COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF:	)	
	)	
NOTICE OF ADJUSTMENT OF THE RATES OF	)	CASE NO. 2004-00103
KENTUCKY AMERICAN WATER COMPANY	)	
EFFECTIVE ON AND AFTER MAY 30, 2004	)	

DIRECT TESTIMONY OF LINDA C. BRIDWELL

April 30, 2004

KENTUCKY AMERICAN WATER
CASE NO. 2004-00103
Direct Testimony
Linda C. Bridwell

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1. Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Linda C. Bridwell and my business address is 2300 Richmond Road, Lexington, Kentucky 40502.

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

A. I am employed by Kentucky-American Water Company ("Kentucky American Water") as Director of Engineering.

3. Q. HAVE YOU PREVIOUSLY FILED TESTIMONY BEFORE THIS COMMISSION?

A. Yes.

4. Q. PLEASE STATE YOUR EDUCATIONAL AND PROFESSIONAL BACKGROUND.

A. I received a B.S. degree in Civil Engineering from the University of Kentucky, and an M.S. degree in Civil Engineering from the University of Kentucky with an emphasis in water resources. I completed a Masters of Business Administration from Xavier University in Cincinnati, Ohio. I am a registered Professional Engineer.

I have been employed by Kentucky American Water since 1989. I worked as a distribution supervisor until 1990 and was promoted to Planning Engineer. In July 1995 I was promoted to Engineering Manager. In January 1998 I was promoted to Director of Engineering. I am an active member of the American Water Works Association ("AWWA"), served as president of the local chapter of the American Society of Civil Engineering ("ASCE"), and am currently Vice-President of the State section. I served as an officer of the local chapter of the National Society of Professional Engineers ("NSPE") and a State officer. Since 1991, I have served periodically as an Adjunct Professor at the University of Kentucky in the Civil Engineering Department, teaching "Water Quality and Pollution Control" and the "Introduction to Environmental

Engineering". I also served as a Commissioner on the Kentucky Water Resources Development Commission established by Governor Patton.

5. Q. WHAT ARE YOUR DUTIES AS DIRECTOR OF ENGINEERING?

A. My primary responsibilities encompass the coordination of the Engineering Department, which includes the development, and implementation of all aspects of long range planning for Kentucky American Water. This includes planning, design and construction project management. I was involved in the development of the 1992 Least Cost/Comprehensive Planning Study ("LC/CPS") including coordinating local input, regionalization and data collection. I supervise the implementation of the recommendations of the LC/CPS in our investment plan and construction schedule. I also coordinate the development and implementation of the entire investment plan and monitor the actual expenditures. I am responsible for updating the demand projections and monitoring the source of supply. I coordinate the provision of technical assistance to all other company departments as needed. Beginning in 1997 I was involved directly as the project manager for the water supply project named the Bluegrass Water Project and have been the lead on Kentucky American Water's continued efforts to resolve the water supply problem. As such, I serve as the Kentucky American Water's representative to the Bluegrass Water Supply Consortium and on the Bluegrass Water Management Planning Council.

6. Q. WHAT WILL YOUR TESTIMONY ADDRESS?

A. My testimony will describe the preparation of the investment plan and detail the information for the construction projects as submitted in this case, as well as the status of the source of supply situation. I will also address tap fees, conservation initiatives, operational efforts including leak detection and water quality, and the technical aspects of the Tri-Village Water District ("Tri-Village") and Elk Lake Property Owners, Inc. water system ("Elk Lake") acquisitions.

7. Q. PLEASE DESCRIBE THE FACTORS USED IN THE PREPARATION OF THE FORECAST PERIOD DATA AS IT RELATES TO THE CAPITAL CONSTRUCTION.

A. The Company's capital investment plan can be divided into two distinct areas: 1) normal recurring construction and 2) major projects identified as investment projects (IPs). Normal recurring construction includes water main installation for new development, smaller main projects for reinforcement and replacement, service line and meter setting installation, meter purchases and the purchase of tools, furniture, equipment and vehicles.

Recurring construction costs are trended from historical and forecasted data. Estimates are prepared for the installation of new mains, service lines, meter settings and the purchase of new meters based on preliminary plats from the appropriate governmental planning agencies and consultations with developers, homebuilders and engineering firms.

Purchase of tools, furniture, equipment and vehicles are based on needs. Each item is reviewed independently and an itemized list of expenditures is prepared. Estimates are made based on current year pricing.

Many of the major projects have their origin in the LC/CPS. The intent of the planning process is to provide a broad and comprehensive review of facility needs which will allow us to then establish a general guide for needed improvements over a short-term horizon. These improvements will enable Kentucky American Water to provide safe, adequate and reliable service to its customers in order to meet their domestic, commercial and industrial needs; provide flows adequate for fire protection and satisfy all regulatory requirements. The plan provides a general scope of each project along with a preliminary design. The criteria for evaluating the various system components are engineering requirements; consideration of national, state and local trends; environmental impact evaluations and water resource management.

The engineering criteria used are accepted engineering standards and practices which provide adequate capacity and appropriate levels of reliability to satisfy residential, commercial, industrial, and public authority needs, and provide flows for fire protection. The criteria are developed from regulations, professional standards and company engineering policies and procedures. Demand projections, based on historical data and usage trends, are utilized in evaluating future system needs. Regionalization opportunities are evaluated to determine if a consolidated solution to water problems in a particular area is feasible or if management service opportunities are viable.

