsby and I both use a sample of local gas distribution companies. The four water utilities included in the Rigsby Testimony (California Water, Aqua America, SJW Corp., and American States Water) are also included in the Manrique Testimony and the Villadsen Direct. In addition to these four companies, the Manrique Testimony and my direct testimony also include Connecticut Water and Middlesex Water. In addition, I considered four additional companies: American Water Works (the parent of Arizona-American Water Company), Pennichuck, Southwest Water, and York.[24] As Pennichuck has agreed to be acquired by the City of Nashua, NH and Southwest Water no longer is a publicly traded company, I agree that these two companies no longer should be included in a water utility sample. Further, I did not include York Water in the more reliable subsample and excluded American Water Works from the subsample when analyzing the CAPM and ECAPM results. While I believe that

[23] I agree with the academic literature that the market value capital structure is the relevant benchmark, but use the average book value equity percentage calculated in the Manrique Testimony, Schedule JCM-4 for illustrative purposes.

[24] Manrique Testimony p. 13, Rigsby Testimony p. 22 and Villadsen Direct Table BV-2.

Connecticut Water and Middlesex Water provides information about the water utilities industry, an elimination of these two companies and Pennichuck from the samples in my direct testimony would increase the sample's cost of equity estimates slightly.[25]

Among the gas LDC's the Rigsby Testimony and the Villadsen Direct both included AGL, Atmos, Laclede, New Jersey Resources, Northwest, Piedmont, South Jersey Industries, Southwest Gas, and WGL. In addition, the Villadsen Direct included Nicor and NiSource.[26] For a sample selection as of today, I agree with Mr. Rigsby in excluding Nicor, which is being acquired by AGL. However, I would also exclude AGL, whose stock price is also affected by the merger. If I were to exclude Nicor and NiSource from my gas LDC sample, the estimated cost of equity would not change in a measurable fashion.[27] Thus, the differences in samples do not cause any substantive difference in results.

B. Discounted Cash Flow

Q. DO YOU HAVE ANY COMMENTS ON THE MANRIQUE OR THE RIGSBY TESTIMONIES' IMPLEMENTATION OF THE DCF METHOD?

A. Yes. A key concern with both testimonies is their use of historical growth rates, which are not necessarily reflective of investors' *expectations*. This is particularly true for industries such as the water utility industry, which is undergoing significant changes from infrastructure investments, consolidation, etc., so the historical performance may not be reflective of future performance. The standard DCF model is based on expected growth rates.[28]

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[25] To see this, note that the average of the after-tax weighted-average cost of capital for Connecticut Water, Middlesex Water, and Pennichuck is below both the full sample and subsample' averages in Table No. BV-11, Panel A.

[26] Rigsby Testimony p. 35 and Villadsen Direct Table BV-14.

[27] To see this, note that the after-tax weighted average cost of capital for Nicor and NiSource in Table No. BV-19, Panels A and B is below the average for the full sample as well as the subsample. Further, in Table BV-22, Panel A, the average for the two companies is within 0.05% of the sub sample and consistently below the average for the full sample.

[28] See, for example, Morningstar, "*Ibbotson SBBI 2011 Valuation Edition,*" p. 62 or M.J. Gordon, "Optimal Investment and Financing Policy," *Journal of Finance* 18, 1962, pp. 264-272.

I note that while the Manrique Testimony specifies the numerical use of the growth rates reported, it is not clear to me exactly how the Rigsby Testimony used its reported growth rates in the analysis.

Q. THE MANRIQUE TESTIMONY ARGUES THAT ANALYSTS' GROWTH FORECASTS ARE BIASED. HOW DO YOU RESPOND?

A. The Manrique Testimony cites several papers in support of the view that "exclusive reliance on analysts' forecasts of earnings growth in the DCF model would result in inflated cost of equity estimates."[29] However, I note that all the publications cited in footnotes 13-16 of the Manrique Testimony dates from 2003 or earlier. It is important to recognize that the New York Stock Exchange ("NYSE") and the NASD during the 2002-05 period implemented a series of rules intended to improve objectivity and transparency in equity research; including in equity analysts' earnings forecasts.[30] To the extent that these rules resulted in the intended improvement in the objectivity and transparency of analysts' forecasts, research conducted prior to the implementation of the rules could differ substantially and it does.

While academic researchers during the 1990s as well as in early 2000s found evidence of analysts' optimism bias, it appears that (1) regulatory reforms have largely if not completely eliminated the issue and (2) utilities likely were not subject to the level of optimism bias as other industries.[31] To elaborate, a recent paper by Hovakimina and Saenyasiri (2010) found that recent efforts to curb analysts' incentive to provide optimistic forecasts have worked, so that "the median forecast bias essentially disappeared."[32] Thus, some recent research indicates that the analyst bias may be a problem of the past.

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[29] Manrique Testimony p. 37.

[30] See, for example, "Joint Report by the NASD and the NYSE On the Operation and Effectiveness of the Research Analyst Conflict of Interest Rules," December 2005, p. 1.

[31] *See*, for example, the discussion of the Chan, Karecski and Lakonishok 2003 article on pp. D-7 and D-8 of the Villadsen Direct.

[32] A. Hovakimian and E. Saenyasiri, "Conflicts of Interest and Analyst Behavior: Evidence from Recent Changes in Regulation," *Financial Analysts Journal*, vol. 66, 2010.

Q. HOW WOULD THE DCF RESULTS REPORTED IN THE MANRIQUE TESTIMONY CHANGE IF FORECASTED GROWTH RATES WERE USED?

A. To understand the impact of the use of historic growth rate, I re-calculated the DCF cost of equity using the same model as in the Manrique Testimony, but replaced the growth rates with Manrique's forecasted growth rates. The results are reported in Table 4.

	Manrique as Filed	Manrique Using Forecasted Growth
Constant Growth DCF Estimate	8.50%	9.20%
Multi-Stage DCF Estimate	9.90%	9.90%
Average DCF Estimate	9.20%	9.55%
Higher of DCF Estimate	9.90%	9.90%

Table 4: Comparing Manrique Estimates as Filed and Using Forecasted Growth

It is clear from the table above that reliance on forecasted growth rates, which is consistent with the academic literature and, for example, Ibbotson Associates implementation result in cost of equity estimates that are up to 70 basis points higher for the constant growth DCF model.[33]

Q. IN ADDITION TO RELYING ON HISTORICAL GROWTH RATES ARE THERE OTHER PROBLEMS WITH THE DCF IMPLEMENTATION PRESENTED IN THE RIGSBY TESTIMONY?

A. Yes. The Rigsby Testimony relies on a constant growth DCF model with a sustainable growth rate where the standard sustainable growth model states that

$$g = b \times r + s \times v \qquad (1)$$

where b is the earnings retention ratio

r is the return on common equity

s is the growth in shares

$$v = [(\text{Market Value per Share}) / (\text{Book Value per Share}) - 1] \qquad (2\text{-a})$$

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[33] Morningstar, *Ibbotson 2011 Cost of Capital Yearbook*, pp. 12-13.

Rigsby calculates the five-year historical and forecasted retention ratio, book return on equity, book value per share, and growth in shares. Based on five-year historical averages and forecasted growth rates, Rigsby decides on an internal growth rate.[34] He also estimates the share growth. However, the Rigsby Testimony relies on a model where v is replaced by[35]

$$v^* = \{[(\text{Market Value per Share}) / (\text{Book Value per Share}) + 1] / 2 - 1\} \quad \textbf{(2-b)}$$

As v* is less than v whenever the stock price per share is higher than the book value per share, the formula in (2-b) results in a lower growth rate than the standard formula for companies with a market-to-book (or price to book value per share) above one. The simplest way to see the difference between (2-a) and (2-b) is to slightly rewrite the formula. Let M denote the market value per share and B denote the book value per share. Simple algebraic manipulations show that

$$v = s \times (M - B) / B \quad (3\text{-a})$$

while (2-b) becomes

$$v^* = s \times (M - B) / 2B \quad (3\text{-b})$$

Equation (3-a) is the standard version of the sustainable growth model that textbooks present.[36] It simply calculates growth in equity that shareholders contribute in excess of book value from external financing. In contrast, the version presented in the Rigsby Testimony (versions (2-a) and (2-b)) do not have a straightforward interpretation. Instead, it arbitrarily reduces the growth contribution by equity holders as it assumes that the market value will drop to approach the book value and do so in a manner that cuts the long-term external growth in half. There is no theory that justifies this formula and the

[34] I found no specific formula relied upon in Schedule WAR-5 and therefore did not calculate the impact of using historical growth rates.

[35] Rigsby Testimony p. 19.

[36] For example, David C. Parcell, "*The Cost Capital – A Practitioner's Guide*," 2010 Edition p. 144-145 relies on the standard sustainable growth model in (1) and (2-a) as do Leonardo R. Giacchino and Jonathan Lesser, "*Principles of Utility Corporate Finance*," Public Utilities Report, 2011 ("Giacchino and Lesser 2011"), p. 254-255.

Rigsby Testimony did not cite a textbook or scholarly article that demonstrates the empirical validity of the assumption. Instead Mr. Rigsby cited testimony by another ROE witness.[37] I know of no textbook for published, peer-reviewed article that rely on the formulation used in the Rigsby Testimony. Because Mr. Rigsby's adjustment to the standard sustainable growth has no theoretical support and Mr. Rigsby has not provided empirical evidence that it is an accurate description of real world phenomena, I find the adjustment unsupported and modified the Rigsby Testimony's results using the textbook formula for the sustainable growth. The impact of simply changing the sustainable growth relied upon in the Rigsby Testimony to the standard sustainable growth is shown in Table 5 below.

	Rigsby	Rigsby using Standard Sustainable Growth
DCF - Water	9.07%	10.62%
DCF - Gas LDC	9.10%	9.64%
Average	9.09%	10.13%

Table 5: Impact of Using Standard Sustainable Growth Model

By using the non-standard version of the sustainable growth model, the Rigsby Testimony downward biases the cost of equity estimated by more than 100 basis points. As can be seen from Table 5 above, simply changing the Rigsby Testimony's DCF to rely on a standard DCF methodology implies that the Rigsby Testimony's recommended return of equity is below the DCF estimate of the cost of equity.

Q. WHAT DO YOU CONCLUDE REGARDING THE DCF ESTIMATES ON COST OF EQUITY PRESENTED IN THE MANRIQUE AND RIGSBY TESTIMONIES?

A. Based on the calculations shown above, the constant growth DCF cost of equity estimate presented in the Manrique Testimony is 70 basis points too low and the average DCF

[37] Rigsby Testimony p. 19-20.

estimate is 35 basis points too low, while the estimates in the Rigsby Testimony is approximately 100 basis points too low.

C. Capital Asset Pricing Model

Q. DO YOU HAVE ANY COMMENTS ON THE CAPM IMPLEMENTATIONS IN THE MANRIQUE TESTIMONY?

A. Yes. The Manrique Testimony implements two versions of the CAPM model. First, he implements a CAPM that rely a medium-term risk-free rate *and* a historical market risk premium ("MRP"). Second, he implements a long-term version of the model that relies on relies on a 30-year risk-free rate *and* a current MRP.[38] The historical model results in a cost of equity estimate of only 8 percent, while the current model results in a cost of equity of 10.6 percent. Noteworthy, the current MRP is estimated at 8.2 percent, which indicate that the expected premium over the risk-free rate currently is higher than it historically has been. I.e., equity investors may require a higher risk premium than they historically have.

As shown in Figure 3 below, the spread between shorter-term government bonds and A-rated utility bond yields is currently unusually high. This indicates that the yield on medium term government bonds is suppressed relative to longer term debt instruments. Therefore, a reliance on a medium term risk-free rate is likely to underestimate the cost of equity.

To see the numerical impact of the reliance on the medium term version of the CAPM, I implemented the CAPM using the data in the Manrique Testimony with two exceptions. First, I modified the risk-free rate to be the long-term rate used by the Manrique Testimony in its current version of the model. Second, to ensure consistency between the horizon of the risk-free rate and the MRP, I substituted the medium term MRP with the

[38] Manrique Testimony JCM-3.

long-term MRP (reducing it from 7.2% to 6.7%).[39] The modification to the model results in the CAPM estimates presented in Table 6 below.

	Manrique	Manrique Modified
CAPM Method		
Historical Market Risk Premium	8.00%	9.40%
Current Market Risk Premium	10.60%	10.60%
Average CAPM Estimate	9.30%	10.00%
Higher of CAPM Estimates	10.60%	10.60%

Table 6: Manrique CAPM Results Using Long-Term Version of Model

Thus, the reliance on the long-term version of the CAPM results in an increase in the average CAPM cost of equity estimate of 70 basis points.

Q. DO YOU HAVE ANY REACTIONS TO THE CAPM IMPLEMENTATION IN THE RIGSBY TESTIMONY?

A. Yes. I have several. First, a cost of equity estimate below the cost of debt is simply not meaningful. Therefore, the several of the cost of equity estimates in the Rigsby Testimony should be ignored. Second, the Rigsby Testimony determines the market risk premium using geometric averages, whereas standard financial texts recommend using the arithmetic average. Third, the Rigsby Testimony uses the total return of government bonds rather than the income return recommended in standard financial texts. Fourth, the Rigsby Testimony relies on the 5-year government bond as a measure of the risk-free rate. The yield on the 5-year government bond (and bonds of shorter maturity) is currently unusually low, so that the use of this risk-free rate downward biases the cost of equity estimate. Each of these aspects of the CAPM implementation results in a downward bias in the cost of equity estimate.

[39] Ibbotson SBBI 2011 Valuation Edition, Appendix A (the source cited in the Manrique Testimony).

Q. PLEASE ELABORATE ON YOUR POINT THAT THE COST OF EQUITY MUST BE HIGHER THAN THE COST OF DEBT.

A. A cost of equity estimate that is below the cost of debt plus an amount is unreasonable. As equity investors are the residual claimants and only receive a return on their investment after debt investors have received their interest and principal payments, equity is inherently more risky than debt. As explained in the Villadsen Direct, Section II, the definition of the cost of capital recognizes a tradeoff between risk and return, so that the higher the risk, the higher the cost of capital. Therefore, an investment that carries more systematic risk requires a higher expected return. As equity is riskier than bonds, equity investors expect a higher return than bondholders.[40] If the Rigsby Testimony were to exclude all CAPM cost of equity figures below the cost of debt plus 100 basis points, which is the cut-off that FERC uses, the resulting cost of equity estimate would be 6.71 percent.[41] This is 96 basis points higher than the average cost of equity reported in the Rigsby Testimony.[42]

Q. WHY DO YOU SAY THAT THE GEOMETRIC MRP SHOULD BE IGNORED?

A. The Rigsby Testimony presents two versions of the CAPM of which one relies on geometric measures of the market risk premium. While the magnitude of the market risk premium currently is the subject of scrutiny in the academic literature,[43] there is little doubt among academics that the geometric market risk premium does not apply to cost-of-capital estimation. For example, Ibbotson Associates state

> The equity risk premium data presented in this book are arithmetic average risk premia as opposed to geometric average risk premia. The arithmetic average equity risk premium can be demonstrated to be most appropriate when discounting future cash flows. For use as the expected equity risk premium in either the CAPM or the building block approach,

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40 The Federal Energy Regulatory Commission ("FERC") recognizes this and usually ignores cost of equity estimates that are less than the cost of debt plus 100 basis points. See, for example, FERC Order 445, 92 FERC ¶61,007.

41 See Table BV R-2 for details.

42 Rigsby Testimony, Schedule WAR-1.

43 See Villadsen Direct, Appendix C for a detailed discussion

> the arithmetic mean or the simple difference of the arithmetic means of stock market returns and riskless rates is the relevant number. This is because both the CAPM and the building block approach are additive models, in which the cost of capital is the sum of its parts. The geometric average is more appropriate for the reporting past performance, since it represents the compound average return.[44]

Similarly, the *New Regulatory Finance* text by Roger A. Morin (2006) argues that

> Only arithmetic means are correct for forecasting purposes and for estimating the cost of capital. There is no theoretical or empirical justification for the use of geometric mean rates of returns as a measure of the appropriate discount rate in computing the cost of capital or in computing present values. There is no dispute in academic circles as to whether the arithmetic or geometric average should be used for purposes of computing the cost of capital.[45]

Finally, the corporate finance text by Berg & DeMarzo (2009) states:

> The compound annual return is a better description of the long-run *historical* performance of an investment. ... Conversely, we should use the arithmetic average return when we are trying to estimate an investment's *expected* return over a *future* horizon based on its past performance. [emphasis in original][46]

Thus, standard financial textbooks recommend using the arithmetic average.

