Exhibit No.:	
Issues:	UPIS Additions, Residential Usage
	Normalization, Platte County Water
	Treatment Facility Retirement
Witness:	Kevin H. Dunn
Exhibit Type:	Direct
Sponsoring Party	: Missouri-American Water Company
Case No.:	WR-2011-0337
	SR-2011-0338
Date:	June 30, 2011

MISSOURI PUBLIC SERVICE COMMISSION

CASE NO. WR-2011-0337 CASE NO. SR-2011-0338

DIRECT TESTIMONY

OF

KEVIN H. DUNN

ON BEHALF OF

MISSOURI-AMERICAN WATER COMPANY

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

IN THE MATTER OF MISSOURI-AMERICAN WATER COMPANY FOR AUTHORITY TO FILE TARIFFS REFLECTING INCREASED RATES FOR WATER AND SEWER SERVICE

CASE NO. WR-2011-XXXX CASE NO. SR-2011-XXXX

AFFIDAVIT OF KEVIN H. DUNN

Kevin H. Dunn, being first duly sworn, deposes and says that he is the witness who sponsors the accompanying testimony entitled "Direct Testimony of Kevin H. Dunn"; that said testimony and schedules were prepared by him and/or under his direction and supervision; that if inquires were made as to the facts in said testimony and schedules, he would respond as therein set forth; and that the aforesaid testimony and schedules are true and correct to the best of his knowledge.

Kevin H. Dunn

State of Missouri County of St. Louis SUBSCRIBED and sworn to Before me this Often day of June 2011.

Notary Public

My commission expires:



DIRECT TESTIMONY KEVIN H. DUNN MISSOURI-AMERICAN WATER COMPANY CASE NO.WR-2011-0337 CASE NO.SR-2011-0338

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DIRECT TESTIMONY

Kevin H. Dunn

I. WITNESS INTRODUCTION

1	Q.	STATE YOUR NAME AND BUSINESS ADDRESS.
2	Α.	Kevin H. Dunn, 727 Craig Rd., St. Louis, MO 63141.
3		
4	Q.	BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?
5	Α.	I am employed by Missouri-American Water Company ("MAWC" or "Company")
6		as Director, Engineering. MAWC is a subsidiary of American Water Works
7		Company, Inc. ("American Water").
8		
9	Q.	WHAT IS YOUR EDUCATIONAL BACKGROUND?
10	Α.	I received my Bachelor of Science degree in Civil Engineering from the University
11		of Missouri - Columbia in 1984.
12		
13	Q.	ARE YOU A LICENSED PROFESSIONAL ENGINEER?
14	Α.	Yes, I am a registered Professional Engineer in Missouri.
15		
16	Q.	DO YOU HOLD OTHER RELATED WATER CERTIFICATES?
17	Α.	Yes, I have Class A and DSIII Public Water Supply Operator Certificates from the
18		Missouri Department of Natural Resources.

1

Q. PLEASE DESCRIBE YOUR BUSINESS EXPERIENCE IN THE WATER UTILITY INDUSTRY.

4 Α. In 1984, I began work with St. Louis County Water Company as a System 5 Engineer. This work included the participation in various designs and relocations 6 and installations of mains throughout St. Louis County. From 1989 to 1994, I was 7 in charge of various water treatment plant facility operations, maintenance and capital projects, which led to my promotion to Superintendent for all of the water 8 9 treatment facilities in St. Louis County. In August of 1994, I was transferred back 10 into Engineering, first as Special Projects Engineer and, then, Superintendent of Production Engineering where I oversaw or performed the project management 11 of various major water treatment facility upgrades, depreciation studies, planning 12 studies to match future growth, and maintenance studies to determine life cycle 13 14 replacements. After the merger of St. Louis County Water with MAWC in 1999, I 15 performed a similar role under the title of Engineering Manager and I was responsible for the eastern districts in Missouri, which included St. Louis County, 16 St. Charles, Mexico, and Jefferson City. In 2002, I was promoted to Director of 17 Engineering for Missouri and became responsible for all of the capital projects 18 19 and planning for all of the Missouri districts. In 2004, I was promoted to a position 20 with American Water Works Service Company, Inc. ("Service Company") as the 21 Central Region Director, Production, where I was responsible for all water and wastewater treatment facilities in the Central Region. My new role mainly 22 23 involved directing the treatment operations and maintenance work for the