Sources of supply are evaluated based on quantity and quality. There must be sufficient quantity to supply the system's needs. There must be sufficient quality to provide, through treatment, finished water, which meets all federal and state regulations. Sources of supply must also have sufficient allocation rights to enable average and maximum demands to be met.

Treatment and pumping facilities are designed to reliably meet projected maximum day needs. Storage facilities are designed to provide the recommended volume to equalize the plant's pumping rate on a maximum demand day. With this approach, treatment facilities need only be designed to meet the projected maximum day demand, although during that day hourly demands will exceed the treatment capacity's maximum rate. Storage facilities are also designed to provide the volume of water necessary for fire protection up to the maximum flow and duration addressed in the most recent Insurance Services Office (ISO) municipal grading schedule.

Pipelines are designed to meet two conditions of service. They are expected to deliver projected peak hour customer demands while maintaining system pressures at 30 psi or greater in accordance with the Public Service Commission (PSC) regulations and to provide adequate fire flow identified by ISO while maintaining distribution system pressure at 20 psi or greater.

In developing the comprehensive planning study, it was beneficial to review national, state and local trends, which can affect future planning. Nationally there has been a strong trend toward more stringent regulations affecting water supplies and treatment processes. Examples include increased protection of sources of supply, more stringent water quality regulations of finished water, increased regulation of treatment plant residuals, more frequent water quality monitoring requirements, and more extensive environmental laws affecting new construction and source development.

Where major projects are not specifically included as a result of the LC/CPS, the projected expenditure is based on preliminary engineering estimates, vendor quotes and other individual analysis.

8. Q. DOES KENTUCKY AMERICAN WATER FOCUS ON COST CONTROL OF CAPITAL EXPENDITURES IN ITS NORMAL DAY-TO-DAY ACTIVITIES?

A. Yes. All significant construction work done by independent contractors and significant purchases made are completed pursuant to a bid solicitation process. We maintain a list of qualified bidders and we believe that our construction costs are very reasonable. American Water annually takes competitive bids for material and supplies that are either manufactured or distributed regionally and nationally. We have the advantage of being able to purchase these materials and supplies on an as-needed basis at favorable prices.

9. Q. HAS KENTUCKY AMERICAN WATER CHANGED ITS METHOD OF IMPLEMENTING ITS CAPITAL PLAN?

A. Yes. Since 1995 Kentucky American Water has been working on ways to improve its capital expenditures planning and implementation. This has included creating the Director of Engineering position in 1998, focused review of all capital expenditures by the Engineering Department in 1999, expansion of the size of the Engineering Department to provide better project delivery, expanded use of consulting engineers on pipeline relocation work, and centralized approval and monitoring of capital expenditures.

In 2003, the entire American Water system transitioned to a new process for development and review of capital expenditures that used some of the best practices already implemented at Kentucky American Water. This new process includes the formation of a regional Capital Investment Management Committee ("CIMC") to provide that capital expenditure plans meet the strategic intent of the business including introduction of new technology and process efficiency, assure that capital expenditure plans are integrated with operating expense plans, and provide more effective controls on budgets and individual capital projects. The CIMC includes the Regional President, Vice President's of Engineering, Finance, Operations, and Rates, and the subsidiary capital manager. The CIMC receives capital expenditure plans from each geographic area, and reviews for submission to the appropriate Board of Directors. Once budgets are approved, the CIMC meets monthly to review capital expenditures compared to budgeted levels. Previously each investment project request was submitted in memorandum form to the Board of Directors, and changes had to be approved at the quarterly Board meetings. The new process includes fives stages: 1) a Project Need Identification defining the project at an early stage; 2) a Project Implementation Proposal that confirms all aspects of the project are in a position to begin work; 3) Project Change Requests, if needed, if the cost changes more than 5% or $100,000; 4) a Post Project Review; and 5) Asset Management. Kentucky American Water personnel handle all of the stages, with oversight by the CIMC. All projects, including normal recurring items, have an identified project manager responsible for processing the stages of the project. Kentucky American Water made tremendous progress in its delivery of capital expenditures over the last ten years in regard to schedules, budgets, and quality of delivery. It is anticipated that this new process will further enhance the efforts Kentucky American Water has already implemented.

Additionally, Kentucky American Water has revised its process for budgeting and implementing large relocation projects. In recent years, one of the most challenging aspects of planning capital expenditures was determining the amount of construction that would be required for individual municipal and state road projects. Some of these projects required significant capital expenditures on the part of Kentucky American

Water, but the company had no control over the schedule. Kentucky American Water is required to act promptly if the project is to stay on schedule, but sometimes would not be informed of project delays until waterline relocation was underway or nearly complete. Project funding was requested individually of the Board of Directors as each project arose, and it became a guessing game on which projects would be delayed and by how long. Investment project funding was requested of the Board of Directors early in case the project remained on the road relocation schedule, but more often than not the project schedule was delayed, sometimes for even years. In reviewing historical spending, it appeared that a consistent expenditure level proceeded each year but it was difficult to determine which specific project was going to be delayed. By creating one project for each year, an estimate of necessary construction dollars could be included in the budget. If a budgeted portion of that total project was postponed, inevitably an unexpected expenditure in relocations would occur. Beginning in 2001, Kentucky American created one investment project for estimated relocations during the year. These estimates were based on regular meeting with state and local agencies in charge of road projects. This process allowed more flexible approval of capital expenditures as unexpected project arose, offsetting other projects that had been postponed.