If I modify Rigsby's CAPM implementation, so that it relies solely on the arithmetic MRP, then the CAPM cost of equity estimate is almost 70 basis points higher than that reported by the Rigsby Testimony. These results are reported in Table 7 below. Importantly, the arithmetic MRP estimates are higher than the cost of debt as approximated by the yield on utility bonds.

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44 Morningstar, *Ibbotson SBBI 2011 Valuation Yearbook*, p. 56.
45 Roger A. Morin (2006), *New Regulatory Finance*, Public Utilities Reports, Inc., pp. 116-117.
46 Jonathan Berk and Peter DeMarzo, "Corporate Finance: The Core," Prentice-Hall 2009, p. 296.

	Rigsby	Rigsby excl. Geometric MRP
CAPM - Water Geometric	5.29%	nmf
CAPM - Gas LDC Geometric	4.91%	nmf
CAPM - Water Arithmetric	6.71%	6.71%
CAPM - Gas Arithmetric	6.18%	6.18%
Average CAPM	5.77%	6.45%

Table 7: The Impact of Rigsby Using the Geometric MRP

Q. WHAT SUPPORT DO YOU HAVE FOR USING THE INCOME RETURNS RATHER THANT THE TOTAL RETURNS TO CALCULATE THE MRP?

A. Finally, I note that it is the income return and not the total return that is the relevant benchmark against which the market risk premium should be measured. As noted by Ibbotson

> Another point to keep in mind when calculating the equity risk premium is that the income return on the appropriate horizon treasury security, rather than the total return, is used in the calculation. The total return is comprised of three return components: the income return, the capital appreciation return and the reinvestment return... *The income return is thus used in the estimation of the equity risk premium because it represents the truly riskless portion of the return.* [emphasis added][47]

Table 8 below shows the impact of using income returns rather than total returns in the estimation of the cost of equity using the Rigsby Testimony's data.

[47] Morningstar, *Ibbotson SBBI 2011 Valuation Yearbook*, p. 55. See also, Giacchino and Lesser 2011, p. 234.

	Rigsby as Filed	Rigsby Using Income Returns
CAPM - Water Geometric	5.29%	5.89%
CAPM - Gas LDC Geometric	4.91%	5.44%
CAPM - Water Arithmetric	6.71%	7.39%
CAPM - Gas Arithmetric	6.18%	6.78%
Average CAPM	5.77%	6.37%

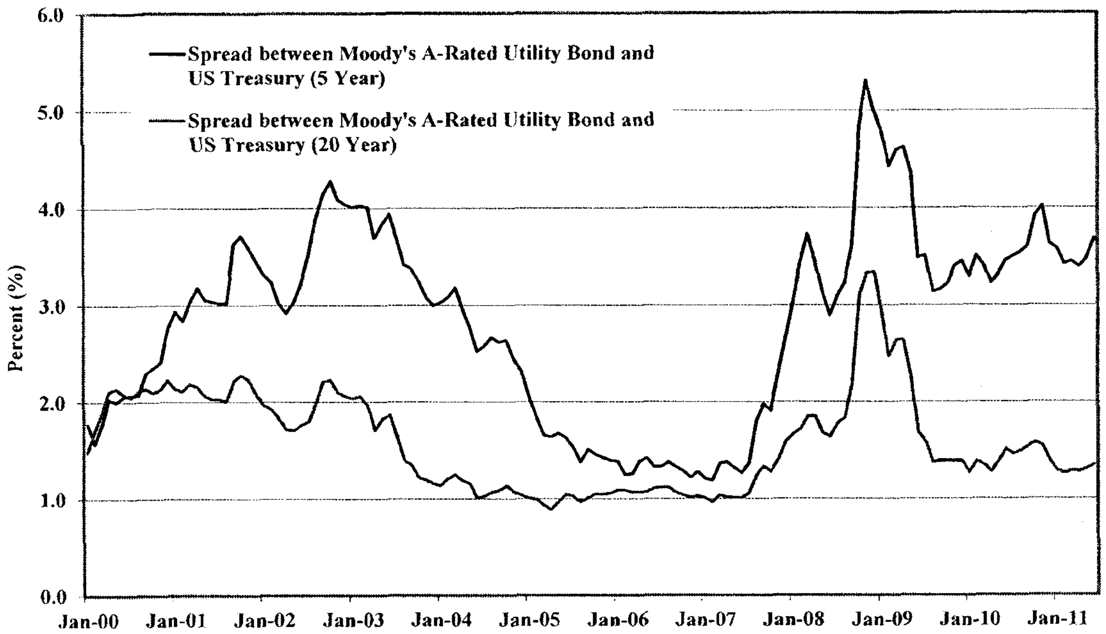
Table 8: The Impact of Rigsby Using Total Returns in the MRP Calculation

The use of total returns rather than income returns downward biases the CAPM cost of equity by approximately 60 basis points.

Q. PLEASE EXPLAIN YOUR COMMENT THAT THE USE OF THE YIELD ON A 5-YEAR GOVERNMENT BOND AS THE RISK-FREE RATE BIASES THE COST OF EQUITY DOWNWARDS.

A. While the theoretical CAPM was developed using short-term risk-free rates, most practitioners rely on long-term risk-free rates because long-term risk-free rates are less influenced by current monetary policy. At the moment, all shorter and medium term government instruments have a very low yield compared to longer term government bonds and, more importantly, utility bonds.

A comparison of the yield on A-rated utility bonds and the yield on government bonds of varying maturities reveal that there currently is a very large spread between the yield on A-rated utility bonds and government bonds of, for example, 5-year maturity compared to <u>both</u> the historical spread between these instruments and to the spread between the yield on, for example, A-rated utility bonds and 20-year government bonds. This fact is illustrated in Figure 3 below. It is evident from the figure that both (i) the <u>absolute spread</u> between the yield on A-rated utility bonds and 5-year government bonds currently is highs and (ii) the spread is <u>high relative</u> to the spread between A-rated utility bond yield and the yield on 20-year government bond yields.[48]



Source: Bloomberg as of July 5, 2011.

Figure 3: Spread between the yield on A-rated utility bonds and on 5 and 20-year Treasury bonds.

Because of the unusual relationship between the yield on medium-term government bonds and the yield on utility bonds, which are indicative of the cost of debt capital for utilities, the use, for example, the 5-year government bond yield as a risk-free rate downward biases the CAPM cost of equity estimate. Had the Rigsby Testimony instead relied on the long-term government bond yields and an MRP calculated as did Mr. Rigsby except that it is based on long-term total returns rather than 5-year total returns,

[48] I use the 20-year government bond yield for comparison because the 30-year government bond was not issued from 2002 to 2006.

his CAPM estimates would increase by more than 200 basis points.[49] The specific data are shown in Table 9 below.

	Rigsby as Filed	Rigsby Using Long-term Rates
CAPM - Water Geometric	5.29%	7.53%
CAPM - Gas LDC Geometric	4.91%	7.16%
CAPM - Water Arithmetric	6.71%	8.73%
CAPM - Gas Arithmetric	6.18%	8.23%
Average CAPM	5.77%	7.91%

Table 9: The Impact of Rigsby using the 5-year Risk-Free Rate

Q. IF YOU CORRECT ALL THE CAPM IMPLEMENTATION PROBLEMS DISCUSSED ABOVE, HOW WOULD THE RESULTS CHANGE?

A. In Table 10 below I modified the Rigsby Testimony's calculation of the CAPM estimates as follows. First, the risk-free rate relied upon is the 30-year government bond yield rather than the 5-year government bond yield. Consistency then requires I also use a 30-year (long-term) MRP. Second, consistent with Ibbotson, I use income returns rather than total returns in the calculation of the MRP. Third, I eliminate the geometric MRP for reasons discussed above. The results from these modifications show that the Rigsby Testimony's estimate of the CAPM ROE is downward biased by about 300 basis points.

[49] The calculation in Table 9 relies on the 30-year government bond yield in June 2011 as its risk-free rate and uses for consistency Ibbotson's long-term total return on government bonds in the MRP calculations. The risk-free rate was obtained from Bloomberg and the Ibbotson data are from Table 2-1 p. 23 of Ibbotson SBBI 2011 Valuation Yearbook.

	Rigsby as Filed	Rigsby Corrected
CAPM - Water Geometric	5.29%	*nmf*
CAPM - Gas LDC Geometric	4.91%	*nmf*
CAPM - Water Arithmetic	6.71%	9.26%
CAPM - Gas Arithmetic	6.18%	8.70%
Average CAPM	5.77%	8.98%

Table 10: Rigsby as Filed and Corrected

IV. CONCLUSIONS

Q. HAVING DISCUSSED THE IMPLEMENTATION ISSUES IN THE MANRIQUE AND RIGSBY TESTIMONIES, PLEASE SUMMARIZE THE CORRECTIONS YOU MADE TO THE MODELS.

A. The Manrique Testimony's reliance on historical growth rates downward biases its constant growth DCF estimate by approximately 70 basis points to and the average DCF estimate by 35 basis points (see Table 4 above). Further, as illustrated in above, if the Manrique Testimony had relied exclusively on the long-term CAPM, the average CAPM estimate on cost of equity would increase by approximately 70 basis points (see Table 6 above). The results obtained when modifying the Manrique Testimony is summarized below.

	Manrique	Manrique Modified
Constant Growth DCF Estimate	8.50%	9.20%
Multi-Stage DCF Estimate	9.90%	9.90%
Average DCF Estimate	9.20%	9.55%
Higher of DCF Estimates	9.90%	9.90%
CAPM Method		
Historical Market Risk Premium	8.00%	9.40%
Current Market Risk Premium	10.60%	10.60%
Average CAPM Estimate	9.30%	10.00%
Higher of CAPM Estimates	10.60%	10.60%
Average of DCF and CAPM	9.3%	9.8%
Average of Higher DCF and CAPM	10.3%	10.3%

Table 11: Summary of Manrique Results and Modified Results

From the table above, the Manrique Testimony's comment that

> Using the mean of the higher of the DCF and the CAPM methods versus the average of the DCF and CAPM methods increases the ROE recommendation by 100 basis points, from 9.3 percent to 10.3 percent.[50]

relies on the fact that he implemented the constant growth DCF using historical growth rates rather and relied on a medium term version of the CAPM. If 100 basis points were added to the average using the more appropriate implementation in the modified column, the ROE would increase to 10.8 percent.

Combining the modifications I made to the Rigsby Testimony's implementation of the DCF and CAPM, I obtain the results summarized in Table 12 below.

[50] Manrique Testimony p. 34-35.

		Rigsby	Rigsby Modified
DCF - Water	[j]	9.07%	10.62%
DCF - Gas LDC	[k]	9.10%	9.64%
Average DCF	[l]	9.09%	10.13%
CAPM - Water Geometric	[m]	5.29%	*nmf*
CAPM - Gas LDC Geometric	[n]	4.91%	*nmf*
CAPM - Water Arithmetic	[o]	6.71%	9.26%
CAPM - Gas Arithmetic	[p]	6.18%	8.70%
Average CAPM	[q]	5.77%	8.98%
Average DCF and CAPM	[r]	7.43%	9.55%

Table 12: Rigsby Modified

Simply correcting the implementation issues to adhere to standard textbook definitions raises the average of the estimated cost of equity by more than 200 basis points. The Rigsby Testimony points out that its cost of equity estimate "exceeds, by 40 basis points, the high end of the range of the range of results that I have obtained in my cost of equity analysis."[51] Certainly, if non-standard implementations are corrected and a currently more appropriate long-term risk-free model is used, then the recommendation in the Rigsby Testimony is below not only the high end of the estimates but below the average estimate. Thus, the Rigsby Testimony's cost of equity recommendation is downward biased and if corrected consistent with a figure north of 10%.

Further, if I take Arizona-American Water Company's higher than average leverage into account, then both the Manrique and the Rigsby Testimonies' recommendation is consistent with my recommendation, as Arizona-American Water Company's more levered capital structure requires a higher ROE. From Table No. BV R-3, the additional equity return is of the magnitude of at least 100 basis points.

[51] Rigsby Testimony p. 7.

Q. DOES THE FACT THAT YOU DO NOT COMMENT ON SOME ASPECTS OF THE SUBMITTED TESTIMONIES MEAN THAT YOU AGREE?

A. No, it does not.

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes.

TABLES AND WORK PAPERS

Table No. BV R-1: Overall Cost of Capital Resulting from California Water Decision

	Equity Percent [1]	Allowed RoE [2]	Debt Percentage [3]	Cost of Debt [4]	Overall CoC [5]
California Water	53%	10.20%	47%	6.72%	8.56%
California American	42%	10.20%	58%	6.48%	8.04%
Golden State	51%	10.20%	49%	7.49%	8.87%
Average					8.49%

Sources and Notes:
[1], [2]: California Decision p. 37.
[3]: 1 - [1]
[4]: Californian PUC Decision D 09-05-19 p. 12.
[5]: [1] x [2] + [3] x [4]

Table No. BV R-2: Overall Cost of Capital Resulting from California Water Decision

	rfr [1]	Beta [2]	Market [3]	rfr [4]	[5]	RoE [6]	Bond Rating [7]	Bond Yield [8]	Spread to bond yield [9]	Revised RoE [10]
AWR	1.91%	0.75	11.90%	5.50%		6.71%	A	5.26%	1.45%	6.71%
CWT	1.91%	0.7	11.90%	5.50%		6.39%	A	5.26%	1.13%	6.39%
SJW	1.91%	0.9	11.90%	5.50%		7.67%	A	5.26%	2.41%	7.67%
WTR	1.91%	0.65	11.90%	5.50%		6.07%	A	5.26%	0.81%	n/a
Average										6.92%
AGL	1.91%	0.75	11.90%	5.50%		6.71%	A	5.26%	1.45%	6.71%
ATO	1.91%	0.7	11.90%	5.50%		6.39%	BBB	5.67%	0.72%	n/a
LG	1.91%	0.6	11.90%	5.50%		5.75%	A	5.26%	0.49%	n/a
NJR	1.91%	0.65	11.90%	5.50%		6.07%	A	5.67%	0.40%	n/a
NWN	1.91%	0.6	11.90%	5.50%		5.75%	A	5.26%	0.49%	n/a
PNY	1.91%	0.65	11.90%	5.50%		6.07%	A	5.67%	0.40%	n/a
SJI	1.91%	0.65	11.90%	5.50%		6.07%	BBB	5.67%	0.40%	n/a
SWX	1.91%	0.75	11.90%	5.50%		6.71%	BBB	5.67%	1.04%	6.71%
WGL	1.91%	0.65	11.90%	5.50%		6.07%	AA	*5.06%*	1.02%	6.07%
Average										6.50%
Average of water and gas LDC										6.71%

Sources and Notes:
[1] - [6]: Rigsby Testimony, WAR-7.
[7]: Bloomberg S&P Rating for company.
[8]: Yield on Moody's comparable bond index as of June 2011.
For WGL the yield was calculated as the yield on an A-rated utility bond minus 1/2 times the spread between the yield on a Baa and an A-rated utility bond.
[9]: [6] - [8].
[10]: If [9] > 0.999% then [6]. Othewise n/a.