1		American Water districts located in Missouri, Illinois, Iowa, Indiana, Ohio, and
2		Michigan. In late 2007, I was transferred to my current position as Director,
3		Engineering for MAWC.
4		
5	Q.	WHAT IS THE PURPOSE OF YOUR TESTIMONY?
6	A.	The purpose of this testimony is to describe the Company's investments in, and
7		additions to, Utility Plant in Service ("UPIS") since the end of the true-up period of
8		MAWC's last rate case, April 30, 2010; to describe the calculation for residential
9		usage normalization based on the decline of residential base usage; and to
10		describe the reasons for retiring the Platte County Water Treatment Facility by
11		May 31, 2018.
12		
13		II. UPIS ADDITIONS
14	Q.	WHAT ARE MAWC'S EXPECTED INVESTMENTS IN PLANT IN SERVICE
15		FROM MAY 1, 2010 THROUGH DECEMBER 31, 2011?
16	A.	The anticipated investments in capital additions, by District, are indicated in the
17		table below:
18		

December 2011	
Brunswick	138,867
Jefferson City	12,461,345
Joplin	4,312,488
Mexico	1,373,292
Platte County	1,826,631
St. Joseph	4,100,620
St. Louis Metro	88,269,949
Warrensburg	787,758
Warren County Water	100,238
Cedar Hill Sewer	259,432
Parkville Sewer	(3,462)
Warren County Sewer	50,537
IUTAL	113,677,696

Investments thru

2

1

3

4 Q. PLEASE LIST THE SIGNIFICANT CAPITAL PROJECTS THAT ARE OR WILL

5 **BE COMPLETED DURING THIS PROCEEDING.**

- 6 A. Significant individual projects at each district are as follows:
- 7 Brunswick
 - Replace Backwash Turbidity Monitor.
- 9 Purchase fire hydrant flushing tools.
- 10 Replace failed service lines.
- Install variable speed drive on high service pump #1.
- 12

1 Jefferson City

- Install new raw water intake pump station to replace the existing station
 that was built in the 1890's.
- Replace 8" cast iron on the 400 block of Jefferson St with 400 ft of 8"
 ductile iron.
- Relocate 160 ft of 12" cast iron main on Tanner Bridge Rd and Ellis Blvd
- Replace 8" cast iron on Monroe St with 1,000 ft of 8" ductile iron.
- 8 Replace high service pump #2
- 9 Replace SCADA computers.
- 10 Joplin
- Relocate 571 ft of 12" main on Connecticut Ave at new KCS railroad
- Relocate 100 ft of 6" main on Porter
- Relocate 1000 ft of 12" on Zora at Main
- Replace 75 ft of 16" and 60 ft of 6" under the railroad at 5th St. and Murphy
 Blvd.
- Replace 235 failed service lines
- Add telemetry for the Webb City vault and Quapaw site to capture
 pressure and flow data

19 Mexico

- Replace 4" cast iron main on Holt with 1,800 ft of 8" plastic main
- Replace 6" cast iron main on Trinity with 450 ft of 6" plastic main
- Relocate 1400 ft of 8" main on Curtis and Concordia for City's Storm
 Sewer Project

1	Replace 206 failed service lines
2	Replace SCADA program logic controllers throughout the system
3	 Replace high service #1 pump/motor combination with new higher
4	efficiency combination
5	Replace filter media on three filters
6	Platte County
7	• Relocate 2,392 ft of 12" and 3,402 ft of 8" main on the Highway 45
8	MODOT project
9	Relocate 260 ft of 12" main on Mattox Ave around box culvert for the City
10	of Riverside
11	Replace 18 failed service lines
12	St. Joseph
13	Relocate 37 ft of 6" main on Lake Ave at Cherokee
14	Repair Karnes Tank interior roof members and install safety cable
15	Repair Industrial Park tank interior roof members and install safety cable
16	 Install variable frequency drives at Agency Tank
17	 Replace medium voltage coils on well pumps #2 and #5
18	Replace 229 failed service lines
19	St. Louis Metro
20	 Complete several Main Relocations resulting from Public Works
21	Improvements
22	\circ Replace 650 ft of 8", 123 ft of 36" 70 ft of 24" and 50 ft of 20" on
23	Olive Blvd in conjunction with the MODOT Rte 141