10. Q. PLEASE EXPLAIN THE MAJOR PROJECTS PROPOSED FOR 2004 AND 2005.

A. In conjunction with the change in capital investment management, Kentucky American Water changed the format of its capital plan along with the entire American Water system. The changes were initiated to better define recurring items based on utility plant account as replacement, non-company funded growth, or company funded extensions. As previously was the policy, individual items within the recurring item total should not exceed $100,000. The investment plan includes projects from recurring accounts as described below:

Item 80 This investment plan item includes the installation of new main, valves and hydrants that are funded entirely by others. This investment plan item may also include the replacement of existing components of water supply, water treatment, water pumping, water storage, and water pressure regulation facilities

not funded by company expenditures. This item is generally the previous Item A. For Kentucky American, the majority of these expenditures are made through deposit agreements as well as non-refundable contributions. The projected expenditure amount is developed through discussions with homebuilders, developers and a review of plats. Developers deposit projected expenditures based on average pipe installation costs from the previous year pursuant to our on-site main extension agreement.

Item 81 This investment plan item includes the replacement, renewal or improvement of existing water mains including valves and other appurtenances that are necessary to perform the work. It also includes relocations to resolve municipal or state road projects with no reimbursement. This item was previously part of Item B.

Item 82 This investment plan item includes new water mains, valves, and other appurtenances that are necessary to perform the work that are funded by the company; including upsizing of developer initiated extensions, company initiated and funded new mains that are not related to immediate growth such as new mains that eliminate existing dead ends or provide new transmission capacity, and new customer initiated extensions in accordance with tariffs that may include some customer contribution (customer funded portion under Item 80). This item may also include new mains that parallel existing mains to increase transmission capacity, provide reliability, or establish an additional pressure gradient. This item was previously part of Item B.

Item 83 This investment plan item includes the replacement of leaking, failed or obsolete hydrants and hydrant assemblies that are company funded. This item was previously part of Item B.

Item 84 This investment plan item includes the installation of new hydrants, including hydrant assemblies that are installed on existing mains or installed in conjunction with main extension projects, which are company funded. This item is generally all public hydrants and was previously part of Item B.

Item 85 This investment plan item includes the replacement of water services or improvements, including the replacement of corporation stops, or shut-off valves. This item was previously part of Item C.

Item 86 This investment plan item includes the installation of new water services or improvements, including corporation stops and shut-off valves. This item was previously part of Item C.

Item 87 This investment plan item includes the replacement or improvement of existing customer meters and meter settings with or without technology changes. These expenditures were previously part of Item D.

Item 88 This investment plan item includes the installation of new meters and meter settings. These expenditures were previously part of Item D.

Item 89 This investment plan item is for the replacement of existing Information Technology System Equipment and systems due to failure or obsolescence and new items to achieve efficiency or address new requirements. These expenditures were previously part of Item E.

Item 90 This investment plan item is for the replacement or improvement of building systems, equipment or furnishings for offices and operations centers, including copy machines, fax machines, security systems, and phone systems. These expenditures were previously part of Item E and Item H.

Item 91 This investment plan item is for replacement or new vehicles. These expenditures were previously Item F.

Item 92 This investment plan item is for the replacement or purchase of construction, shop, garage, meter reading, storeroom and laboratory equipment. These expenditures were previously part of Item G.

Item 93 This investment plan item is for the replacement of existing components of water supply water treatment, water pumping, water storage, and water pressure regulation facilities, including associated building components and equipment. Replacements may planned or made because of failure, or may include improvements. These expenditures were previously part of Item G and Item H.

Item 94 This investment plan item is for the installation of new components or small facilities for source of supply, water treatment, water pumping, water storage,

and water pressure regulation facilities. These expenditures were previously part of Item G and Item H.

Additionally, the new process includes investment plan items for treatment media replacement and process rehabilitation, capitalized tank painting, and capitalized comprehensive planning. Kentucky American Water has not proposed to utilize these items in the 2004 or 2005 investment plans. A cross reference table of the new budget items versus the previously named budget items is attached to my testimony as Exhibit 1 and is filed electronically as KAW_DT_LCB_EX1_043004.xls.

Investment Projects

These projects are for facilities that are substantial in dollar amount. Projects approved in the immediate investment plan are identified by a hyphenated numerical system, the first number being the year the project originated and the second number being the number of the project within that year. Projects are also assigned an 8-digit business unit where the first two digits identify the subsidiary; the second two digits are based on the Division, and the final four digits being the hyphenated numerical project number. Kentucky American Water 's company number is (12) and the central division is (02) while the northern division is (30). If the project is proposed but has not yet been approved it will be identified only by its description. Explanation of the projects in the 2004 and the 2005 investment plan follows.

IP 01-02 (12020102) is the design and construction for a new three million gallon ground storage tank to be located at the Clays Mill Road tank site. An additional 3.0 million gallon ground storage tank was identified in the 1992 LC/CPS to provide additional fire protection and storage for reliability, although the location was not determined. In 1993 Kentucky American Water submitted a storage capacity analysis to the PSC that recommended the appropriate water storage needs for its system through the year 2005 including the construction of five additional storage tanks. Kentucky American Water requested and was granted a deviation from the one-day emergency storage requirement on December 20, 1993 through 2005. This tank is one of the five recommended tanks for construction. Total project costs are projected

at $1,500,000 with expenditures projected at $666,850 in 2004 with completion in August 2004.