Table No. BV R-3: The Impact of Leverage on the Cost of Equity

Scenario I	Equity %	ROE	Debt %	Cost of Debt	Tax Rate	ATWACC
Sample	50%	10.0%	50%	5.67%	38%	$\boxed{6.76\%}$
Company	40%	$\boxed{11.6\%}$	60%	5.67%	38%	6.76%
Scenario II	Equity %	ROE	Debt %	Cost of Debt	Tax Rate	ATWACC
Sample	46.8%	10.3%	53.2%	5.67%	38%	$\boxed{6.69\%}$
Company	40%	$\boxed{11.5\%}$	60%	5.67%	38%	6.69%
Scenario III	Equity %	ROE	Debt %	Cost of Debt	Tax Rate	ATWACC
Sample	46.8%	9.5%	53.2%	5.67%	38%	$\boxed{6.32\%}$
Company	37.5%	$\boxed{11.0\%}$	62.5%	5.67%	38%	6.32%

EXHIBIT

A-43

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

GARY PIERCE, Chairman
BOB STUMP
PAUL NEWMAN
SANDRA D. KENNEDY
BRENDA. BURNS

IN THE MATTER OF THE APPLICATION OF ARIZONA-AMERICAN WATER COMPANY, AN ARIZONA CORPORATION, FOR A DETERMINATION OF THE CURRENT FAIR VALUE OF ITS UTILITY PLANT AND PROPERTY AND FOR INCREASES IN ITS RATES AND CHARGES BASED THEREON FOR UTILITY SERVICE BY ITS AGUA FRIA WATER, HAVASU WATER AND MOHAVE WATER DISTRICTS	DOCKET NO. W-01303A-10-0448

REJOINDER TESTIMONY
OF
DR. BENTE VILLADSEN
ON BEHALF OF
ARIZONA-AMERICAN WATER COMPANY
AUGUST 9, 2011

REJOINDER TESTIMONY
OF
DR. BENTE VILLADSEN
ON BEHALF OF
ARIZONA-AMERICAN WATER COMPANY
AUGUST, 2011

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EXECUTIVE SUMMARY

Dr. Villadsen rebuts the cost of capital surrebuttal testimony provided by Staff witness, Juan Manrique, RUCO witness, William Rigsby, and Sun City Grand Community Association witness, Michael Arndt.

Dr. Villadsen also provides an update of previously submitted tables summarizing past decisions by the Arizona Corporation Commission.

I. INTRODUCTION AND SUMMARY

Q. ARE YOU THE SAME BENTE VILLADSEN WHO FILED DIRECT TESTIMONY IN NOVEMBER 2010 AND SURREBUTTAL TESTIMONY IN JULY 2011 ON BEHALF OF ARIZONA-AMERICAN WATER COMPANY IN NOVEMBER 2010?

A. Yes.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. I have been asked by Arizona-American Water Company (Arizona-American Water or the Company) to review and comment on the surrebuttal testimonies filed by Mr. Juan C. Manrique on behalf of the Utilities Division of the Arizona Corporation Commission ("Manrique Surrebuttal"), Mr. Michael L. Arndt on behalf of Sun City Grand Community Association ("Arndt Surrebuttal") and Mr. William A. Rigsby on behalf of Residential Utility Consumer Office ("Rigsby Surrebuttal").

Q. HAVE YOU CHANGED YOUR RECOMMENDED ROE?

A. No.

Q. WHAT DO YOU ADDRESS IN YOUR REJOINDER?

A. First, I discuss why previously allowed RORs are appropriate benchmarks for Arizona-American Water's current ROR. Second, I discuss analysts' growth forecasts and include a comparison of Value Line's forecast and realized income for gas utilities. Third, I show that if an ROE of 9.5% is a reasonable return for the water utility industry, then an ROE of 11% is appropriate for Arizona-American Water at RUCO's proposed capital structure. Fourth, I explain why the geometric average measures past performance and is not an appropriate measure for the expected performance. Fifth, I provide references that rebut the Rigsby Surrebuttal that his non-standard DCF methodology adjusts for the effect of non-regulated activities.

II. RESPONSES TO SPECIC ISSUES IN SURREBUTTAL TESTIMONIES

A. Comparing ROR

Q. THE MANRIQUE SURREBUTTAL ARGUES THAT RORS ALLOWED IN PAST DECISIONS ARE NOT ACCURATE INDICATORS OF AN APPROPRIATE ROR FOR ARIZONA-AMERICAN.[1] HOW DO YOU RESPOND?

A. I disagree. Investors are concerned about being compensated adequately for the risks they bear. The total return a utility is allowed to earn is split between equity and debt holders as is the risk of the investment. However, the leverage magnifies the risk equity investors' bear as explained in the Villadsen Direct.[2] Therefore, the total risk is reflected in the overall cost of capital. In a regulatory setting, the overall cost of capital is reflected in the allowed ROR and investors in a regulated entity would naturally look to the allowed ROR to gauge the magnitude of the return they can expect. Similarly, customers, whose rates include the allowed ROR, logically would care about the dollar amount being charged rather than the percentage return on equity. Therefore, I believe the historical ROR is a reasonable benchmark for Arizona-American Water's ROR.

Q. THE MANRIQUE SURREBUTTAL STATES THAT "ROR IS NOT AN APPROPRIATE METRIC OF COMPARISON OVER TIME . . ."[3] WHAT IS YOUR VIEW?

A. I agree that it may be difficult to compare rates of return over time. Therefore, and to ensure all recent decisions are reflected in my analysis, I added four additional decisions to the analysis. Table BV-RJ1 attached to this rejoinder testimony updates Table 2 and Table 3 of the Villadsen Rebuttal. In addition, I calculated the ROR for the 2010-2011 period to check that the analysis is not biased by the timing of the decisions. As can be seen from Table BV-RJ2, the ROR for all decisions remain at 8.1% and is slightly higher at 8.2% for 2010-2011 decisions. Even with the inclusion of additional decisions and a distinct look to recent decisions, the Commission's recent water decisions are consistent

[1] Manrique Surrebuttal p. 3-4.
[2] See the Villadsen Direct pp. 14-18 for an illustrative example.
[3] Manrique Surrebuttal p. 3.

with an ROR of approximately 8.1% - 8.2% and an ROE of 11.9% - 12.1% at the Company's proposed capital structure.[4] In other words, looking only to recent decisions does not change the magnitude of the comparable ROR.

Q. DO YOU HAVE ANY OTHER COMMENTS ON THE COMMENT THAT THE ROR IS "PUSHED DOWNWARD BY A HIGHER DEBT RATIO"?

A. Yes. Allowing a lower overall cost of capital, ROR, for companies with a higher debt ratio assumes that investors do not require compensation for additional leverage. Both equity and debt investors consider leverage and the higher the leverage the more risk equity investors face. They require compensation for that risk in the form of a higher return on equity. As discussed at length in the Villadsen Direct, the cost of equity increases as the percentage of debt increases. Therefore, the overall cost of capital, the dollar amount of capital costs, does not decline as more debt is used, but the allocation between debt and equity holders does change.

The fact that leverage matters is recognized by, for example, the Florida Public Service Commission ("FL PSC"), which in its recent, July 2011 decision on water utilities relied on the following formula to determine the ROE for the utilities:[5]

$$ROE = 7.13\% + 1.610 / \text{Equity Ratio} \qquad (1)$$

The FL PSC put the ROE at 8.74% at 100% equity and imposed an upper bound of 11.16% for utilities with 40% equity. Applying the FL PSC formula to Arizona-American Water at 40% equity (or at 37.46% equity) would give rise to a return on equity of 11.16%.

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[4] The ROR figure for all decisions is not visibly different from the figure shown in Table 2 of the Villadsen Rebuttal although the implied ROE is higher.

[5] Florida Public Service Commission, Docket No. 110006-WS, Order No. PSC-11-0287-PAA-WS, ("Florida Order") p. 2. The decision is attached to this rejoinder as Attachment A.

Notably, the Florida PSC recognizes the link between financial risk and the cost of equity and notes that a basic assumption is that "[t]he cost of equity is an exponential function of the equity ratio but a linear function of the debt to equity ratio over the relevant range."[6] Put differently, the cost of equity increases at an ever increasing rate as the equity percentage ratio declines, while the cost of equity is proportional to the debt to equity ratio.

B. Analysts' Growth Forecasts

Q. THE MANRIQUE SURREBUTTAL ARGUES THAT "OUTSIDE OF ECONOMIC BOOM YEARS, ANALYSTS' ESTIMATES ARE OVERLY-OPTIMISTIC."[7] DO YOU HAVE ANY COMMENTS?

A. Yes. It appears that the conclusions from research on this topic differ with McKinsey agreeing with the Manrique Surrebuttal and the article by Hovakimina and Saenyasire disagreeing.[8] However, utilities constitute only 3.4% of the S&P 500 index, which is the focus of the McKinsey study. The S&P 500 includes a large share of financials (15.1%) and information technology (17.8%) companies,[9] whose earnings have been very volatile in recent years. It is not clear that they provide a good insight into the reliability of growth forecasts for utilities, which is the real issue at hand. To gain insight into this issue, I compared Earnings per Share and Number of Shares Outstanding forecast from Value Line with realized figures for the gas LDC companies used in the Villadsen Direct. I did not undertake this study for the water utilities because (1) I have five-year forecasts for only three companies back in time and (2) I did not rely on the results from the DCF model for the water utilities as the industry. Looking at analysts' forecast from 2005-06 for 2008, 2009, and 2010, which are **not** boom years, I found **no evidence** that Value Line's earnings forecast for the gas distribution industry is "overly-optimistic." Instead, there forecasts that were optimistic and forecasts that were pessimistic, which more pessimistic than optimistic forecasts. The results are reported in Table BV-RJ3 attached

[6] Florida Order p. 3.
[7] Manrique Surrebuttal p. 6.
[8] A. Hovakimian and E. Saenyasiri, "Conflicts of Interest and Analyst Behavior: Evidence from Recent Changes in Regulation," *Financial Analysts Journal*, vol. 66, 2010. Cited in the Villadsen Rebuttal.
[9] Standard & Poor's, "S&P 500 Fact Sheet." Attached to this rejoinder as Attachment B.

to this rejoinder,[10] which finds 13 optimistic forecasts, 16 pessimistic forecasts and one exact forecast on gas LDCs income approximately 4 years out. Thus, the Value Line forecasts for gas LDCs do not appear to have been inflated in recent years.[11]

C. VALUE LINE'S 9.5% EXPECTED ROE FOR THE WATER INDUSTRY

Q. THE RIGSBY SURREBUTTAL USES A RECENT VALUE LINE SHEET TO ARGUE THAT AN ROE OF 9.5% IS "ATTRACTIVE TO INVESTORS."[12] HOW DO YOU RESPOND?

A. As noted by the Florida PSC and discussed at length in the Villadsen Direct, a company's cost of equity and its capital structure are linked. It is therefore vital to not only look at the 9.5% ROE that Value Line forecasts for the water utility industry, but to also look to the forecasted equity ratio of 48%.[13] Customers of Arizona-American Water are concerned about the cost of water services, in dollar terms, and investors are concerned about adequate compensation for the risk they take on. Therefore, it is important to understand how the 9.5% cited in the Rigsby Surrebuttal relates to the cost of capital that customers pay and investors earn on a rate base that is financed by varying proportions of debt and equity. In Table 1 below, I calculate the total return on a rate base of $148.9 million financed by 48% equity and 52% debt, which is Value Line's forecasted capital structure. I assume for illustrative purposes that the cost of debt is 4.21% and that the cost of equity is 9.5%. The total return (before tax gross up) then becomes approximately $10.05 million.

[10] Table BV-RJ3 does not consider NiSource because I do not readily have access to historic forecast.

[11] I note that the growth forecasts relied upon were made during the so-called boom years, while the realizations were around the financial crisis.

[12] Rigsby Surrebuttal p. 7-8.

[13] *Value Line Investment Survey*, Water Utility Industry, July 22, 2011 (Attachment A to the Rigsby Surrebuttal).

	Value Line	Rigsby Capital Structure
Rate Base	$148,900	$148,900
ROE	9.5%	n/a
% Equity	48.0%	37.5%
Cost of Debt	4.21%	4.21%
% Debt	52.0%	62.5%
Tax Rate	38.6%	38.6%
Cost of Equity	$6,790	$6,130
Cost of Debt	$3,260	$3,920
Total Return	$10,050	$10,050
Implied ROE	n/a	10.99%

Table 1: Comparison of Value Line's and the Rigsby Rebuttal

In column 2, I set the total return (or the capital costs) equal to the figure the Value Line number proposed by the Rigsby Rebuttal gives rise to, $10.05 million, and determine the ROE that ensures that customers pay no more and no less than in the Value Line example. The ROE that is consistent with Value Line's suggested $10.05 million return on a rate base of $148.9 million is 10.99%. The example shows that if an ROE of 9.5% is reasonable for a company with 48% equity, then an ROE of 10.99% is reasonable for a company with 37.46% ROE.[14]

D. Explaining the Geometric Average

Q. PLEASE EXPLAIN THE ARITHMETIC AND GEOMETRIC AVERAGE OF RETURN.

A. The arithmetic mean of stock market returns (e.g., the S&P 500) over a historical time period, e.g., 1926 to 2010, is simply the average return experienced during the period. The geometric mean is the return that if compounded annually over 84 years would result in the same increase in the S&P 500 as indicated by the annual return.

[14] Rigsby Surrebuttal p. 3 recommends an equity ratio of 37.46% for Arizona-American Water.

Q. HOW WOULD YOU USE THE ARITHMETIC AND GEOMETRIC MEAN OF STOCK RETURNS?

A. If the purpose is to evaluate the past performance of a stock, the geometric mean is the most appropriate. In other words, the geometric mean tells us how a specific stock or portfolio performed in the past, but a simple example, which I adopt from Morningstar 2009 Valuation Yearbook, explains why it fails to provide a reasonable expected return.

Figure 1 below shows a simple probability tree. Suppose that, at time 0, we invest \$100 in the stock market. Also assume that there are only two possible and equally likely outcomes for the market return: either the stock increases by 20% or it declines by 10%, so the resulting stock value is \$120 or \$90. The arithmetic mean growth rate is 5% (=50%×20% + 50%×(-10%)) whereas the geometric growth rate is $[(1+20\%) \times (1-10\%)]^{1/2} = 3.92\%$.

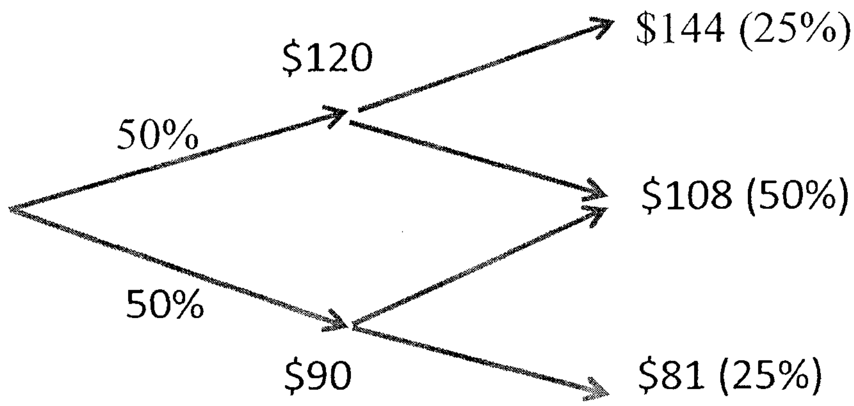

Figure 1: Probability Tree for Arithmetic and Geometric Averages

If the value after year one was \$120, the total value will either increase to \$144 (another 20% increase) or decrease to \$108 in the second year. If the value after year one was \$90, the total value will increase to \$108 or decrease to \$81 in the second year. Figure 1 also shows the probability or likelihood that these scenarios will occur.

To calculate the arithmetic mean after two years, I simply determine the expected value of the investment:

$$\text{Expected Value of Investment} = 25\%\times\$144 + 50\%\times\$105 + 25\%\times\$81 = \$110.25$$

Compare that value to the value I obtain if I assume the investment grows at the arithmetic growth rate for two years: $\$100 \times (1+5\%)^2 = \$110.25$

I also compare the figure to the value I obtain if the investment grows a the geometric mean for two years: $\$100 \times (1+3.92\%)^2 = \$108$

Put simply, if I rely on the arithmetic mean I obtain the correct expected value after two years. This is why I recommend using the arithmetic mean for the purpose of determining the market risk premium.