1	$_{\odot}$ Replace 5100 ft of 20", 100 ft of 8" and 100 ft of 6" on Sappington
2	Rd
3	 Replace 4200 ft of 12" main on Clayton Rd in Town &n Country
4	• Relocate 2549 ft of 12", 115 ft of 8", and 160 ft of 6" main on the
5	Thoele Rd St. Charles County Project
6	 Relocate 405 ft of 12" main on Guttermuth Rd in conjunction with
7	the St. Charles County Highway Project
8	 Relocate 1400 ft of 12" main on Ehlmann Rd
9	\circ Replace 18" and 12" mains with 5445 ft of 24", 400 ft of 20", 360 ft
10	of 18", 450 ft of 16", and 30 ft of 30" main on Page Ave Highway
11	Relocation Project in St. Charles
12	 Replace mains as part of the obsolete main replacement program
13	Install treatment to meet new NPDES permit requirements for the South
14	Plant Residual Lagoons
15	Replace South Plant wash water rate of flow valve
16	 Replace South Plant Raw Water Intake Valves #1 and #5
17	Replace six power poles on intake road at Central Plant
18	Replace Central Plant 3 High Service A Switchgear switches
19	Overhaul Central Plant 3 Filter #1 and Filter Plant Filter #12
20	Replace two Central Plant #1 Coag Baffle Walls and Floc Drives
21	Replace Central Plant HS Pump #7
22	Replace filter media in Central Plant Filters #1 and #12

1	• Replace Synchronous Controls on Central Plant #12 High Service High
2	Pump
3	Replace Liquid Ferric feed pumps at Meramec Plant
4	Replace Carbon Mixer at Meramec Plant
5	Overhaul North Plant Filters #1 and #6
6	Warrensburg
7	Replace roof hatch and ladders, and install riser handrail and safety cable
8	on North Tank
9	Replace #7 well pump
10	Warren County Water
11	Replace 6 failed service lines
12	Cedar Hill Sewer
13	Replace Lagoon Aerator
14	Replace Cedar Springs Lift Station
15	Install SCADA radio
16	Warren County Sewer
17	Install 4 dissolved oxygen monitors to operate blowers more efficiently
18	Replace 11 failed laterals
19	Former Aqua Systems – MAWC will increase these systems' Utility Plant by
20	approximately \$1.2 million.
21	
22	
23	

1

III. RESIDENTIAL USAGE NORMALIZATION

2 Q. WHY SHOULD RESIDENTIAL USAGE BE NORMALIZED?

A. A "normal" usage level should represent the customers' usage that would occur
based on average weather patterns. This normal usage is used in ratemaking to
set revenues for the residential customer class. Weather extremes will increase
or decrease customers' outside the home usage. In addition, the Company has
observed a significant and continuing residential declining usage trend that
should be taken into account.

9

10 Q. HOW CAN RESIDENTIAL WATER USAGE BE NORMALIZED?

11 Α. A statistical model for weather normalization, such as the one presented in the 12 Company's last rate case by Dr. Edward Spitznagel Jr., would accomplish this result. In the water industry, customer consumption expectations cannot be 13 14 simply estimated through heating or cooling degree comparisons as they often 15 are in the electric and gas industries. For example, Dr. Spitznagel's modeling 16 assumptions took into account not only temperatures, but precipitation and 17 drought tolerance indices, as well. After normalizing for these factors, he also considered trend-line analyses reflecting permanent changes in consumption 18 19 patterns over time. His statistical model proved to be quite accurate during the 20 summer of 2010 in St. Louis. Although weather in the area exhibited extremely 21 hot temperatures (hottest summer in last 65 years), the consistent precipitation (15th highest in last 65 years) kept residential discretionary usage below normal 22 23 levels. As accurate as that approach proved to be, however, any model with