IP 01-03 (12020103) is the design and installation of an upgraded distributed controls system at both treatment plants. This project is a result of deficiencies and obsolescence of the current system which provides monitoring and control of the treatment facilities. The manufacturer no longer supports the current software so additions and changes have to be customized. The current computer equipment is inadequate to handle additional facilities, and three separate systems will be integrated with this project. The systems are unreliable and do not allow for seamless transfer of data or database for easy access. The new system will allow for a common database for critical operational data. The previous system was installed in the mid-1980s and was expanded in piecemeal fashion. Total project costs are estimated at $694,000 with projected expenditures in 2004 of $70,000. The project completion was originally scheduled for December 2003 but has been delayed as the contract programmer has sustained a serious injury that limits travel. The project is projected is now projected to be complete in June 2004.

IP 01-05 (12020105) is design and construction of the Russell Cave Road 1.0 million-gallon pumped storage facility. This tank will equalize pressure, provide fire flows, and improve system reliability and allow maintenance to be performed on the Muddy Ford tank in Scott County, which is critical to maintaining service to Toyota Motor Manufacturing. This is another of the five tanks recommended for construction in the 1993 Storage Analysis. Total project costs are estimated at $1,500,000 with $950,000 estimated in 2004 and $451,600 estimated in 2005. The project will be completed in 2005.

IP 01-11 (12300111) is the design and installation of 292,000 feet of 4, 6, and 8-inch mains in Owen County to serve the New Columbus area. The project also includes a booster pump station and storage tank to support the main extensions. Approximately 400 new customers will be added to the system as a result of this project. The entire project is estimated at $2,120,430 with $150,000 in 2004. The project will be completed in 2004.

IP 02-01 (12020201) is design and installation of 10,000 feet of 16-inch water main along Leestown Road from Masterson Station Park to Yarnallton Road. The purpose of this project is to improve fire flows and increase distribution system reliability in the Midway vicinity. There has been tremendous growth along the Leestown Road corridor near Masterson Station and near Midway which has reduced reliability for existing customers, including Midway. The project is estimated at $700,000 and will be completed in 2004. An estimated $616,000 will be spent in 2004.

IP 02-03 (12020203) is for the design and replacement of the Traveling Screens and Housing at the Kentucky River intake. The two screens are used to protect the raw water intake pumps from larger debris and are located behind a coarse bar rack. Portions of the screens have been in service since their original installation in the late 1950's. Continual maintenance has been required to keep the screens operational with recent failure in 2003. The effective operation of the screens is critical to reliability of the intake pumps. The project is estimated to cost $450,000 in 2004.

IP 02-04 (12020204) is for ongoing work for the water supply problem. An estimated $241,700 is projected for 2004 with an additional expenditure of $135,200 proposed for 2005. The status of the water supply problem will be addressed later in my testimony.

IP 03-01 (12020301) is the design and construction of a 2.0 million gallon elevated storage tank located in the Winchester/New Circle Road vicinity. This project was recommended in the 2002 revision of the 1993 storage analysis, with a higher priority than the previously recommended additional 3.0 million gallon ground storage tank. This tank will provide additional reliability and improve pressure concerns in the immediate vicinity. The project is estimated to cost $2.7 million, with $1,100,000 in 2004 and $1,600,000 in 2005.

IP 03-03 (12020303) is the upgrades for reliability to the electrical systems at the Kentucky River Station ("KRS") and at select tank sites. This project was the result of the power outage at the KRS during peak demands of July 2002. A review of the facilities has determined that some modification should be made that will minimize or even eliminate the customer impact if a similar event occurred in the future. These modifications include sectionalizing breakers at the KRS substation and necessary

electrical equipment adjustments, improved electrical system upgrades at the KRS, the installation of ball valve systems at two ground storage tanks and the construction of a booster pump station to create additional elevated storage in the system. This project is projected to cost $1,320,000 with $1,010,000 in 2004 and $300,000 in 2005.

IP 04-02 (12020402) is the relocation of mains associated with major highway relocations in 2004. As discussed previously, this is a new method for planning capital expenditures required for municipal and state road relocations. $400,000 is projected for 2004, with an additional $400,000 projected for 2005.

IP 04-03 (12300403) is a project for additional main extensions in Owen County. The Owen County Judge Executive has successfully been awarded additional grant money for waterlines and Kentucky American Water has agreed to match capital expenditures for further expansion of access to public community water. This project is expected to total $700,000 with $60,000 in 2004 for design and $240,000 in 2005 for additional construction. Construction will continue into 2007.

IP Incline Car Replacement at KRS is the replacement of the mechanical car that travels between the Kentucky River intake and the treatment plant at the Kentucky River Station. The car covers a 380-foot vertical elevation change up a bluff, and parallels a steep staircase. The system was originally installed in 1957 and continues to operate. The car has periodically been out of service for mechanical repairs, which inhibits monitoring of the intake station. Further, the existing car has a weight limit of 1250 pounds. With the installation of significantly larger intake pumps in 1992 and subsequent maintenance on those pumps, this weight limit has restricted maintenance. Parts in excess of the weight limit have to be barged, and the timing is dependent on river flows. A replacement system will be designed for greater reliability and higher weight limits. The proposed 2005 expenditure of $ 250,000 is part of a projected total project cost of $1,900,000 to be completed in 2007.