Q. DOES STAFF CURRENTLY RELY ON THE HISTORIC GEOMETRIC AVERAGE TO CALCULATE THE MRP?

No. The current staff testimony does not calculate a geometric average over the historically experienced returns in the stock market.[15] The testimony cited in the Rigsby Surrebuttal was put forth by Mr. Parcell, an independent consultant. Staff currently uses two market risk premiums: (1) the arithmetic average over historic market risk premia and (2) a current MRP that is determined so that the market risk premium that is consistent with current data on expected market returns using Value Line data. In other words, the staff testimony attempts to capture the expected market risk premium and not to obtain and estimate of past performance. Thus, staff's concept is consistent with the notion that investors care about expected returns.

[15] Neither did the Testimony of Juan A. Manrique in W-013003A-09-0343.

E. The Rigsby Direct's Reliance on Non-Standard DCF

Q. PLEASE COMMENT ON THE RIGSBY SURREBUTTAL THAT THE SAMPLE COMPANIES ARE NOT "PURE-PLAY" AND HIS NON-STANDARD DCF METHOD HELPS ELIMINATE THE IMPACT OF UNREGULATED SEGMENTS.

A. A pure-play company is an investment term referring to companies with operations only in one line of business. While many companies have several business segments, it is difficult to find an industry that is more concentrated in the target industry than the water companies included by Mr. Rigsby. As shown in the Villadsen Direct, Table No. BV-3, the average percent regulated activities for American States Water, Aqua America, California Water, and SJW Water is 95.8%, which is very close to being pure-play. Similarly, the gas LDCs included by Mr. Rigsby average over 88% regulated activities and my subsample is a little above 89%, so this sample is also close to being a pure-play in the gas distribution industry.[16] Therefore, there is no need to eliminate the impact of unregulated segments for the water sample and very little if any reason for the gas LDC sample.

Q. DO YOU HAVE ANY OTHER COMMENTS ON THE RIGSBY SURREBUTTAL'S SECTION ON WHY THE RIGSBY DIRECT RELIES ON A NON-STANDARD DCF?

A. Yes. The Rigsby Surrebuttal cites Willard T. Carleton and Roger A. Morin in this section of the surrebuttal. Dr. Morin does not rely on the non-standard DCF methodology relied upon by Mr. Rigsby. For example, Dr. Morin's text, "New Regulatory Finance,"[17] shows two versions of the sustainable growth model[18]

$$g = b \times r \qquad \textbf{and} \qquad g = b \times r + s\,v \qquad (2)$$

[16] See Tables No. BV-3 and BV-14, which summarizes the percentages of regulated assets in the samples.
[17] Roger A. Morin, "*New Regulatory Finance*," Public Utilities Report 2006, ("Morin (2006)"), p. 303-307. Attached to this rejoinder as Attachment C.
[18] Morin (2006) p. 303 and 306, respectively.

where g equals the growth rate, b is the retention ratio, r is the expected future return on book equity, s is the expected growth in shares and v is the profitability of equity investments. Further, Dr. Morin's text has an example of implementing the sustainable growth model that relies on the standard formula.[19] While I have been unable to find recent publications of Dr. Carleton that demonstrate his position, he published a study showing that analysts' forecast dominate historical trends for the purpose of implementing the DCF. In this study, Dr. Carleton clearly relied on the standard DCF formula.[20] Thus, not only did Dr. Carleton not rely on a non-standard DCF model, but he favored analysts growth forecasts over historical growth rates.

Q. DOES THE FACT THAT YOU DO NOT COMMENT ON SOME ASPECTS OF THE SUBMITTED TESTIMONIES MEAN THAT YOU AGREE?

A. No, it does not.

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes.

[19] Morin (2006) p. 305.

[20] James H. Vander Weide and Willard T. Carleton, "Investor Growth Expectations: Analysts vs. History," *Journal of Portfolio Management*, Spring 1988, equation (2). The article is attached to this rejoinder as Attachment D.

SUPPORTING TABLES AND WORK PAPERS

Company	Decision [1]	Date [2]	Common Equity [3]	Allowed Rate of Return on Equity [4]
Bella Vista Water Company	65350	11/1/2002	68.1%	9.1%
Clearwater Utilities	66782	2/13/2004	100.0%	9.1%
Arizona Water Company	66849	3/19/2004	66.2%	9.2%
AZ-American Water Co. (Citizens)	67093	6/30/2004	39.9%	9.0%
Rio Rico Utilities	67279	10/5/2004	100.0%	8.7%
Las Quintas Serenas Water Co.	67455	1/4/2005	100.0%	8.1%
Forest Highlands	67983	7/18/2005	100.0%	8.1%
Pineview Water Co.	67989	7/18/2005	51.0%	8.9%
Chaparral City Water	68176	9/30/2005	58.8%	9.3%
Arizona Water Company	68302	11/14/2005	73.4%	9.1%
AZ-American Water Co. (PV)	68858	7/28/2006	36.7%	10.4%
Black Mountain Sewer	69164	12/5/2006	100.0%	9.6%
Far West Water & Sewer Co.	69335	2/20/2007	56.0%	9.3%
Goodman Water Co.	69404	4/16/2007	100.0%	9.3%
AZ-American Water Co. (Mohave)	69440	5/1/2007	40.0%	10.7%
Gold Canyon Sewer Company	69664	6/28/2007	100.0%	9.2%
Utility Source	70140	1/23/2008	100.0%	8.9%
Cordes Lakes Water Company	70710	2/27/2008	100.0%	10.0%
AZ -American (Sun City Wastewater)	70209	3/20/2008	38.5%	10.6%
AZ-American (Anthem)	70372	6/13/2008	39.2%	8.8%
Arizona Water Company	71845	8/24/2010	45.9%	9.5%
Global Water	71878	9/14/2010	55.5%	9.0%
Rio Rico Utilities	72059	1/6/2011	80.0%	9.5%
Coronado Utilities	*71956*	*5/5/2010*	*36.7%*	*9.0%*
Litchfield Park Service Company	*72026*	*12/10/2010*	*82.4%*	*8.0%*
Sahuarita Water Company	*72177*	*2/11/2011*	*82.2%*	*10.3%*
Bella Vista Water Company	*72251*	*4/7/2011*	*77.4%*	*9.5%*
Average			71.4%	9.3%
Average *			64.1%	9.2%

Companies in italic are in addition to those listed in the Villadsen Rebuttal.
* Excluding Companies with 100% of common equity and Arizona-American Water Co.

Table BV-RJ1: Allowed Return on Equity and Common Equity Percentages in Recent AZ Water Decisions

		Implied ROE at AZ-Am Equity %		
Company	Implied RoR	Villadsen / Company	Manrique / Staff	Rigsby / RUCO
Bella Vista Water Company	8.1%	12.0%	14.3%	15.3%
Clearwater Utilities	9.1%	15.9%	18.7%	20.0%
Arizona Water Company	9.0%	13.5%	16.0%	17.0%
AZ-American Water Co. (Citizens)	6.5%	7.6%	9.4%	10.0%
Rio Rico Utilities	8.7%	15.0%	17.7%	18.9%
Las Quintas Serenas Water Co.	8.1%	13.7%	16.2%	17.3%
Forest Highlands	8.1%	13.7%	16.2%	17.3%
Pineview Water Co.	7.2%	9.4%	11.4%	12.2%
Chaparral City Water	7.6%	10.7%	12.8%	13.7%
Arizona Water Company	8.9%	13.6%	16.1%	17.2%
AZ-American Water Co. (PV)	7.2%	8.9%	10.7%	11.5%
Black Mountain Sewer	9.6%	17.0%	19.9%	21.3%
Far West Water & Sewer Co.	7.8%	10.8%	12.9%	13.8%
Goodman Water Co.	9.3%	16.3%	19.2%	20.5%
AZ-American Water Co. (Mohave)	7.7%	9.9%	11.9%	12.7%
Gold Canyon Sewer Company	9.2%	16.1%	18.9%	20.2%
Utility Source	8.9%	15.4%	18.2%	19.4%
Cordes Lakes Water Company	10.0%	17.9%	20.9%	22.4%
AZ -American (Sun City Wastewater)	7.5%	9.4%	11.3%	12.1%
AZ-American (Anthem)	6.7%	7.9%	9.6%	10.3%
Arizona Water Company	7.7%	10.0%	12.0%	12.8%
Global Water	7.9%	10.7%	12.8%	13.7%
Rio Rico Utilities	8.7%	14.1%	16.7%	17.8%
Coronado Utilities	*7.2%*	*8.4%*	*10.3%*	*11.0%*
Litchfield Park Service Company	*7.7%*	*11.9%*	*14.2%*	*15.1%*
Sahuarita Water Company	*9.2%*	*15.5%*	*18.3%*	*19.5%*
Bella Vista Water Company	*8.8%*	*13.9%*	*16.5%*	*17.6%*
Average	8.2%	12.6%	14.9%	16.0%
Average without AZ-Am	8.5%	13.4%	15.9%	17.0%
Average without AZ-Am and Companies with 100% Equity	8.1%	11.9%	14.2%	15.1%
2010-11 Average	8.2%	12.1%	14.4%	15.4%

Companies in italic are in addition to those listed in the Villadsen Rebuttal.

Table BV-RJ2: Implied RoR and ROE

	Date of Forecast	Forecast for	ATG	ATO	LG	NJR*	GAS	NWG	PNY	SJI**	SWX	WGL
EPS												
Forecast	Mar-05	2008	$ 2.63	$ 2.15	$ 2.15	$ 2.00	$ 2.52	$ 2.42	$ 1.50	$ 1.90	$ 2.20	$ 2.42
Realized		2008	$ 2.71	$ 2.00	$ 2.64	$ 2.70	$ 2.63	$ 2.57	$ 1.49	$ 2.27	$ 1.39	$ 2.44
Forecast	Sep-05	2009	$ 2.80	$ 2.35	$ 2.25	$ 2.17	$ 2.70	$ 2.65	$ 1.75	$ 2.10	$ 2.40	$ 2.50
Realized		2009	$ 2.88	$ 1.97	$ 2.92	$ 2.40	$ 2.97	$ 2.83	$ 1.67	$ 2.38	$ 1.94	$ 2.53
Forecast	Mar-06	2010	$ 2.90	$ 2.50	$ 2.80	$ 2.20	$ 2.80	$ 2.85	$ 1.75	$ 2.30	$ 2.30	$ 2.40
Realized		2010	$ 3.00	$ 2.16	$ 2.43	$ 2.46	$ 3.03	$ 2.73	$ 1.55	$ 2.70	$ 2.27	$ 2.27
Shares												
Forecast	Mar-05	2008	77.7	93.3	21.5	38.5	44.4	28.3	74.0	29.5	39.0	48.7
Realized		2008	76.9	90.8	22.0	42.1	45.1	26.5	73.3	29.7	44.2	49.9
Forecast	Sep-05	2009	78.0	97.0	21.5	37.5	44.5	29.0	73.0	30.0	41.5	48.7
Realized		2009	77.5	92.6	22.2	41.6	45.3	26.5	73.3	29.8	45.1	50.1
Forecast	Mar-06	2010	78.0	100.0	24.0	39.0	44.6	28.0	75.0	31.0	45.0	48.8
Realized		2010	78.0	90.2	22.3	41.4	45.6	26.7	72.3	29.9	45.6	50.5
Earnings												
Forecast	Mar-05	2008	$ 204.5	$ 200.7	$ 46.2	$ 77.0	$ 111.7	$ 68.5	$ 111.0	$ 56.1	$ 85.8	$ 117.7
Realized		2008	$ 208.4	$ 181.6	$ 58.1	$ 113.6	$ 118.7	$ 68.1	$ 109.2	$ 67.5	$ 61.4	$ 121.8
Forecast minus Realized			$ (3.9)	$ 19.0	$ (11.8)	$ (36.6)	$ (7.0)	$ 0.4	$ 1.8	$ (11.4)	$ 24.4	$ (4.1)
Forecast	Sep-05	2009	$ 218.4	$ 228.0	$ 48.4	$ 81.3	$ 120.2	$ 76.9	$ 127.8	$ 63.0	$ 99.6	$ 121.8
Realized		2009	$ 223.3	$ 182.3	$ 64.7	$ 99.8	$ 134.4	$ 75.1	$ 122.4	$ 70.9	$ 87.5	$ 126.9
Forecast minus Realized			$ (4.9)	$ 45.6	$ (16.4)	$ (18.6)	$ (14.2)	$ 1.8	$ 5.4	$ (7.9)	$ 12.1	$ (5.1)
Forecast	Mar-06	2010	$ 226.2	$ 250.0	$ 67.2	$ 85.8	$ 124.9	$ 79.8	$ 131.3	$ 71.3	$ 103.5	$ 117.1
Realized		2010	$ 234.0	$ 194.7	$ 54.2	$ 101.7	$ 138.0	$ 72.8	$ 112.0	$ 80.6	$ 103.5	$ 114.7
Forecast minus Realized			$ (7.8)	$ 55.3	$ 13.0	$ (15.9)	$ (13.1)	$ 7.0	$ 19.2	$ (9.3)	$ (0.0)	$ 2.4

Sources and Notes:

* Adjusted for NJR's three for two stock split in January 2008
** Adjusted for SJI's two for one stock split in March 2005
[1], [7]: Value Line Sheets for natural gas utility, March 18, 2005.
The forecast is calculated as: Forecast 2006 + 2/3 x (Forecast 08-10 - Forecast 2006)
[2], [4], [6], [8], [10], [12]: Value Line Investment Survey, June 10, 2011
[3], [9]: Value Line Sheets for natural gas utilities, September 16, 2005
[5], [11]: Value Line sheets for natural gas utilities, March 17, 2006
[13]: [1] x [7]

[14]: [2] x [8]
[15]: [13] - [14]
[16]: [3] x [9]
[17]: [4] x [10]
[18]: [16] - [17]
[19]: [5] x [11]
[20]: [6] x [12]
[21]: [19] - [20]

Table BV-RJ3: Gas LDC Forecast and Realized EPS, Common Shares and Income per Value Line

ATTACHMENT A

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Water and wastewater industry annual reestablishment of authorized range of return on common equity for water and wastewater utilities pursuant to Section 367.081(4)(f), F.S.	DOCKET NO. 110006-WS ORDER NO. PSC-11-0287-PAA-WS ISSUED: July 5, 2011

The following Commissioners participated in the disposition of this matter:

ART GRAHAM, Chairman
LISA POLAK EDGAR
RONALD A. BRISÉ
EDUARDO E. BALBIS
JULIE I. BROWN

NOTICE OF PROPOSED AGENCY ACTION
ORDER ESTABLISHING AUTHORIZED RANGE OF RETURNS ON COMMON EQUITY FOR WATER AND WASTEWATER UTILITIES

BY THE COMMISSION:

NOTICE is hereby given by the Florida Public Service Commission that the action discussed herein is preliminary in nature and will become final unless a person whose interests are substantially affected files a petition for a formal proceeding, pursuant to Rule 25-22.029, Florida Administrative Code.

BACKGROUND

Section 367.081(4)(f), Florida Statutes (F.S.), authorizes this Commission to establish, not less than once each year, a leverage formula to calculate a reasonable range of returns on equity (ROE) for water and wastewater (WAW) utilities. The leverage formula methodology currently in use was established in Order No. PSC-01-2514-FOF-WS.[1] On October 23, 2008, this Commission held a formal hearing in Docket No. 080006-WS to allow interested parties to provide testimony regarding the validity of the leverage formula. Based on the record in that proceeding, we approved the 2008 leverage formula in Order No. PSC-08-0846-FOF-WS.[2] In

[1] See Order No. PSC-01-2514-FOF-WS, issued December 24, 2001, in Docket No. 010006-WS, In re: Water and wastewater industry annual reestablishment of authorized range of return on common equity for water and wastewater utilities pursuant to Section 367.081(4)(f), F.S.
[2] See Order No. PSC-08-0846-FOF-WS, issued December 31, 2008, in Docket No. 080006-WS, In re: Water and wastewater industry annual reestablishment of authorized range of return on common equity for water and wastewater utilities pursuant to Section 367.081(4)(f), F.S.

that order, we reaffirmed the methodology that was previously approved in Order No. PSC-01-2514-FOF-WS. In 2010, the Commission established the leverage formula currently in effect by Order No. PSC-10-0401-PAA-WS.[3]

This Order utilizes the current leverage formula methodology established in Order No. PSC-08-0846-FOF-WS. This methodology uses returns on equity (ROE) derived from financial models applied to an index of natural gas utilities. Based on the results of our annual review, there is an insufficient number of WAW utilities that meet the requisite criteria to assemble an appropriate proxy group. Therefore, since 2001, we have used natural gas utilities as the proxy companies for the leverage formula. There are many natural gas utilities that have actively traded stocks and forecasted financial data. We used natural gas utilities that derive at least 49 percent of their revenue from regulated rates. These utilities have market power and are influenced significantly by economic regulation. As explained in the body of this Order, the model results based on natural gas utilities are adjusted to reflect the risks faced by Florida WAW utilities.