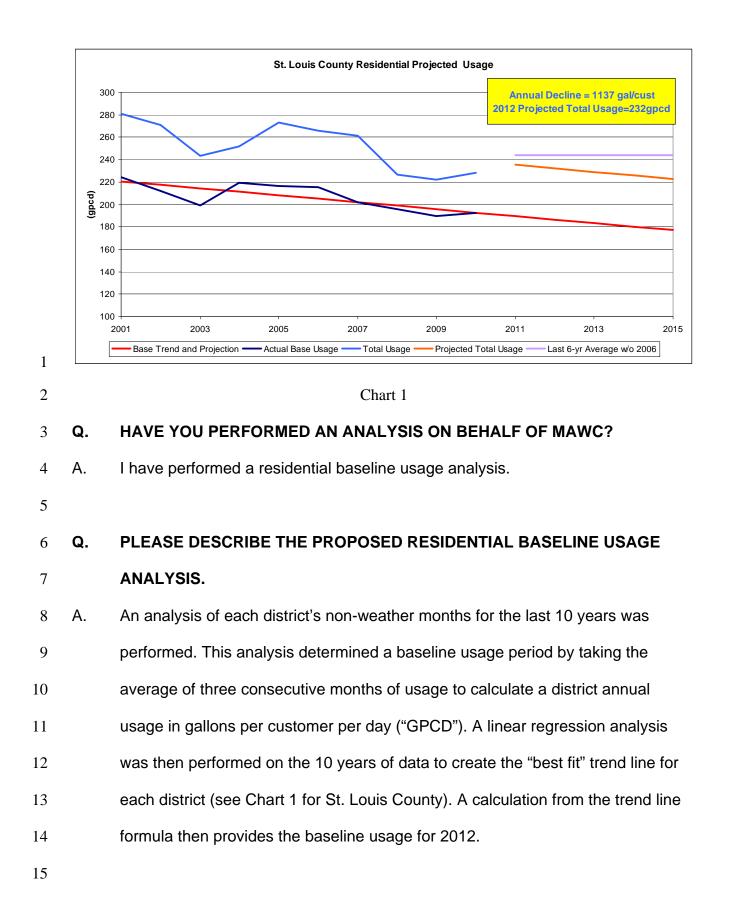
1 such a great number of factors and variables can be complicated to perform, 2 difficult to comprehend and costly. As a result, the Company is proposing a simpler, but still accurate alternative method that reviews the residential 3 4 customer baseline usage pattern from 10 years of non-weather months' (i.e., 5 winter months with little or no outdoor use) usage and then add to this the ten 6 year average of the customers' discretionary usage (e.g. lawn watering, etc).

7

8

Q. WHY NOT USE A SIMPLE AVERAGE BASED ON THE AVERAGE ANNUAL 9 **RESIDENTIAL CUSTOMER USAGE OVER A SET PERIOD?**

10 Α. An annual average does not take into account the significant and continuing 11 residential declining usage trend that we have observed. This trend is common 12 throughout the United States and will be discussed further in the testimony of MAWC witness Gary Naumick. Because an average of historical data can not 13 14 account for this anticipated decline, an average of annual averages would 15 calculate a higher residential usage rate. Chart 1 below displays a graph of St. Louis County's actual last ten years of annual customer usage along with 16 17 projected normalized annual usage from 2011 – 2015; as well as a projection using the six year average method similar to that proposed by the Commission 18 19 Staff in the last case. This data illustrates that the average of annual averages 20 projects higher usage than has been experienced.



Page 11 MAWC - KHD.Dir

Q. WHY DOES THE BASELINE PERIOD AVERAGE THREE CONSECUTIVE MONTHS?

Α. Some customers are billed monthly and some are billed quarterly. By including 3 4 three consecutive months of quarterly cycle usage, the analysis accounts for the 5 usage variability of all customers in all of the districts. If the model only used one 6 month as the non-weather usage indicator, the one month billing of a quarterly 7 cycle would only account for about one third of the total residential customers. Three consecutive months of quarterly customers represent all customers and 8 9 their usage patterns. Thus, using a three consecutive month period allows for the 10 total usage for all customers in all districts no matter the billing cycle. Moreover, 11 in some years during which American Water was under foreign ownership, 12 accounting information was reported based on cycles of four weeks, four weeks and five weeks rather than using the standard monthly reporting cycles utilized 13 14 by most domestic corporations. Not only does averaging three consecutive 15 months better represent the usage of all customers in a quarterly billing cycle but it also eliminates the need for adjustments due to the different reporting cycles 16 previously used by the Company. Therefore all customers in each district are 17 considered and all years can be analyzed. 18

19

20

Q. WHAT THREE MONTHS WERE USED IN THE STUDY?

A. This study uses bills issued during the period February through April for the three
 consecutive months of data, except for the district of Brunswick. No significant
 discretionary factor was found in the Brunswick district. Consequently, the whole