IP Ground Storage Tank 3.0 MG is the proposed investment project for the construction of an additional 3.0 million gallons of storage in the distribution system. This project was identified in the LC/CPS and the 1993 and 2002 Storage Analysis. The 2002 Storage Analysis concluded that the 2.0 MG Elevated tank should be

constructed first to increase overall system reliability, therefore this project has been scheduled for 2005-2007. The projected expenditures of $75,000 in 2005 are for design only, with a total project cost estimate of $1,675,000.

IP Replace Trac-Vac System at Richmond Road Station ("RRS") is the proposed replacement of the current sludge removal system in the sedimentation basins at the RRS. The existing system was installed in 1988 and worked well initially. However, the system was based on sludge consistency and volume at that time. Changes in regulation have required two changes in coagulants in order to reduce disinfection by-products. These changes have resulted in more sludge produced, as well as a different sludge consistency. Further, the sludge volume has also increased with the greater use of the Kentucky River raw water at the Richmond Road Station. The sludge removal system simply can't keep up. Modifications to the system have made marginal impacts, however, the basins are removed from service at least once per quarter for manual sludge removal. This manual cleaning is extremely labor intensive and significantly limits the operations of the entire system. Projected construction expenditures are $250,000 in 2005 to replace the vacuum units and air hose system.

IP KRS Filter Media Replacement – Hydrotreators 3 & 4 at KRS is the rebuilding of the underdrains and replacement of the filter media in Hydrotreators 3 and 4. The filters have been operating at significantly reduced levels from their design capacity because of the degradation of the media and the underdrains. This project is estimated to cost $250,000 in 2005.

IP Russell Cave Road Main Extension – 34,000' of 12" is the construction of approximately 34,000 feet of 12" main in the Russell Cave Road vicinity. This project will optimize the operations of the new tank on Russell Cave Road. The project is estimated at a total of $1,800,000 between 2005 to 2007, with $500,000 projected in 2005.

1. Q. PLEASE DESCRIBE THE OPERATIONS OF KENTUCKY AMERICAN WATER FACILITIES.

A. Kentucky American Water operates two water treatment facilities. The water treatment plants operate independently but are connected by Kentucky American's distribution system. They are referred to as the KRS and the RRS. The KRS and RRS have a combined reliable treatment capacity of 65 million gallons per day, with the KRS at a 40 mgd capacity and the RRS at a 25 mgd capacity. As described later in my testimony, Kentucky American Water has received temporary re-rating of those facilities to 65 mgd in summer months. Kentucky American Water uses a combination of these facilities to meet daily demands.

Kentucky American Water withdraws water from the Kentucky River at Pool 9 just downstream of Clays Ferry, at an intake at the KRS. Raw water is pumped up a 380-foot bluff to the treatment plant, and can also be transferred at the top of the cliff to the RRS. RRS can also withdraw water from Jacobson Reservoir on US 25 south of Lexington, or Lake Ellerslie next to the RRS. Both of these water supplies are very small in volume.

Both of Kentucky American Water's treatment facilities utilize a chemical-mechanical process. The RRS utilizes a conventional coagulation and sedimentation process, followed by filtration through granular activated carbon and sand filters. The KRS utilizes an upflow solid contact process followed by filtration through mixed media high rate filters. Both facilities utilize chloramination to maintain a residual disinfectant within the distribution system. The Kentucky American Water treatment facilities are operated to meet all current and proposed federal and state water quality regulations. Each facility is fully staffed by Kentucky Division of Water certified water treatment plant operators.

Water treated at these two treatment facilities is pumped into the integrated distribution system that serves the Central Division. This system covers all of Fayette County and parts of Scott, Jessamine, Bourbon, Woodford, Harrison, and Clark Counties. This system is made up of 1,574 miles of main of various materials ranging from 2" to 36" and of various materials. The system has 22,074 valves and 6,593 hydrants. Pressures are stabilized through the use of 12 tanks with a total volume of 16.58 million gallons. From

the distribution system, Kentucky American Water also sells for resale water to eight other water utilities including Jessamine South Elkhorn Water District, the City of Nicholasville, the City of Georgetown, the City of Versailles, the City of Midway, the City of North Middletown, East Clark County Water District and the Harrison County Water Association.

In 2001, Kentucky American Water merged with Tri-Village in Owen County by acquiring its assets. This added approximately 173 miles of main in Owen, Grant and Gallatin Counties. Kentucky American Water then acquired the assets of Elk Lake and merged it with the Tri-Village. Tri-Village purchased all of its water from the City of Owenton, while Elk Lake had its own treatment facilities. The Elk Lake treatment facilities have been decommissioned and all water is now supplied through the Tri-Village distribution system. This now represents the Northern Division of Kentucky American Water and includes 3 booster pump stations and nine tanks, with a total volume of 1.24 million gallons including the recently constructed New Columbus tank.

2. Q. HOW LONG HAVE YOU BEEN INVOLVED WITH THE WATER SUPPLY AND TREATMENT CAPACITY DEFICIT ANALYSIS FOR KENTUCKY AMERICAN WATER?