Although subsection 367.081(4)(f), F.S., authorizes this Commission to establish a range of returns for setting the authorized ROE for WAW utilities, we retain the discretion to set an ROE for WAW utilities based on record evidence in any proceeding. If one or more parties file testimony in opposition to the use of the leverage formula, we will determine the appropriate ROE based on the evidentiary record in that proceeding. We have jurisdiction pursuant to Section 367.081, F.S.

DECISION

The current leverage formula methodology was applied using updated financial data, and is calculated as follows:

Return on Common Equity = 7.13% + 1.610/Equity Ratio

Where the Equity Ratio = Common Equity / (Common Equity + Preferred Equity + Long-Term and Short-Term Debt)

Range: 8.74% @ 100% equity to 11.16% @ 40% equity

Section 367.081(4)(f), F.S., authorizes us to establish a leverage formula to calculate a reasonable range of returns on equity for WAW utilities. We must establish this leverage formula not less than once a year.

We note that the leverage formula depends on four basic assumptions:

1) Business risk is similar for all WAW utilities;

[3] See Order No. PSC-10-0401-PAA-WS, issued June 18, 2010, in Docket No. 100006-WS, In re: Water and wastewater industry annual reestablishment of authorized range of return on common equity for water and wastewater utilities pursuant to Section 367.081(4)(f), F.S.

2) The cost of equity is an exponential function of the equity ratio but a linear function of the debt to equity ratio over the relevant range;

3) The marginal weighted average cost of investor capital is constant over the equity ratio range of 40 percent to 100 percent; and

4) The debt cost rate at an assumed Moody's Baa3 bond rating, plus a 50 basis point private placement premium and a 50 basis point small utility risk premium, represents the average marginal cost of debt to a Florida WAW utility over an equity ratio range of 40 percent to 100 percent.

For these reasons, the leverage formula is assumed to be appropriate for the average Florida WAW utility.

The leverage formula relies on two ROE models. We adjusted the results of these models to reflect differences in risk and debt cost between the index of companies used in the models and the average Florida WAW utility. Both models include a four percent adjustment for flotation costs. The models are as follows:

- A Discounted Cash Flow (DCF) model applied to an index of natural gas (NG) utilities that have publicly traded stock and are followed by the Value Line Investment Survey (Value Line). This DCF model is an annual model and uses prospective growth rates. The index consists of 9 companies that derive at least 49 percent of their total revenue from gas distribution service. These companies have a median Standard and Poor's bond rating of A.

- A Capital Asset Pricing Model (CAPM) using a market return for companies followed by Value Line, the average yield on the Treasury's long-term bonds projected by the Blue Chip Financial Forecasts, and the average beta for the index of NG utilities. The market return for the 2011 leverage formula was calculated using a quarterly DCF model.

We averaged the indicated returns of the above models and adjusted the result as follows:

- A bond yield differential of 57 basis points is added to reflect the difference in yields between an A/A2 rated bond, which is the median bond rating for the NG utility index, and a BBB-/Baa3 rated bond. Florida WAW utilities are assumed to be comparable to companies with the lowest investment grade bond rating, which is Baa3. This adjustment compensates for the difference between the credit quality of "A" rated debt and the credit quality of the minimum investment grade rating.

- A private placement premium of 50 basis points is added to reflect the difference in yields on publicly traded debt and privately placed debt, which is illiquid. Investors require a premium for the lack of liquidity of privately placed debt.

- A small utility risk premium of 50 basis points is added because the average Florida WAW utility is too small to qualify for privately placed debt.

After the above adjustments, the resulting cost of equity estimate is included in the average capital structure for the NG utilities. The derivation of the recommended leverage formula using the current methodology with updated financial data is presented in Attachment 1.

For administrative efficiency, the leverage formula is used to determine the appropriate return for an average Florida WAW utility. Traditionally, the Commission has applied the same leverage formula to all WAW utilities. As is the case with other regulated companies under the our jurisdiction, we have discretion in the determination of the appropriate ROE based on the evidentiary record in any proceeding. If one or more parties file testimony in opposition to the use of the leverage formula, we will determine the appropriate ROE based on the evidentiary record in that proceeding.

Based on the foregoing, we find it appropriate to cap returns on common equity at 11.16 percent for all WAW utilities with equity ratios less than 40 percent. We believe that this will discourage imprudent financial risk. This cap is consistent with the methodology in Order No. PSC-08-0846-FOF-WS.

Based on the foregoing, it is

ORDERED by the Florida Public Service Commission that the leverage formula methodology, summarized herein and in Attachment 1, is hereby approved. It is further

ORDERED that Attachment 1 is incorporated herein by reference. It is further

ORDERED that returns on common equity are hereby capped at 11.16 percent for all water and wastewater utilities with equity ratios of less than 40 percent in order to discourage imprudent financial risk. It is further

ORDERED that the provisions of this Order, issued as proposed agency action, shall become final and effective upon the issuance of a Consummating Order unless an appropriate petition, in the form provided by Rule 28-106.201, Florida Administrative Code, is received by the Commission Clerk, 2540 Shumard Oak Boulevard, Tallahassee, Florida 32399-0850, by the close of business on the date set forth in the "Notice of Further Proceedings" attached hereto. It is further

ORDERED that in the event this Order becomes final, this docket shall remain open to allow our staff to monitor changes in capital market conditions and to readdress the reasonableness of the leverage formula as conditions warrant.

By ORDER of the Florida Public Service Commission this 5th day of July, 2011.

Hong Wang

HONG WANG
Chief Deputy Commission Clerk
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, Florida 32399
(850) 413-6770
www.floridapsc.com

CERTIFICATE OF SERVICE

In accordance with Section 28-106.110, Florida Administrative Code, documents are electronically served on each party or each party's counsel or representative at the last e-mail address of record. Where there is no e-mail address, documents are electronically served via the last facsimile number of record and, if unavailable, documents are served via U.S. Mail at the last address of record.

(S E A L)

CMK

NOTICE OF FURTHER PROCEEDINGS OR JUDICIAL REVIEW

The Florida Public Service Commission is required by Section 120.569(1), Florida Statutes, to notify parties of any administrative hearing that is available under Section 120.57, Florida Statutes, as well as the procedures and time limits that apply. This notice should not be construed to mean all requests for an administrative hearing will be granted or result in the relief sought.

Mediation may be available on a case-by-case basis. If mediation is conducted, it does not affect a substantially interested person's right to a hearing.

The action proposed herein is preliminary in nature. Any person whose substantial interests are affected by the action proposed by this order may file a petition for a formal proceeding, in the form provided by Rule 28-106.201, Florida Administrative Code. This petition must be received by the Office of Commission Clerk, 2540 Shumard Oak Boulevard, Tallahassee, Florida 32399-0850, by the close of business on July 26, 2011.

In the absence of such a petition, this order shall become final and effective upon the issuance of a Consummating Order.

Any objection or protest filed in this/these docket(s) before the issuance date of this order is considered abandoned unless it satisfies the foregoing conditions and is renewed within the specified protest period.

SUMMARY OF RESULTS

Leverage Formula Update

	Updated Results	Currently in Effect
(A) DCF ROE for Natural Gas Index	8.25%	8.92%
(B) CAPM ROE for Natural Gas Index	9.40%	8.58%
AVERAGE	8.83%	8.75%
Bond Yield Differential	0.57%	0.53%
Private Placement Premium	0.50%	0.50%
Small-Utility Risk Premium	0.50%	0.50%
Adjustment to Reflect Required Equity Return at a 40% Equity Ratio	0.76%	0.57%
Cost of Equity for Average Florida WAW Utility at a 40% Equity Ratio	11.16%	10.85%

2010 Leverage Formula (Currently in Effect)

Return on Common Equity = 7.46% + 1.356/ER

Range of Returns on Equity = 8.82% - 10.85%

2011 Leverage Formula

Return on Common Equity = 7.13% + 1.610/ER

Range of Returns on Equity = 8.74% - 11.16%

Marginal Cost of Investor Capital
Average Water and Wastewater Utility

Capital Component	Ratio	Marginal Cost Rate	Weighted Marginal Cost Rate
Common Equity	49.30%	10.40%	5.13%
Total Debt	50.70%	7.13% *	3.61%
	100.00%		8.74%

A 40% equity ratio is the floor for calculating the required return on common equity. The return on equity at a 40% equity ratio is 7.13% + 1.610/.40 = 11.16%

Marginal Cost of Investor Capital
Average Water & Wastewater Utility at 40% Equity Ratio

Capital Component	Ratio	Marginal Cost Rate	Weighted Marginal Cost Rate
Common Equity	40.00%	11.16%	4.46%
Total Debt	60.00%	7.13% *	4.28%
	100.00%		8.74%

Where: ER = Equity Ratio = Common Equity/(Common Equity + Preferred Equity + Long-Term Debt + Short-Term Debt)

* Assumed Baa3 rate for March 2011 plus a 50 basis point private placement premium and a 50 basis point small utility risk premium.

Sources: Moody's Credit Perspectives and Value Line Selection and Opinion

Attachment 1
Page 3 of 6

ANNUAL DISCOUNTED CASH FLOW MODEL

INDEX NATURAL GAS INDEX

VALUE LINE ISSUE: March 11, 2011

COMPANY	DIV0	DIV1	DIV2	DIV3	DIV4	EPS4	ROE4	GR1-4	GR4+	APRIL HI-PR	APRIL LO-PR	APRIL AVER-PR
AGL RESOURCES INC.	1.80	1.84	1.88	1.92	1.96	3.75	12.50	1.0213	1.0597	41.61	38.58	40.095
ATMOS ENERGY CORPORATION	1.36	1.38	1.40	1.43	1.45	2.70	9.00	1.0166	1.0417	34.94	32.76	33.850
LACLEDE GROUP, INC.	1.61	1.65	1.70	1.75	1.80	3.15	10.00	1.0294	1.0429	38.98	36.30	37.640
NICOR INC.	1.86	1.86	1.86	1.86	1.86	2.80	10.00	1.0000	1.0336	55.50	52.22	53.860
NORTHWEST NATURAL GAS CO.	1.72	1.76	1.77	1.79	1.80	3.20	10.00	1.0075	1.0438	46.37	44.08	45.225
PIEDMONT NATURAL GAS CO., INC.	1.15	1.19	1.23	1.27	1.31	1.90	12.50	1.0325	1.0388	32.00	29.00	30.500
SOUTH JERSEY INDUSTRIES, INC.	1.48	1.60	1.72	1.86	2.00	4.10	17.50	1.0772	1.0896	58.03	54.05	56.040
SOUTHWEST GAS CORPORATION	1.05	1.10	1.15	1.20	1.25	2.00	9.00	1.0435	1.0338	39.89	36.97	38.430
WGL HOLDINGS, INC.	1.53	1.57	1.61	1.64	1.68	2.70	10.00	1.0228	1.0378	39.68	36.93	38.305
AVERAGE				1.7575								

S&P STOCK GUIDE: MAY 2011 with APRIL Stock Prices

Stock Price w/four Percent Flotation Costs		$39.89		Annual	8.25%	ROE
Cash Flows	1.4019	1.3315	1.2628	1.1982	1.1428	33.5503
Present Value of Cash Flows	39.8875					

NOTE: The cash flows for this multi-stage DCF Model are derived using the average forecasted dividends and the near term and long term growth rates. The discount rate, 8.25%, equates the cash flows with the average stock price less flotation cost.
$39.89 = April 2011 average stock price with a 4% flotation cost.
8.25% = Cost of equity required to match the current stock price with the expected cash flows.
Sources:
1. Stock Prices - S&P Stock Guide, May 2011 Edition.
2. DPS, EPS, ROE - Value Line Issue: March 11, 2011.

Capital Asset Pricing Model Cost of Equity for
Water and Wastewater Industry

CAPM analysis formula

K	=	RF + Beta(MR - RF)
K	=	Investor's required rate of return
RF	=	Risk-free rate (Blue Chip forecast for Long-term Treasury bond, May 1, 2011)
Beta	=	Measure of industry-specific risk (Average for water utilities followed by Value Line)
MR	=	Market return (Value Line Investment Survey For Windows, May 2011)
9.40%	=	4.94% + 0.67(11.28% - 4.94%) + 0.20%

Note: We calculated the market return using a quarterly DCF model for a large number of dividend paying stocks followed by Value Line. For May 2011, the result was 11.28%. We also added 20 basis points to the CAPM result to allow for a four-percent flotation cost.

Attachment 1
Page 5 of 6

BOND YIELD DIFFERENTIALS									
Public Utility Long Term Bond Yield Averages									
120 Month Average Spread		0.1424		0.1424		0.1424		0.1424	
MONTH/YEAR	A2	SPREAD	A3	SPREAD	Baa1	SPREAD	Baa2	SPREAD	Baa3
Mar-11	5.54	0.15	5.69	0.15	5.84	0.15	5.99	0.15	6.14
Sources: Moody's Credit Perspectives and Value Line Selection and Opinion									

INDEX STATISTICS AND FACTS

Natural Gas Distribution Proxy Group	S & P Bond Rating	% of Gas Revenue	V/L Market Capital ($ millions)	Equity Ratio	Value Line Beta
AGL Resources Inc.	A-	63%	$ 3,247.10	40.12%	0.75
Atmos Energy Corporation	BBB+	65%	$ 3,102.80	48.58%	0.65
Laclede Group, Inc.	A	51%	$ 862.82	54.30%	0.60
NICOR Inc.	AA	81%	$ 2,541.71	54.45%	0.75
Northwest Natural Gas Co.	A+	94%	$ 1,217.71	44.65%	0.60
Piedmont Natural Gas Co., Inc.	A	100%	$ 2,280.01	49.77%	0.65
South Jersey Industries, Inc.	A	51%	$ 1,702.11	44.81%	0.65
Southwest Gas Corporation	BBB	83%	$ 1,784.55	47.49%	0.75
WGL Holdings, Inc.	AA-	49%	$ 1,985.64	59.55%	0.65
Average:				49.30%	0.67
Sources:					

Value Line Investment Survey for Windows, May 2011
S.E.C. Forms 10Q and 10K for Companies
AUS Utility Report, May 2011

ATTACHMENT B

S&P 500

Equity Indices |

S&P INDICES

BLOOMBERG℠ Homepage:
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Mumbai	+91.22.26598359
Dubai	+971.4.3727100

About the Index

Widely regarded as the best single gauge of the U.S. equities market, this world-renowned index includes 500 leading companies in leading industries of the U.S. economy. Although the S&P 500® focuses on the large cap segment of the market, with approximately 75% coverage of U.S. equities, it is also an ideal proxy for the total market. S&P 500 is part of a series of S&P U.S. indices that can be used as building blocks for portfolio construction.

S&P 500 is maintained by the S&P Index Committee, a team of Standard & Poor's economists and index analysts, who meet on a regular basis. The goal of the Index Committee is to ensure that the S&P 500 remains a leading indicator of U.S. equities, reflecting the risk and return characteristics of the broader large cap universe on an on-going basis. The Index Committee also monitors constituent liquidity to ensure efficient portfolio trading while keeping index turnover to a minimum.

Index Methodology

The S&P Index Committee follows a set of published guidelines for maintaining the index. Complete details of these guidelines, including the criteria for index additions and removals, policy statements, and research papers are available on the Web site at www.indices.standardandpoors.com. These guidelines provide the transparency required and fairness needed to enable investors to replicate the index and achieve the same performance as the S&P 500.