1		year was considered as the baseline period. The February – April range
2		represents the lowest three consecutive month period of customer usage on
3		which the baseline is calculated. Limited outdoor water usage occurs during this
4		period and thus represents the best estimate of the baseline indoor usage that
5		customers would use throughout the whole year.
6		
7	Q.	WHY IS THE NORMAL USAGE DETERMINED FOR THE CALENDAR YEAR
8		2012?
9	Α.	When determining the proper normalized residential usage per day, it is
10		important to consider the date at which rates will become effective as a result of
11		the rate case. The timing of the filing of this case suggests that rates will not be
12		effective until 2012 and thus customer usage levels in 2012 will dictate the
13		revenue generated. It is only reasonable that the 2012 projected baseline usage
14		be considered for the calculation of normal usage. This will allow for
15		consideration of the continued decline in customer usage at the time new rates
16		are likely to become effective.
17		
18	Q.	WHAT IS THE PROJECTED ANNUAL USAGE DECLINE FOR EACH
19		DISTRICT?
20	Α.	The analysis of the Missouri districts calculates an annual decline in usage from
21		a low of 394 gallons/customer in Jefferson City to a high of 3,169
22		gallons/customer in Platte County:
23		

	Annual
	Decline
District	(gallons/cust)
Brunswick	1,040
Mexico	682
Platte County	3,169
Warrensburg	1,065
Jeff City	394
St. Charles	1,306
Warren County	740
St. Joseph	807
Joplin	1,074
St. Louis Qtrly	1,137

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Several key factors appear to cause this decline - increasing prevalence of low
flow (water efficient) plumbing fixtures, conservation ethic of the customers, and
price elasticity. These factors are more thoroughly discussed in the testimony of
MAWC witness Gary Naumick.

8

9 Q. DO YOU EXPECT THE DECLINING USAGE TO CONTINUE?

10 A. Yes. MAWC customers live in well developed communities and it appears they

11 will continue to replace plumbing fixtures and less efficient water using

12 appliances with newer water efficient fixtures and appliances for an extended

13 period. The ten year period for this model review was selected as a

- 14 representative period of these type replacements in customers' homes. It is
- 15 important to note that the decline in usage could possibly accelerate if customers
- 16 embrace a greater conservation ethic, especially as the price of water increases.

1 Q. HOW IS THE NORMAL USAGE CALCULATED?

2 A. Once the baseline usage and the 2012 decline are determined the analysis then 3 reviews the yearly discretionary usage per day. This figure is calculated by 4 subtracting the yearly baseline usage from that year's average daily usage. The 5 discretionary usage is smaller in wet summers approximately 5-25% of annual usage, like the last three years, than when the summers are dry and hot and the 6 7 discretionary usage could get up to 40% of annual usage. With ten years of data, 8 an average of discretionary usage can be used to calculate the portion of 9 discretionary usage to be added to the baseline projection and determine the 10 normal usage. The 2012 baseline, discretionary, and normal usage per district 11 are:

	2	2012 Projections	6
	Baseline	Discretionary	Normal
District	(GPCD)	(GPCD)	(GPCD)
Brunswick	100.09	0.00	100.09
Mexico	122.08	8.83	130.90
Platte County	133.41	76.61	210.02
Warrensburg	125.49	19.22	144.72
Jeff City	129.44	20.40	149.85
St. Charles	165.07	71.29	236.35
Warren County	147.28	36.55	183.84
St. Joseph	133.96	15.85	149.81
Joplin	133.09	33.18	166.26
St. Louis Qtrly	186.43	45.76	232.19

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- 14
- 15
- 16
- 17

1		
2		IV. PLATTE COUNTY WATER TREATMENT FACILITY RETIREMENT
3	Q.	PLEASE DESCRIBE THE PLATTE COUNTY WATER TREATMENT FACILITY
4		(PCWTF).
5	Α.	The Platte County Water Treatment Facility is a ground water iron-manganese
6		removal and lime softening plant that fits tightly on the existing property. The
7		oldest parts of this plant date back to 1898. Major improvements at the plant
8		occurred in 1942, 1954, and 1976. Other equipment replacements and repairs
9		have occurred throughout the life of the plant. The major items that date to 1898
10		are the 150,400 gallon clearwell and the 23,000 gallon backwash holding basin.
11		The clearwell has a concrete wall interior with a stone revetment support as
12		foundation.
13		
14	Q.	WHY MUST THE PLATTE COUNTY WATER TREATMENT FACILITY
15		(PCWTF) BE RETIRED BY MAY 31, 2018?
16	A.	Renovations to the plant will be required and it is not practical or advisable to
17		make those renovations at this site.
18		The concrete and stone for the clearwell show signs of cracking. In addition, the
19		stone has missing sections of grout. This clearwell is a vital part of the treatment
20		facility and further deterioration could lead to contamination from groundwater or
21		possible infiltration of insects and rodents. The clearwell needs to be replaced to
22		prevent the contamination. The existing site does not have sufficient space to
23		place a new clearwell of equal or greater size while keeping the existing clearwell