A. Since February 1990, when I was first promoted to Planning Engineer. I have been actively involved with it ever since.

13. Q. TO YOUR KNOWLEDGE, HAD THE COMPANY BEEN WORKING ON THE PROBLEM PRIOR TO THAT?

A. Definitely. Kentucky American Water has been actively involved in developing additional raw water on the Kentucky River since the 1970s beginning with the Red River Dam project. Even after the construction of Red River Dam was abandoned, Kentucky American Water continued to look at the Kentucky River as its preferred source of raw water supply. The Company first identified a potential treatment capacity deficit in 1986 and selected the least cost alternative to both solutions of construction of a second treatment facility on the Kentucky River at Pool 6. This would take advantage of

the confluence of the Dix River below Herrington Lake. Design was then begun on the Kentucky River Station II.

14. Q. WHY WASN'T THE KENTUCKY RIVER STATION II CONSTRUCTED?

A. Design of the 5-mgd treatment plant was essentially complete in 1989. However, the drought of 1988 demonstrated that the safe yield of the Kentucky River was much less than previously anticipated. Further, as detailed in previously filed testimony in Case No. 2000-120 and Case No. 93-434, a number of other concerns were raised that caused Kentucky American Water to reassess that solution. These included opposition over easements, minimum passing flow restrictions on the river, and environmental concerns about the site selected. After lengthy efforts to pursue ways to increase the safe yield of the Kentucky River, Kentucky American decided in 1992 that a second treatment plant on the Kentucky River would not be reliable enough to be feasible.

15. Q. WHAT WAS THE IMPACT OF THE 1988 DROUGHT?

A. In 1988, Kentucky American Water asked its customers to restrict their water use for the first time since 1930. As river and reservoir levels dropped, customers were first asked to voluntarily conserve, then mandated to restrict outdoor water use including a ban on all outdoor water use for 12 days. The situation drew attention to the water supply situation and heightened community awareness. Fortunately, the drought was not prolonged, and serious economic losses were not incurred.

16. Q. WHAT HAPPENED FOLLOWING THE DROUGHT OF 1988?

A. Then Lexington Mayor Scotty Baesler established the Kentucky River Basin Steering Committee that oversaw a comprehensive report on the source of supply deficit of the entire Kentucky River. The report, concluded in 1991, indicated that neither conservation nor demand management could eliminate the problem. The report, which only looked at raw water, concluded that the most cost effective alternative was to raise Kentucky River dams.

The Kentucky Division of Water ("DOW") initiated passing flow restrictions on the Kentucky River withdrawal permits, requiring water withdrawers to restrict water withdrawals during low flow periods. This decreased the amount of raw water available for withdrawal from the Kentucky River.

Kentucky American Water began to review Ohio River alternatives. Because Kentucky American Water had both a treatment capacity deficit as well as a raw water source of supply deficit, and the Louisville Water Company had an excess treatment capacity, an alternative for purchasing finished water from the Louisville Water Company became a very cost competitive alternative solution to both problems.

In January 1993, Kentucky American Water began to pursue exclusively a pipeline to purchase water form the Louisville Water Company because efforts to enhance Kentucky River supply were progressing far to slowly to meet customer needs. The Kentucky River Authority ("KRA") was created in 1986 to be responsible for the Kentucky River; however, in 1992 it still had no staff and no source of income to finance any efforts. Kentucky American Water included the first expenditures for design in Case No. 92-452.

The Public Service Commission ("PSC") established Case No. 93-434 on November 19, 1993. The purpose of that case was to investigate the sources of supply and demand projections of Kentucky American Water. Kentucky American Water committed to doing no further work on the pipeline until the conclusion of the case.

17. Q. WHAT DID CASE NO. 93-434 CONCLUDE?

A. The files of Case No. 93-434 are on record with the PSC and are quite extensive. The case took nearly four years to complete and Kentucky American Water responded to over 800 interrogatories from the PSC and intervenors. In an order dated March 14, 1995, the PSC acknowledged that Kentucky American Water did not have capacity to meet its customers' unrestricted demand during a drought of record. The PSC concluded, "KAWC and the KRA should continue their cooperative efforts to obtain a reliable safe yield analysis of the Kentucky River." The PSC went on to clarify in an April 25, 1995

order that "KAWC's demand projections were within the realm of reasonableness and were produced by state of the art methodology."

In December 1996, the KRA completed a study that confirmed a significant source of supply deficit that could be reduced with valve operations in upstream dams that would allow the transfer of water downstream, but could not be eliminated with the current river system, or in combination with conservation and demand management.

Based on the evidence presented, the PSC determined in an order dated August 21, 1997 that "additional steps must be taken and financial resources will have to be committed to develop an adequate and reliable source of water supply, not only for the customers of KAWC but for all the citizens served by the Kentucky River. The evidence further indicated that the net effect of the KRA's proposed activities, if implemented, will be insufficient." The order went on to state "the responsibility to develop an adequate source of water supply for KAWC's customer is the direct obligation of KAWC itself."

18. Q. WHAT WAS KENTUCKY AMERICAN WATER'S RESPONSE TO THE ORDER?

A. Kentucky American Water believes the orders in Case 93-434 were very clear in that Kentucky American Water was expected to address the water supply needs of its customers. Because of the continued uncertainty of a Kentucky River solution, Kentucky American Water decided to pursue the most feasible alternative that it could reasonably expect to implement in the near future and began work on the Bluegrass Water Project.