Criteria for Index Additions

- *U.S. Company.* Determining factors include location of the company's assets & revenues, its corporate structure, its SEC filing type, and its exchange listings.
- *Market Capitalization.* Companies with market cap in excess of US$ 4 billion. This minimum is reviewed from time to time to ensure consistency with market conditions.
- *Public Float.* There must be public float of at least 50%.
- *Financial Viability.* Companies should have four consecutive quarters of positive as-reported earnings, where as-reported earnings are defined as GAAP Net Income excluding discontinued operations and extraordinary items.
- *Adequate Liquidity and Reasonable Price.* The ratio of annual dollar value traded to float adjusted market capitalization for the company should be 1.0 or greater. Very low stock prices can affect a stock's liquidity.
- *Sector Representation.* Companies' industry classifications contribute to the maintenance of a sector balance that is in line with the sector composition of the universe of eligible companies within the defined market cap range.
- *Company Type.* All U.S. common equities listed on the NYSE (including NYSE Arca and NYSE Amex) and the NASDAQ stock market. REITs (excluding mortgage REITs) and business development companies (BDCs) are also eligible for inclusion. Closed end funds, ETF's, ADR's, ADS's and certain other types of securities are ineligible for inclusion. See methodology for details.

Continued index membership is not necessarily subject to these guidelines. The Index Committee strives to minimize unnecessary turnover in index membership and each removal is determined on a case-by-case basis.

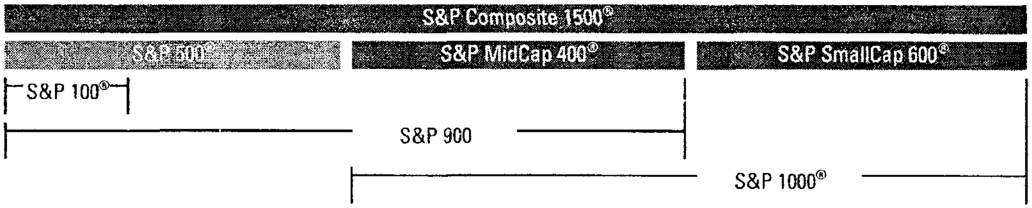
Criteria for Index Removals

- Companies that substantially violate one or more of the criteria for index inclusion.
- Companies involved in merger, acquisition, or significant restructuring such that they no longer meet the inclusion criteria.

S&P 500

June 30, 2011

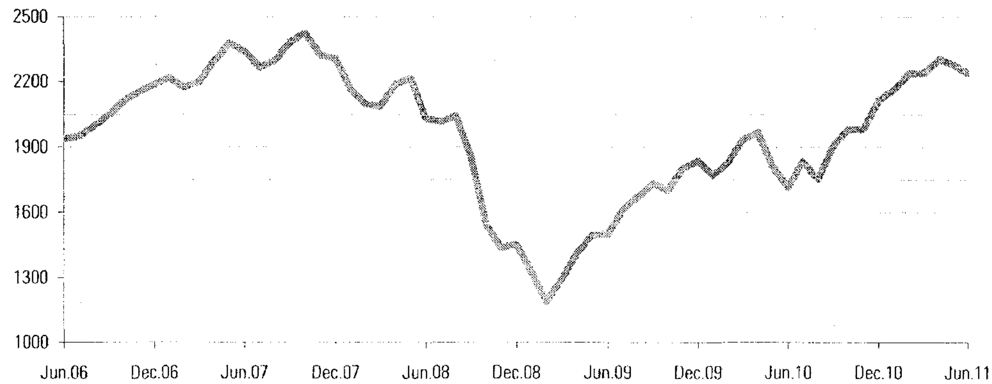
The large cap segment of the U.S. equities market, covering approximately 75% of the U.S. equities market.



Index Performance

Returns	1 Month	-1.67%
	3 Month	0.10%
	YTD	6.02%
Annualized	1 Year	30.69%
Returns	3 Years	3.34%
	5 Years	2.94%
	7 Years	4.22%
Annualized	3 Years Std Dev	21.21%
Risk	5 Years Std Dev	17.88%
Sharpe Ratio	3 Years	0.0713
	5 Years	0.0442

5 Year Historical Performance



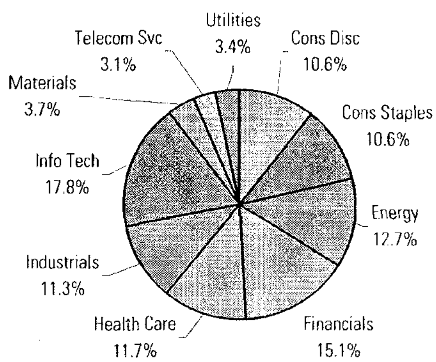
Top 10 Companies By Weight

Country	Company	Float Adjusted Market Cap ($ Million)	Index Weight	Sector Weight	Investable Weight Factor	GICS® Sector
United States	Exxon Mobil Corp	400,884.9	3.34%	26.31%	1.00	Energy
United States	Apple Inc.	310,412.5	2.58%	14.52%	1.00	Information Technology
United States	Intl Business Machines Corp	207,781.4	1.73%	9.72%	1.00	Information Technology
United States	Chevron Corp	206,736.2	1.72%	13.57%	1.00	Energy
United States	General Electric Co	200,018.7	1.66%	14.78%	1.00	Industrials
United States	Microsoft Corp	192,941.7	1.61%	9.02%	0.88	Information Technology
United States	AT&T Inc	186,010.0	1.55%	50.04%	1.00	Telecommunication Services
United States	Johnson & Johnson	182,340.8	1.52%	12.95%	1.00	Health Care
United States	Procter & Gamble	177,442.6	1.48%	13.87%	1.00	Consumer Staples
United States	Pfizer Inc	162,763.3	1.35%	11.56%	1.00	Health Care

Tickers

S&P 500	
BLOOMBERG℠	SPX
Reuters	.SPX
Total Return	
BLOOMBERG℠	SPTR
Reuters	.SPXTR

Sector Breakdown



Index Portfolio Characteristics

Number of Companies	500
Adjusted Market Cap ($ Billion)	12,017.49
Company Size By Market Cap (Adjusted $ Billion):	
Average	24.03
Largest	400.88
Smallest	1.65
Median	11.43
% Weight Largest Company	3.34%
Top 10 Holdings (% Market Cap Share)	18.53%

Source: Standard & Poor's. Data as of June 30, 2011. Charts and graphs are provided for illustrative purposes. Past performance is not a guarantee of future results.

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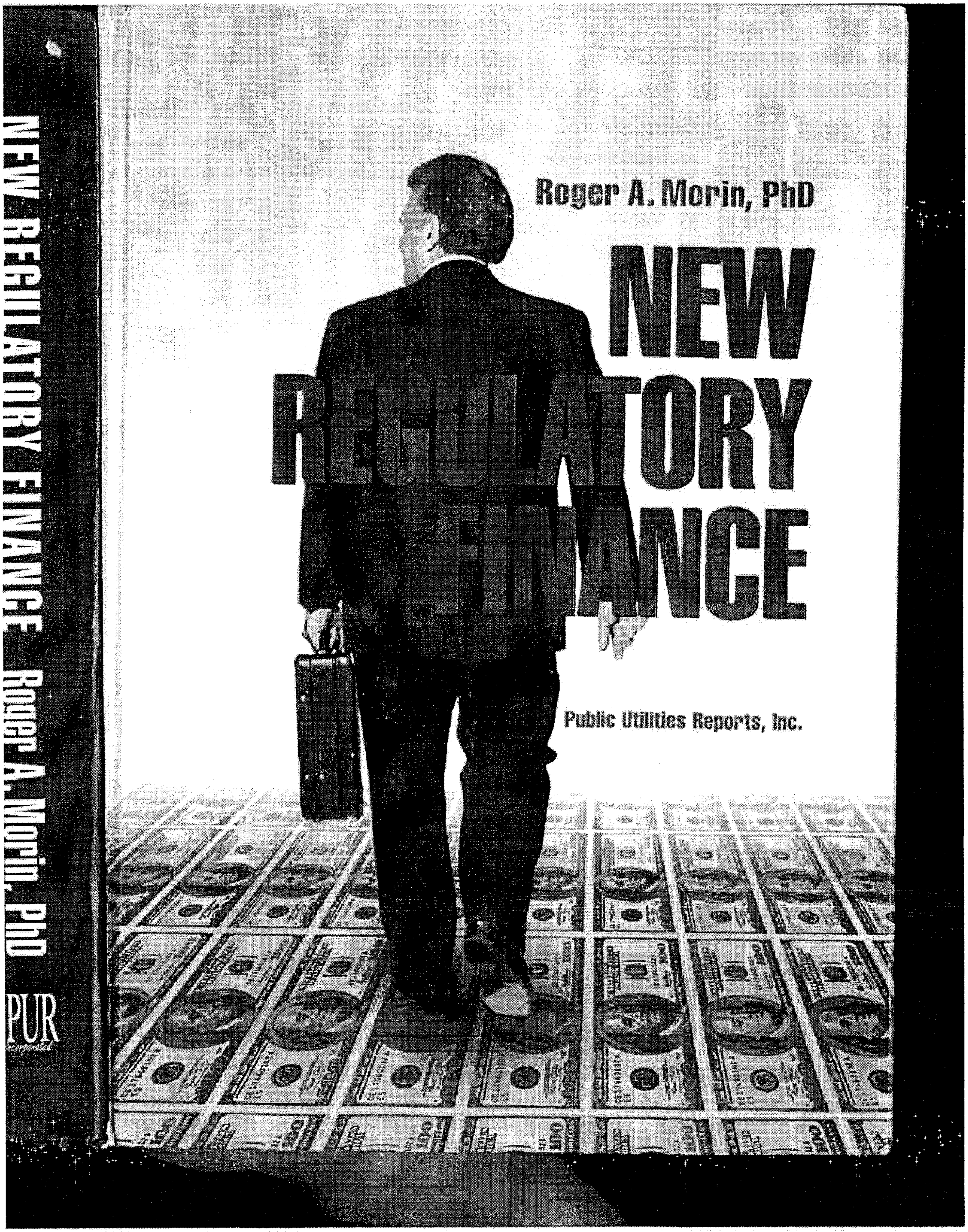
ATTACHMENT C


NEW REGULATORY FINANCE
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PUR
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NEW
REGULATORY
FINANCE
Public Utilities Reports, Inc.

First Printing, June 2006

Library of Congress Cataloging-in-Publication Data
Morin, Roger A.
New regulatory finance/Roger A. Morin.
p. cm.
Rev. ed. of: Regulatory finance. 1994.
Includes bibliographical references and index.
ISBN-13: 978-0-910325-05-9
ISBN-10: 0-910325-05-7
1. Public utilities—United States—Finance. 2. Public utilities—Rate of return. 3. Public utilities—Law and legislation—United States. 4. Capital costs—United States. I. Morin, Roger A. Regulatory finance. II. Public Utilities Reports, Inc. III. Title.

HD2766.M62 2006
363.6068'1—dc22

2006018026

Printed in the United States of America

expectations. The sheer volume of earnings forecasts available from the investment community relative to the scarcity of dividend forecasts attests to their importance. The fact that these investment information providers focus on growth in earnings rather than growth in dividends indicates that the investment community regards earnings growth as a superior indicator of future long-term growth. Surveys of analytical techniques actually used by analysts reveal the dominance of earnings and conclude that earnings are considered far more important than dividends. Finally, Value Line's principal investment rating assigned to individual stocks, Timeliness Rank, is based primarily on earnings, accounting for 65% of the ranking.

Historical Growth Rates Versus Analysts' Forecasts

Obviously, historical growth rates as well as analysts' forecasts provide relevant information to the investor with regard to growth expectations. Each proxy for expected growth brings information to the judgment process from a different light. Neither proxy is without blemish; each has advantages and shortcomings. Historical growth rates are available and easily verifiable, but may no longer be applicable if structural shifts have occurred. Analysts' growth forecasts may be more relevant since they encompass both history and current changes, but are nevertheless imperfect proxies.

9.5 Growth Estimates: Sustainable Growth Method

The third method of estimating the growth component in the DCF model, alternately referred to as the "sustainable growth" or "retention ratio" method, can be used by investment analysts to predict future growth in earnings and dividends. In this method, the fraction of earnings expected to be retained by the company, b, is multiplied by the expected return on book equity, r, to produce the growth forecast. That is,

$$g = b \times r$$

The conceptual premise of the method, enunciated in Chapter 8, Section 8.4, is that future growth in dividends for existing equity can only occur if a portion of the overall return to investors is reinvested into the firm instead of being distributed as dividends.

For example, if a company earns 12% on equity, and pays all the earnings out in dividends, the retention factor, b, is zero and earnings per share will not grow for the simple reason that there are no increments to the asset base (rate base). Conversely, if the company retains all its earnings and pays no dividends, it would grow at an annual rate of 12%. Or again, if the company earns 12% on equity and pays out 60% of the earnings in dividends, the retention factor is 40%, and earnings growth will be 40% × 12% = 4.8% per year.

In implementing the method, both 'b' and 'r' should be the rate that the market expects to prevail in the future. If no explicit forecast of 'b' is available, it is reasonable to assume that the utility's future retention ratio will, on average, remain unchanged from its present level. Or, it can be estimated by taking a weighted average of past retention ratios as a proxy for the future on the grounds that utilities' target retention ratios are usually, although not always, stable.[14]

Both historical and forecast values of 'r' can be used to estimate g, although forecast values are superior. The use of historical realized book returns on equity rather than the expected return on equity is questionable since reliance on achieved results involves circular reasoning. Realized returns are the results of the regulatory process itself, and are also subject to tests of fairness and reasonableness. As a gauge of the expected return on book equity, either direct published analysts' forecasts of the long-run expected return on equity, or authorized rates of return in recent regulatory cases can be used as a guide. As a floor estimate, it seems reasonable for investors to expect allowed equity returns by state regulatory commissions to be in excess of the current cost of debt to the utility in question.

Another way of obtaining the expected 'r' is to examine its fundamental determinants. Since earnings per share, E, can be stated as dividends per share, D, divided by the payout ratio $(1 - b)$, the earnings per share capitalized by investors can be inferred by dividing the current dividend by an expected payout ratio. Provided that a utility company follows a fairly stable dividend policy, the possibility of error is less when estimating the payout than when estimating the expected return on equity or the expected growth rate. Using this approach, and denoting book value per share by B, the expected return on equity is:

$$r = E/B = (D/(1 - b)) / B \qquad (9\text{-}9)$$

Estimates of the expected payout ratio can be inferred from historical 10-year average payout ratio data for utilities, assuming a stable dividend policy has been pursued. Since individual averages frequently tend to regress toward the grand mean, the historical payout ratio needs to be adjusted for this tendency, using statistical techniques for predicting future values based on this tendency of individual values to regress toward the grand mean over time.

An application of the sustainable growth method is shown in example 9-1.

[14] Statistically superior predictions of future averages are made by weighting individual past averages with the grand mean, with the variance within the individual averages and the variance across individual averages serving as weights.

EXAMPLE 9-1

Southeastern Electric's sustainable growth rate is required for upcoming rate case testimony. As a gauge of the expected return on equity, authorized rates of return in recent decisions for eastern U.S. electric utilities as reported by Value Line for 2005 and 2006 averaged 11%, with a standard deviation of 1%. In other words, the majority of utilities were authorized to earn 11%, with the allowed return on equity ranging from 10% to 12%. As a gauge of the expected retention ratio, the average 2006 payout ratio of 34 eastern electric utilities as compiled by Value Line was 60%, which indicates an average retention ratio of 40%, with a standard deviation of 5%. This was consistent with the long-run target retention ratio indicated by the management of Southeastern Electric. It is therefore reasonable to postulate that investors expect a retention ratio ranging from 35% to 45% for the company with a likely value of 40%. In Table 9-4 below, expected retention ratios of 35% to 45% and assumed returns on equity from 10% to 12% are multiplied to produce sustainable growth rates ranging from 3.8% to 5.4% with a likely value of 4.6%.