in service. Therefore, in order to use the existing site, additional property
 adjacent to the PCWTF will need to be purchased. Limited land around the plant
 site is available for this construction and what may be possible for purchase
 would be subject to flooding.

5 The current plant and office site has been subjected to floods and remains 6 vulnerable. In 1993 (flood of record), the existing plant site was flooded and there 7 was approximately seven feet of river water on the main floor of the operating 8 building. The wetted portion of the clearwell was below the height of the flood 9 waters by approximately four inches.

10 The clearwell could be designed to be replaced where it is currently located but 11 that would require major portions of the existing office and garage to be removed. 12 The demolition and construction would require a significant outage of the plant

13 during the construction phase of the replacement.

A more limited outage occurred in 1995 when the clearwell roof had to be

15 replaced. During this outage, water was purchased from the City of Kansas City

16 (at a higher cost than producing water from the plant) to supply water to Platte

17 County. The project was scheduled during the lower customer demand period.

18 The demolition and construction of a new clearwell would require the plant to be

19 out of service for a longer period.

20 Therefore, replacing the clearwell on site would not be advisable as the major

21 portions of the plant would remain susceptible to flooding.

Q. IS THE CLEARWELL REPLACEMENT THE ONLY REASON FOR RETIRING THE PCWTF?

Α. Replacing the clearwell in the near future to prevent failure or exposure to 3 4 contamination is the major reason for retiring the plant, but other structural and 5 building facade deterioration exists. Steel roof support beams over both sets of 6 filters have extensive corrosion due to being in the moist atmosphere. These 7 beams could fail in a similar manner as what occurred in the winter of 2009 -2010 when the portion of the plant roof over the operator area collapsed. Also, 8 9 the brick façade of the PCWTF shows signs of stress and bricks have cracked 10 and popped out in various sections of the exterior walls. Concrete spalling and 11 other metal corrosion on the filters and settling basin are also occurring and will 12 require repair/replacement in the near future. Overall, repairing or replacing the existing structures in place would be more expensive than building a plant on a 13 14 new site. Furthermore, a new site would not be subject to the flooding of the 15 current site.

16

17 Q. WHY IS THE RETIREMENT DATE MAY 31, 2018?

A. MAWC has considered the retirement of this plant for some time. In Burns &
McDonnell's 2000 Report "Final Draft of the Water Demand Projections and
Capital Improvement Options Study for Platte County District"; they state "The
remaining useful life of the existing Water Treatment Plant has been estimated in
about 10 years. Operation of the plant beyond this period of time is anticipated to
be uneconomical. Therefore, retirement of the existing Water Treatment Plant is

assumed to occur in year 2010." MAWC continued to monitor the plant condition
from this point and in 2008 conducted an in-house study prior to agreeing with
the City of Kansas City for an additional connection at Briarcliff. This study
concluded that the WTF would need to be replaced within 10 years, which is the
year 2018.

6 The above conditions indicate a continuation of disintegration of the plant. The 7 building of a new water treatment plant on a new site could take 5-6 years to 8 purchase land, obtain funding and proper permitting of the plant and site, thus 9 fitting the 2018 retirement date. The May date was selected to meet projected 10 summer demand.

- 11
- 12

2 Q. WHAT WILL REPLACE THE PCWTF?

A. MAWC will continue to evaluate building a new treatment facility versus purchase
 of all water from the City of Kansas City. The selection will need to be determined
 within the next eighteen months. The 2008 Company study selected building a
 new plant matching the existing plant's capacity on a new site, while purchasing
 the remaining water to meet demands from Kansas City. However, a decision in
 this regard has not yet been made.

19

20 Q. DOES THIS CONCLUDE YOUR TESTIMONY?

21 A. Yes.