19. Q. PLEASE DESCRIBE THE EFFORTS ON THE BLUEGRASS WATER PROJECT?

A. As discussed in Case No. 2000-120, Kentucky American Water began work on the project. However, with design about 60% complete, controversy began to build within some segments of the community. Despite the onset of a drought in early 1999, the Lexington-Fayette Urban County Government ("LFUCG") Council initiated a technical

investigation of the situation. In July 1999, Kentucky American Water announced that it would stop design work on the pipeline pending the outcome of the Council's review.

20. Q. PLEASE DESCRIBE THE EVENTS OF THE DROUGHT OF 1999.

A. Unlike 1988, the 1999 drought was much more prolonged. Kentucky American Water asked its customers to voluntarily and then manditorily restrict water use for four months due to dropping Kentucky River levels. Outdoor water use was banned completely for two months and Kentucky American Water was in discussions with the PSC regarding potential emergency actions. The proposed Emergency Pricing Tariff proposed in this case and discussed by Coleman Bush in his direct testimony is a result of those discussions as well as discussion after the drought with industrial customers, commercial users, and other affected parties.

21. Q. WHAT DID KENTUCKY AMERICAN WATER LEARN AS A RESULT OF THE DROUGHT?

A. First, Kentucky American Water was able to confirm that its large customers, particularly industrial customers through internal conservation initiatives, had already reduced water usage to a minimum to maintain businesses. Second, the deterioration of Dam 9 was more extensive than previously thought, despite work by the U.S. Army Corps of Engineers ("USACE") recent to the drought. Third, the valves to release upstream water helped but do not solve the problem. Fourth, customers were generally much better about responding to restrictions than in 1988. Finally, Kentucky American Water was able to confirm the results of the 1991 Aquatic Study of drought flow impacts of the Kentucky River by monitoring water quality in the Kentucky River during low flows.

22. Q. WHAT BENEFITS WERE GAINED FROM THE DROUGHT?

A. The drought brought a widespread awareness of the water supply situation to the community. The prolonged drought also brought the first opportunity to discuss the logistics of customer restrictions beyond limiting outdoor water use.

23. Q. WHAT WAS THE OUTCOME OF THE LFUCG COUNCIL EFFORTS IN THE WATER SUPPLY INVESTIGATION?

A. On December 9, 1999, the LFUCG Council passed Resolution 679-99, which indicated a preference for a solution from the Kentucky River. The resolution also supported a regional water supply effort and encouraged regional cooperation.

24. Q. WHAT ACTIONS DID KENTUCKY AMERICAN TAKE FOLLOWING THAT RESOLUTION?

A. First, Kentucky American Water continued to support the KRA in its efforts to enhance Kentucky River supply. The status of those efforts will be discussed further in my testimony.

In December 1999, Kentucky American Water began meeting with a small group of area utilities to investigate a regional water supply solution. The Bluegrass Area Development District was asked to facilitate conversations, to determine if there was a need or feasibility of a regional water supply. The group began as Winchester Municipal Utilities, the City of Nicholasville, Georgetown Municipal Water and Sewer Service, Frankfort Plant Board, and Kentucky American Water. The other entities combined equaled less than the total capacity as Kentucky American Water. All had both water supply and long-term treatment capacity deficits. The group called itself the Bluegrass Water Supply Consortium ("BWSC").

25. Q. WHAT HAVE BEEN THE EFFORTS OF THE BLUEGRASS WATER SUPPLY CONSORTIUM?

A. At first, the group struggled to find middle ground. Finally, the BWSC adopted a mission statement: *"The Bluegrass Water Supply Consortium will ensure the delivery of an adequate supply of potable water under any conditions to the customers of member entities. We will maximize the utilization of the Kentucky River as a raw water source, maintain reasonable rates, and provide adequate water quality."*

The group then evolved into an alliance of seventeen government agencies and water utilities (both public and private) that worked have been working together for nearly four years to address the drinking water needs of central Kentucky. The group represented serves 800,000 people in central Kentucky, representing approximately 20% of the Commonwealth's population. The BWSC began working with numerous local, state and federal agencies including the KRA, the DOW, and the Kentucky Infrastructure Authority ("KIA").

The Consortium received a congressional appropriation for $295,000 and received matching funds of $240,000 from the KIA to complete a study to determine the best source of additional water supply for the region that could be brought "on line" within 3 to 5 years. The study was also intended to optimize regional water supplies by using a grid network of water pipelines among communities, develop a financial plan that is affordable, and fairly apportions costs, recommend a management approach that is fair and flexible, and utilize a comprehensive public participation and outreach effort to communicate the study process. Member utilities contributed $60,000 to the efforts as well.

The study's efforts determined that through the year 2020 there is a 67 million gallon per day deficit of water during a critical drought. Nearly two-thirds of this deficit exists today with an additional deficit 2 million gallons per day accruing each year beyond 2020. It was further determined that the water deficits could be reduced to 45 million gallons per day by utilizing a regional approach to all water resources and anticipating current Kentucky River Authority projects.