TABLE 9-4
SUSTAINABLE GROWTH METHOD ILLUSTRATION

Expected Retention Ratio (b)	Expected Return on Book Equity (r)		
	10%	11%	12%
35%	3.5%	3.9%	4.2%
40%	4.0%	4.4%	4.8%
45%	4.5%	5.0%	5.4%

It should be pointed out that published forecasts of the expected return on equity by analysts such as Value Line are sometimes based on end-of-period book equity rather than on average book equity. The following formula[15]

[15] The return on year-end common equity, r, is defined as $r = E/B_t$, where E is earnings per share, and B_t is the year-end book value per share. The return on average common equity, r_a, is defined as: $r_a = E/B_a$ where B_a = average book value per share. The latter is by definition: $B_a = (B_t + B_{t-1})/2$ where B_t is the year-end book equity per share and B_{t-1} is the beginning-of-year book equity per share. Dividing r by r_a and substituting:

$$\frac{r}{r_a} = \frac{E/B_t}{E/B_a} = \frac{B_a}{B_t} + \frac{B_t + B_{t-1}}{2B_t}$$

Solving for r_a, a formula for translating the return on year-end equity into the return on average equity is obtained, using reported beginning-of-the year and end-of-year common equity figures:

$$r_a = r\frac{2B_t}{B_t + B_{t-1}}$$

adjusts the reported end-of-year values so that they are based on average common equity, which is the common regulatory practice:

$$r_a = r_t \frac{2B_t}{B_t + B_{t-1}} \tag{9-10}$$

The sustainable growth method can also be extended to include external financing. From Chapter 8, the expanded growth estimate is given by:

$$g = br + sv$$

where b and r are defined as previously, s is the expected percent growth in number of shares to finance investment, and v is the profitability of the equity investment. The variable s measures the long-run expected stock financing that the utility will undertake. If the utility's investments are growing at a stable rate and if the earnings retention rate is also stable, then s will grow at a stable rate. The variable s can be estimated by taking a weighted average of past percentage increases in the number of shares. This measurement is difficult, however, owing to the sporadic and episodic nature of stock financing, and smoothing techniques must be employed. The variable v is the profitability of the equity investment and can be measured as the difference of market price and book value per share divided by the latter, as discussed in Chapter 8.

There are three problems in the practical application of the sustainable growth method. The first is that it may be even more difficult to estimate what b, r, s, and v investors have in mind than it is to estimate what g they envisage. It would appear far more economical and expeditious to use available growth forecasts and obtain g directly instead of relying on four individual forecasts of the determinants of such growth. It seems only logical that the measurement and forecasting errors inherent in using four different variables to predict growth far exceed the forecasting error inherent in a direct forecast of growth itself.

Second, there is a potential element of circularity in estimating g by a forecast of b and ROE for the utility being regulated, since ROE is determined in large part by regulation. To estimate what ROE resides in the minds of investors is equivalent to estimating the market's assessment of the outcome of regulatory hearings. Expected ROE is exactly what regulatory commissions set in determining an allowed rate of return. In other words, the method requires an estimate of return on equity before it can even be implemented. Common sense would dictate the inconsistency of a return on equity recommendation that is different than the expected ROE that the method assumes the utility will earn forever. For example, using an expected return on equity of 11% to determine the growth rate and using the growth rate to recommend a return on equity of 9% is inconsistent. It is not reasonable to assume that this regulated utility company is expected to earn 11% forever, but recommend a 9% return on equity. The only way this utility can earn 11% is that rates be set by the regulator so that the utility will in fact earn 11%. One is assuming, in effect, that the company will earn a return rate exceeding the recommended cost of equity forever, but then one is recommending that a different rate be granted by the regulator. In essence, using an ROE in the sustainable growth formula that differs from the final estimated cost of equity is asking the regulator to adopt two different returns.

The circularity problem is somewhat dampened by the self-correcting nature of the DCF model. If a high equity return is granted, the stock price will increase in response to the unanticipated favorable return allowance, lowering the dividend yield component of market return in compensation for the high g induced by the high allowed return. At the next regulatory hearing, more conservative forecasts of r would prevail. The impact on the dual components of the DCF formula, yield and growth, are at least partially offsetting.

Third, the empirical finance literature discussed earlier demonstrates that the sustainable growth method of determining growth is not as significantly correlated to measures of value, such as stock price and price/earnings ratios, as other historical growth measures or analysts' growth forecasts. Other proxies for growth, such as historical growth rates and analysts' growth forecasts, outperform retention growth estimates. See for example Timme and Eiseman (1989).

In summary, there are three proxies for the expected growth component of the DCF model: historical growth rates, analysts' forecasts, and the sustainable growth method. Criteria in choosing among the three proxies should include ease of use, ease of understanding, theoretical and mathematical correctness, and empirical validation. The latter two are crucial. The method should be logically valid and consistent, and should possess an adequate track record in predicting and explaining security value. The retention growth method is the weakest of the three proxies on both conceptual and empirical grounds. The research in this area has shown that the first two growth proxies do a better job of explaining variations in market valuation (M/B and P/E ratios) and are more highly correlated to measures of value than is the retention growth proxy.

ATTACHMENT D

The Journal of Portfolio Management

Investor growth expectations: Analysts vs. history

Analysts' growth forecasts dominate past trends in predicting stock prices.

James H. Vander Weide and Willard T. Carleton

For the purposes of implementing the Discounted Cash Flow (DCF) cost of equity model, the analyst must know which growth estimate is embodied in the firm's stock price. A study by Cragg and Malkiel (1982) suggests that the stock valuation process embodies analysts' forecasts rather than historically based growth figures such as the ten-year historical growth in dividends per share or the five-year growth in book value per share. The Cragg and Malkiel study is based on data for the 1960s, however, a decade that was considerably more stable than the recent past.

As the issue of which growth rate to use in implementing the DCF model is so important to applications of the model, we decided to investigate whether the Cragg and Malkiel conclusions continue to hold in more recent periods. This paper describes the results of our study.

STATISTICAL MODEL

The DCF model suggests that the firm's stock price is equal to the present value of the stream of dividends that investors expect to receive from owning the firm's shares. Under the assumption that investors expect dividends to grow at a constant rate, g, in perpetuity, the stock price is given by the following simple expression:

$$P_s = \frac{D\,(1+g)}{k-g} \qquad (1)$$

where:

P_s = current price per share of the firm's stock;
D = current annual dividend per share;
g = expected constant dividend growth rate; and
k = required return on the firm's stock.

Dividing both sides of Equation (1) by the firm's current earnings, E, we obtain:

$$\frac{P_s}{E} = \frac{D}{E} \cdot \frac{(1+g)}{k-g} \qquad (2)$$

Thus, the firm's price/earnings (P/E) ratio is a non-linear function of the firm's dividend payout ratio (D/E), the expected growth in dividends (g), and the required rate of return.

To investigate what growth expectation is embodied in the firm's current stock price, it is more convenient to work with a linear approximation to Equation (2). Thus, we will assume that:

$$P/E = a_0(D/E) + a_1 g + a_2 k. \qquad (3)$$

(Cragg and Malkiel found this assumption to be reasonable throughout their investigation.)

Furthermore, we will assume that the required

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rate of return, k, in Equation (3) depends on the values of the risk variables B, Cov, Rsq, and Sa, where B is the firm's Value Line beta; Cov is the firm's pretax interest coverage ratio; Rsq is a measure of the stability of the firm's five-year historical EPS; and Sa is the standard deviation of the consensus analysts' five-year EPS growth forecast for the firm. Finally, as the linear form of the P/E equation is only an approximation to the true P/E equation, and B, Cov, Rsq, and Sa are only proxies for k, we will add an error term, e, that represents the degree of approximation to the true relationship.

With these assumptions, the final form of our P/E equation is as follows:

$$P/E = a_0(D/E) + a_1 g + a_2 B + a_3 Cov + a_4 Rsq + a_5 Sa + e. \qquad (4)$$

The purpose of our study is to use more recent data to determine which of the popular approaches for estimating future growth in the Discounted Cash Flow model is embodied in the market price of the firm's shares.

We estimated Equation (4) to determine which estimate of future growth, g, when combined with the payout ratio, D/E, and risk variables B, Cov, Rsq, and Sa, provides the best predictor of the firm's P/E ratio. To paraphrase Cragg and Malkiel, we would expect that growth estimates found in the best-fitting equation more closely approximate the expectation used by investors than those found in poorer-fitting equations.

DESCRIPTION OF DATA

Our data sets include both historically based measures of future growth and the consensus analysts' forecasts of five-year earnings growth supplied by the Institutional Brokers Estimate System of Lynch, Jones & Ryan (IBES). The data also include the firm's dividend payout ratio and various measures of the firm's risk. We include the latter items in the regression, along with earnings growth, to account for other variables that may affect the firm's stock price.

The data include:

Earnings Per Share. Because our goal is to determine which earnings variable is embodied in the firm's market price, we need to define this variable with care. Financial analysts who study a firm's financial results in detail generally prefer to "normalize" the firm's reported earnings for the effect of extraordinary items, such as write-offs of discontinued operations, mergers and acquisitions. They also attempt, to the extent possible, to state earnings for different firms using a common set of accounting conventions.

We have defined "earnings" as the consensus analyst estimate (as reported by IBES) of the firm's earnings for the forthcoming year.[1] This definition approximates the normalized earnings that investors most likely have in mind when they make stock purchase and sell decisions. It implicitly incorporates the analysts' adjustments for differences in accounting treatment among firms and the effects of the business cycle on each firm's results of operations. Although we thought at first that this earnings estimate might be highly correlated with the analysts' five-year earnings growth forecasts, that was not the case. Thus, we avoided a potential spurious correlation problem.

Price/Earnings Ratio. Corresponding to our definition of "earnings," the price/earnings ratio (P/E) is calculated as the closing stock price for the year divided by the consensus analyst earnings forecast for the forthcoming fiscal year.

Dividends. Dividends per share represent the common dividends declared per share during the calendar year, after adjustment for all stock splits and stock dividends). The firm's dividend payout ratio is then defined as common dividends per share divided by the consensus analyst estimate of the earnings per share for the forthcoming calendar year (D/E). Although this definition has the deficiency that it is obviously biased downward — it divides this year's dividend by next year's earnings — it has the advantage that it implicitly uses a "normalized" figure for earnings. We believe that this advantage outweighs the deficiency, especially when one considers the flaws of the apparent alternatives. Furthermore, we have verified that the results are insensitive to reasonable alternative definitions (see footnote 1).

Growth. In comparing historically based and consensus analysts' forecasts, we calculated forty-one different historical growth measures. These included the following: 1) the past growth rate in EPS as determined by a log-linear least squares regression for the latest year,[2] two years, three years, . . ., and ten years; 2) the past growth rate in DPS for the latest year, two years, three years, . . ., and ten years; 3) the past growth rate in book value per share (computed as the ratio of common equity to the outstanding common equity shares) for the latest year, two years, three years, . . ., and ten years; 4) the past growth rate in cash flow per share (computed as the ratio of pretax income, depreciation, and deferred taxes to the outstanding common equity shares) for the latest year, two years, three years, . . ., and ten years; and 5) plowback growth (computed as the firm's retention ratio for the current year times the firm's latest annual return on common equity).

We also used the five-year forecast of earnings per share growth compiled by IBES and reported in mid-January of each year. This number represents the consensus (i.e., mean) forecast produced by analysts from the research departments of leading Wall Street and regional brokerage firms over the preceding three months. IBES selects the contributing brokers "because of the superior quality of their research, professional reputation, and client demand" (IBES *Monthly Summary Book*).

Risk Variables. Although many risk factors could potentially affect the firm's stock price, most of these factors are highly correlated with one another. As shown above in Equation (4), we decided to restrict our attention to four risk measures that have intuitive appeal and are followed by many financial analysts: 1) B, the firm's beta as published by Value Line; 2) Cov, the firm's pretax interest coverage ratio (obtained from Standard & Poor's Compustat); 3) Rsq, the stability of the firm's five-year historical EPS (measured by the R^2 from a log-linear least squares regression); and 4) Sa, the standard deviation of the consensus analysts' five-year EPS growth forecast (mean forecast) as computed by IBES.

After careful analysis of the data used in our study, we felt that we could obtain more meaningful results by imposing six restrictions on the companies included in our study:

1. Because of the need to calculate ten-year historical growth rates, and because we studied three different time periods, 1981, 1982, and 1983, our study requires data for the thirteen-year period 1971-1983. We included only companies with at least a thirteen-year operating history in our study.
2. As our historical growth rate calculations were based on log-linear regressions, and the logarithm of a negative number is not defined, we excluded all companies that experienced negative EPS during any of the years 1971-1983.
3. For similar reasons, we also eliminated companies that did not pay a dividend during any one of the years 1971-1983.
4. To insure comparability of time periods covered by each consensus earnings figure in the P/E ratios, we eliminated all companies that did not have a December 31 fiscal year-end.
5. To eliminate distortions caused by highly unusual events that distort current earnings but not expected future earnings, and thus the firm's price/earnings ratio, we eliminated any firm with a price/earnings ratio greater than 50.
6. As the evaluation of analysts' forecasts is a major part of this study, we eliminated all firms that IBES did not follow.

Our final sample consisted of approximately sixty-five utility firms.[3]

RESULTS

To keep the number of calculations in our study to a reasonable level, we performed the study in two stages. In Stage 1, all forty-one historically oriented approaches for estimating future growth were correlated with each firm's P/E ratio. In Stage 2, the historical growth rate with the highest correlation to the P/E ratio was compared to the consensus analyst growth rate in the multiple regression model described by Equation (4) above. We performed our regressions for each of three recent time periods, because we felt the results of our study might vary over time.

First-Stage Correlation Study

Table 1 gives the results of our first-stage correlation study for each group of companies in each of the years 1981, 1982, and 1983. The values in this table measure the correlation between the historically oriented growth rates for the various time periods and the firm's end-of-year P/E ratio.

The four variables for which historical growth rates were calculated are shown in the left-hand column: EPS indicates historical earnings per share growth, DPS indicates historical dividend per share growth, BVPS indicates historical book value per share growth, and CFPS indicates historical cash flow per share growth. The term "plowback" refers to the product of the firm's retention ratio in the currennt year and its return on book equity for that year. In all, we calculated forty-one historically oriented growth rates for each group of firms in each study period.

The goal of the first-stage correlation analysis was to determine which historically oriented growth rate is most highly correlated with each group's year-end P/E ratio. Eight-year growth in CFPS has the highest correlation with P/E in 1981 and 1982, and ten-year growth in CFPS has the highest correlation with year-end P/E in 1983. In all cases, the plowback estimate of future growth performed poorly, indicating that — contrary to generally held views — plowback is not a factor in investor expectations of future growth.

Second-Stage Regression Study

In the second stage of our regression study, we ran the regression in Equation (4) using two different measures of future growth, g: 1) the best historically oriented growth rate (g_h) from the first-stage correlation study, and 2) the consensus analysts' forecast (g_a) of five-year EPS growth. The regression results, which are shown in Table 2, support at least

TABLE 1

Correlation Coefficients of All Historically Based Growth Estimates by Group and by Year with P/E

Current Year	*Historical Growth Rate Period in Years*									
	1	2	3	4	5	6	7	8	9	10
1981										
EPS	−0.02	0.07	0.03	0.01	0.03	0.12	0.08	0.09	0.09	0.09
DPS	0.05	0.18	0.14	0.15	0.14	0.15	0.19	0.23	0.23	0.23
BVPS	0.01	0.11	0.13	0.13	0.16	0.18	0.15	0.15	0.15	0.15
CFPS	−0.05	0.04	0.13	0.22	0.28	0.31	0.30	0.31	−0.57	−0.54
Plowback	0.19									
1982										
EPS	−0.10	−0.13	−0.06	−0.02	−0.02	−0.01	−0.03	−0.03	0.00	0.00
DPS	−0.19	−0.10	0.03	0.05	0.07	0.08	0.09	0.11	0.13	0.13
BVPS	0.07	0.08	0.11	0.11	0.09	0.10	0.11	0.11	0.09	0.09
CFPS	−0.02	−0.08	0.00	0.10	0.16	0.19	0.23	0.25	0.24	0.07
Plowback	0.04									
1983										
EPS	−0.06	−0.25	−0.25	−0.24	−0.16	−0.11	−0.05	0.00	0.02	0.02
DPS	0.03	−0.10	−0.03	0.08	0.15	0.21	0.21	0.21	0.22	0.24
BVPS	0.03	0.10	0.04	0.09	0.15	0.16	0.19	0.21	0.22	0.21
CFPS	−0.08	0.01	0.02	0.08	0.20	0.29	0.35	0.38	0.40	0.42
Plowback	−0.08									

two general conclusions regarding the pricing of equity securities.

First, we found overwhelming evidence that the consensus analysts' forecast of future growth is superior to historically oriented growth measures in predicting the firm's stock price. In every case, the R^2 of the regression containing the consensus analysts' forecast is higher than the R^2 in the regression containing the historical growth measure. The regression coefficients in the equation containing the consensus analysts' forecast also are considerably more significant than they are in the alternative regression. These results are consistent with those found by Cragg and Malkiel for data covering the period 1961-1968. Our results also are consistent with the hypothesis that investors use analysts' forecasts, rather than historically oriented growth calculations, in making stock buy-and-sell decisions.

TABLE 2

Regression Results
Model I

Part A: *Historical*

$P/E = a_0 + a_1 D/E + a_2 g_h + a_3 B + a_4 Cov + a_5 Rsq + a_6 Sa$

Year	$\hat{a}_0$	$\hat{a}_1$	$\hat{a}_2$	$\hat{a}_3$	$\hat{a}_4$	$\hat{a}_5$	$\hat{a}_6$	R^2	F Ratio
1981	−6.42*	10.31*	7.67*	3.24	0.54*	1.42*	57.43	0.83	46.49
	(5.50)	(14.79)	(2.20)	(2.86)	(2.50)	(2.85)	(4.07)		
1982	−2.90*	9.32*	8.49*	2.85	0.45*	−0.42	3.63	0.86	65.53
	(2.75)	(18.52)	(4.18)	(2.83)	(2.60)	(0.05)	(0.26)		
1983	−5.96*	10.20*	19.78*	4.85	0.44*	0.33	32.49	0.82	45.26
	(3.70)	(12.20)	(4.83)	(2.95)	(1.89)	(0.50)	(1.29)		

Part B: *Analysis*

$P/E = a_0 + a_1 D/E + a_2 g_a + a_3 B + a_4 Cov + a_5 Rsq + a_6 Sa$

Year	$\hat{a}_0$	$\hat{a}_1$	$\hat{a}_2$	$\hat{a}_3$	$\hat{a}_4$	$\hat{a}_5$	$\hat{a}_6$	R^2	F Ratio
1981	−4.97*	10.62*	54.85*	−0.61	0.33*	0.63*	4.34	0.91	103.10
	(6.23)	(21.57)	(8.56)	(0.68)	(2.28)	(1.74)	(0.37)		
1982	−2.16*	9.47*	50.71*	−1.07	0.36*	−0.31	119.05*	0.90	97.62
	(2.59)	(22.46)	(9.31)	(1.14)	(2.53)	(1.09)	(1.60)		
1983	−8.47*	11.96*	79.05*	2.16	0.56*	0.20	−34.43	0.87	69.81
	(7.07)	(16.48)	(7.84)	(1.55)	(3.08)	(0.38)	(1.44)		

Notes:
* Coefficient is significant at the 5% level (using a one-tailed test) and has the correct sign. T-statistic in parentheses.

Second, there is some evidence that investors tend to view risk in traditional terms. The interest coverage variable is statistically significant in all but one of our samples, and the stability of the operating income variable is statistically significant in six of the twelve samples we studied. On the other hand, the beta is never statistically significant, and the standard deviation of the analysts' five-year growth forecasts is statistically significant in only two of our twelve samples. This evidence is far from conclusive, however, because, as we demonstrate later, a significant degree of cross-correlation among our four risk variables makes any general inference about risk extremely hazardous.

Possible Misspecification of Risk

The stock valuation theory says nothing about which risk variables are most important to investors. Therefore, we need to consider the possibility that the risk variables of our study are only proxies for the "true" risk variables used by investors. The inclusion of proxy variables may increase the variance of the parameters of most concern, which in this case are the coefficients of the growth variables.[4]

To allow for the possibility that the use of risk proxies has caused us to draw incorrect conclusions concerning the relative importance of analysts' growth forecasts and historical growth extrapolations, we have also estimated Equation (4) with the risk variables excluded. The results of these regressions are shown in Table 3.

Again, there is overwhelming evidence that the consensus analysts' growth forecast is superior to the historically oriented growth measures in predicting the firm's stock price. The R^2 and t-statistics are higher in every case.

CONCLUSION

The relationship between growth expectations and share prices is important in several major areas of finance. The data base of analysts' growth forecasts collected by Lynch, Jones & Ryan provides a unique opportunity to test the hypothesis that investors rely more heavily on analysts' growth forecasts than on historical growth extrapolations in making security buy-and-sell decisions. With the help of this data base, our studies affirm the superiority of analysts' forecasts over simple historical growth extrapolations in the stock price formation process. Indirectly, this finding lends support to the use of valuation models whose input includes expected growth rates.

TABLE 3

Regression Results
Model II

Part A: *Historical*

$P/E = a_0 + a_1 D/E + a_2 g_h$

Year	$\hat{a}_0$	$\hat{a}_1$	$\hat{a}_2$	R^2	F Ratio
1981	−1.05	9.59	21.20	0.73	82.95
	(1.61)	(12.13)	(7.05)		
1982	0.54	8.92	12.18	0.83	167.97
	(1.38)	(17.73)	(6.95)		
1983	−0.75	8.92	12.18	0.77	107.82
	(1.13)	(12.38)	(7.94)		

Part B: *Analysis*

$P/E + a_0 + a_1 D/E + a_2 g_a$

Year	$\hat{a}_0$	$\hat{a}_1$	$\hat{a}_2$	R^2	F Ratio
1981	3.96	10.07	60.53	0.90	274.16
	(8.31)	(8.31)	(20.91)	(15.79)	
1982	−1.75	9.19	44.92	0.88	246.36
	(4.00)	(4.00)	(21.35)	(11.06)	
1983	−4.97	10.95	82.02	0.83	168.28
	(6.93)	(6.93)	(15.93)	(11.02)	

Notes:

* Coefficient is significant at the 5% level (using a one-tailed test) and has the correct sign. T-statistic in parentheses.

[1] We also tried several other definitions of "earnings," including the firm's most recent primary earnings per share prior to any extraordinary items or discontinued operations. definitions of "earnings" we report only the results for the IBES consensus.

[2] For the latest year, we actually employed a point-to-point growth calculation because there were only two available observations.

[3] We use the word "approximately," because the set of available firms varied each year. In any case, the number varied only from zero to three firms on either side of the figures cited here.

[4] See Maddala (1977).

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EXHIBIT
A-44

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

GARY PIERCE, Chairman
BOB STUMP
PAUL NEWMAN
SANDRA D. KENNEDY
BRENDA BURNS

IN THE MATTER OF THE APPLICATION OF ARIZONA-AMERICAN WATER COMPANY, AN ARIZONA CORPORATION, FOR A DETERMINATION OF THE CURRENT FAIR VALUE OF ITS UTILITY PLANT AND PROPERTY AND FOR INCREASES IN ITS RATES AND CHARGES BASED THEREON FOR UTILITY SERVICE BY ITS AGUA FRIA WATER, HAVASU WATER AND MOHAVE WATER DISTRICTS	DOCKET NO. W-01303A-10-0448

TESTIMONY
OF
KEVIN TILDEN
ON BEHALF OF
ARIZONA-AMERICAN WATER COMPANY
SEPTEMBER 14, 2011

TESTIMONY OF KEVIN TILDEN ON BEHALF OF ARIZONA-AMERICAN WATER COMPANY

SEPTEMBER 14, 2011

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EXECUTIVE SUMMARY

Kevin Tilden testifies regarding the Company's noticing error in the Agua Fria District and the measures being taken to ensure that it does not occur again. He also confirms that this error did not affect the billing determinants used in this case.

I INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND TELEPHONE NUMBER.

A. My name is Kevin Tilden. My business address is 1033 B Avenue, Suite #200, Coronado, CA 92118; and my telephone number is 619-435-7402.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by American Water Works Service Company as Director of External Affairs.

Q. PLEASE BRIEFLY OUTLINE YOUR RESPONSIBILITIES IN ARIZONA AS DIRECTOR OF EXTERNAL AFFAIRS.

A. In the states of Arizona, California, Hawaii and New Mexico, I am responsible for customer communication including websites, conservation outreach, media relations, special events, and bill inserts.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. As directed by the Administrative Law Judge, the purpose of my testimony is to address the customer notification issues experienced by Arizona-American Water Company ("Arizona-American" or "Company") in the Agua Fria Water District in this rate case.

II ERRORS EXPERIENCED WITH FEBRUARY 2011 BILL INSERTS

Q. WHAT METHOD DID THE COMPANY USE TO NOTIFY CUSTOMERS IN THIS RATE CASE?

A. As required by the January 20, 2011 Procedural Order, the Company utilized a bill insert method to notify customers of the pending rate case.

Q. WHAT WAS THE PROBLEM WITH THIS NOTIFICATION, AND WHEN DID YOU BECOME AWARE OF IT?

A. On July 25, 2011, the Company undertook an internal examination as to whether all customers in the Agua Fria Water District received the required customer notice. This was undertaken in response to persistent and continuing allegations regarding a lack of notice made by Mr. Ken Hewitt, a customer and intervenor in this proceeding.

After this investigation, the Company discovered two errors:

1. Arizona-American Water used an incorrect Agua Fria customer count and only printed 31,000 Agua Fria inserts.
2. Other customer classifications (the non-regulated Surprise O&M Water Service) mistakenly received the Agua Fria Rate Case Notice.

Q. PLEASE EXPLAIN IN GREATER DETAIL HOW THIS OCCURRED.

A. The billing insert process is controlled by American Water Works Services Company employees using an outside mailing vendor. For the February 2011 mailing, these employees relied upon PWSID (public water system ID) codes to identify those customers in the Agua Fria Water District. Two issues arose as a result of the use of the PWSIDs. First, certain PWSIDs that are part of the Agua Fria Water District (approximately 7,000 customers) were not included in the list of customers to receive the insert. As a result, an insufficient number of bill inserts was ordered for the Agua Fria Water District (approximately 31,000). Second, certain individuals within the list of customers slated to receive the insert were unregulated O&M customers (these are customers of the City of Surprise for which American Water Enterprises provides billing services and they are not regulated water customers). Thus, due to some bill inserts being sent to unregulated customers (approximately 4,000) and due to too few inserts being ordered for the Agua Fria Water District, the inventory of bill inserts was depleted on February 22, 2011. Unfortunately, when the bill inserts became depleted, the mailing vendor did not contact American Water.

Q. HOW MANY CUSTOMERS WERE AFFECTED?

A. Approximately 11,000 Agua Fria Water District customers did not receive the required notice.

III <u>REMEDIAL ACTIONS TAKEN BY THE COMPANY</u>

Q. WHAT ACTION DID THE COMPANY TAKE ONCE IT BECAME AWARE OF THIS ISSUE?

A. Representatives from Arizona-American immediately notified the Commission and all parties to the proceeding to ensure that each was aware of this issue. A procedural conference was also convened on August 2, 2011 to disclose the issue to the Hearing Division and to propose a remedy. Following that procedural conference and in accordance with a Procedural Order dated August 2, 2011, the Company sent a first-class, direct mail version of the notice to the entire Agua Fria Water District (approximately 38,000 customers) on August 5, 2011. Arizona-American Water also continued its internal investigation in order to ensure this error would not occur in the future. Lastly, Arizona-American is repeating the bill insert during the month of September and is conducting a daily real time check on these inserts to confirm they are being distributed.

Q. DID THE COMPANY SIGN AN AFFIDAVIT THAT NOTICING HAD BEEN COMPLETED IN ACCORDANCE WITH THE ORDER? IF SO, WHY?

A. Yes, an affidavit was signed on March 17, 2011, by Mr. Barry Pawelek, Customer Communications Manager in the External Affairs Department. At the time he signed the affidavit, to his knowledge and to the knowledge of everyone in our Department, all of the notices had been properly distributed by bill insert. As a result, Mr. Pawelek did not perform any additional research as to the bill inserts. It was not until much later (as described above), that the Company became aware of the noticing issue.

In addition, to respond to questions posed by Mr. Hewitt, at the time of the Company's response to his June 3, 2011 motion, the Company and its counsel had no reason to believe the affidavit was not accurate or to ask additional questions. In hindsight, the Company, of course, wishes it would have asked those questions.

Q. WHAT STEPS IS THE COMPANY TAKING TO ENSURE THAT THIS DOES NOT OCCUR AGAIN?

A. After an internal investigation of this issue, we are convinced that we fully understand the error and how to ensure that it does not happen in the future. The investigation into this issue included testing inquiries into customer coding, examining customer counts of all Arizona districts (regulated or non-regulated), as well as critiquing the process of how the bill insert process is conducted. For future bill inserts, the Company will use codes that are very specific to the customers within each district and will not use PWSIDs for coding purposes. It is also likely that the Company will use direct mailing for certain required notices.

As noted during Procedural Conference on August 2, 2011, Arizona-American is testing the new bill insert process by sending a duplicate Rate Case Customer Notice in all Agua Fria Water customers' September bills. As part of this test, Arizona-American is monitoring daily the Agua Fria billings throughout September to ensure that all Agua Fria customers receive this duplicate notice.

In addition, to eliminate the failure of communication that occurred in February, Arizona-American will now receive immediate, direct communication if a bill insert does not fulfill its complete insertion cycle. The typical process is for the mailing vendor to contact American Water to determine whether to (i) proceed with billing, (ii) hold bills until additional inserts are received or (iii) utilize another method to contact the remaining customers. As stated above, the process will now include a direct communication by American Water to Arizona-American to assist with this determination.

Following additional research, which included discussions with Barry Pawelek; Terry Cherubini, a Correspondence Specialist in the IT Department; and Regulus, the mailing vendor, I have learned that, despite the process noted above, Regulus did not contact anyone at American Water when the bill inserts became depleted. Regulus is a national vendor that works with many companies, utilities, and municipalities. Regulus's normal process is to contact clients when they run out of bill inserts, and in this instance, all machines and monitoring mechanisms worked properly. Based on my discussion with Regulus, they believe that the failure resulted from human error, as a Regulus employee failed to notify the supervisor of the bill insert shortage, which meant that American Water was not notified as well.

I recognize that this is contrary to a prior conversation that Ms. Cherubini had with Mr. Hewitt; however, Ms. Cherubini has since conducted additional research confirming that she did not receive notice from Regulus, and, as noted above, I have personally confirmed this with Regulus. I would also note that at the time of her response to Mr. Hewitt's data response, Ms. Cherubini was not aware of the extent of or exact cause of the issue. As noted above, I have now confirmed that the actions that Mr. Hewitt believes should have been disclosed in fact did not occur. Regardless, the Company recognizes that an error in the process occurred and is taking measures to make sure that it does not occur again.

IV BILLING DETERMINANTS

Q. COULD THE SAME ERRORS THAT LED TO THIS FAILURE TO NOTICE ALSO HAVE CAUSED INCORRECT BILLING DETERMINANTS?

A. No, this error occurred within the bill insert process in February 2011. The test year actual bill counts and billing determinants for each month of the test year ending June 30, 2010, are correct. They were obtained from a download of data from the Company's "E-CIS" system. The download was performed by a very experienced senior analyst in the shared services rates department located in Cherry Hill, New Jersey. The download contained customer count and billing determinant data from each and every rate schedule in effect in the Agua Fria district. Within the Company's databases, rate schedules are coded uniquely by district. Furthermore, as a check, the revenue totals from the download were successfully verified against the actual general ledger at the district level for the same period as the test year. As a result, an amended or supplemental application is not necessary.

V CONCLUSION

Q. IS THERE ANYTHING ELSE YOU WOULD LIKE TO ADD?

A. I, as well as the Company, regret both the failure to notice customers and the non-compliance with a Commission order. I assure you that it was unintentional, and, once we became aware of the errors, we took appropriate steps to remedy the issue with our customers, the parties to this proceeding, and the Commission.

Q. DOES THAT CONCLUDE YOUR TESTIMONY?

A. Yes.