26. Q. WHAT IS THE SOLUTION RECOMMENDED BY THE BWSC STUDY?

A. The consultant hired by the BWSC identified 40 alternatives based on previous work and new analysis. The list was separated for near-term and long-term results. Sixteen near-term solutions were whittled to eight "preferred" solutions. The top three solutions were identified. Detailed cost estimates were developed and refined. The overall best solution was determined to be a new treatment plant on the Kentucky River at Pool No. 3, with an

auxiliary raw water intake and pumping station at the Ohio River for emergency purposes. The water will be treated and transferred to a grid network in central Kentucky. The proposed regional solution provides immediate and long-term benefits. These include:

1. Existing water treatment system maximization – treatment plant capacity is sized based on single peak day demands. It was determined that the utilities do not all have a peak day of water demand on the same days. By connecting the facilities through a managed grid network, the exiting facilities can be maximized, thus reducing the amount of additional capacity to be built.
2. Optimization of existing raw water sources – The grid network also provides the ability to maximize existing sources during localized drought issues.
3. Economies of scale – A large single solution will provide economies of scale in comparison to construction and operation of new, small projects by each participant.
4. Reliability of multiple sources- The grid network will allow water from multiple sources to minimize the potential for interruptions due to chemical spills or individual facility outages.
5. Phasing construction – The proposed solution provides flexibility in accommodating changes in the growth areas to most cost effectively provide new facilities as needed.
6. Individual autonomy – Existing water utilities will continue to maintain their existing systems and be responsible for their local customers. Each entity, regardless of size, will have equal weight in the decision-making for regional efforts.

The selected project was estimated to cost $265 million dollars with a 40-year present worth of $330 million including operating expenses. This would represent at least a 20-25% rate increase for many of the region's consumers although no specifics of rates or cost allocations were undertaken.

27. Q. WHAT IS THE CURRENT STATUS OF THE BLUEGRASS WATER SUPPLY CONSORTIUM?

A. The BWSC is not a formal organization. As part of the study, the legal counsel hired for the Consortium looked at a number of different organizations for the regional group. The best fit of a public agency that can be formed and begin work under current Kentucky statutes appears to be a Water Commission, although a private company cannot be a member. In an effort to maintain momentum, it was agreed that a Water Commission should be formed with all parties as members except Kentucky American Water, which would be a partner with the Commission. All members of a Water Commission have one vote on the Board. Because Kentucky American Water cannot be a member, the LFUCG was asked to be a member as a voting representative for Lexington citizens. With this arrangement, work could continue on implementing a solution with a potential for legislative changes requested at a future date.

At the conclusion of the study, all utilities were asked to make a non-binding commitment for necessary water volumes to indicate their continued interest based on the study's cost estimates. Ten water providers delivered written, non-binding commitments. Based on previous demand projections updated with recent demands, Kentucky American Water indicated a need for 22 mgd through 2020 with a total commitment of 31.75 mgd from all utilities. Once the Commission is formally established, it will seek funding to begin detailed master planning, design, and initiate construction of the overall project. Current requests are in place for federal and state assistance on funding, although the group recognizes that success will require significant contribution by all members.

Nine communities are in the process of adopting ordinances to create the Bluegrass Water Supply Commission. They include Mt. Sterling, Lancaster, Nicholasville, Georgetown, Cynthiana, Paris, Winchester, Lexington, and Frankfort. The Commission should be established by September 2004.

28. Q. IN ITS ORDER DATED NOVEMBER 27, 2000, THE COMMISSION REMINDED KENTUCKY AMERICAN WATER OF ITS OBLIGATION TO DEVELOP AN ADEQUATE AND RELIABLE SOURCE OF WATER SUPPLY FOR KENTUCKY AMERICAN WATER'S CUSTOMERS. THE COMMISSION INDICATED THAT KENTUCKY AMERICAN "SHOULD ACT PROMPTLY TO DEVELOP AND IMPLEMENT A VIABLE PLAN FOR ADRESSING THIS PROBLEM." HAS KENTUCKY AMERICAN WATER DONE SO?

A. Yes. At the conclusion of 1999 and in early 2000, Kentucky American Water realized it had four alternative courses of action. First, a plan to expand its existing treatment facilities considering the enhancement of the Kentucky River supplies by the KRA to be inevitable and solely sufficient to meet all raw water needs of Kentucky American Water in pool 9. Kentucky American Water is extremely limited in its ability to accelerate the schedule of enhancements of the Kentucky River, which remains tentative. This choice of expanding treatment facilities that are supplied by an inadequate source of supply would not be a prudent expenditure of capital investment.

As a variation, Kentucky American Water could have could have chosen to wait until the Kentucky River enhancements were more definite. However, as Kentucky American Water believes that enhancements to the Kentucky River will only be accomplished in a very long-term schedule, this would be tantamount to doing nothing in the 15-year planning horizon with regard to the water supply problem as demonstrated by the slow progress of the KRA's efforts to raise Dam 10. The progress of the KRA's efforts is not a reflection of the KRA or the USACE, but the process required to significantly alter dams and particularly dam heights. This course of action clearly would have been in violation of a direct order by the Public Service Commission and not have met the obligations to Kentucky American Water's customers, and was not a reasonable alternative.

Third, Kentucky American Water could resume the pursuit of the Bluegrass Water Project, with the intention of presenting a Certificate of Convenience and Necessity to the Commission within eighteen months. Kentucky American Water continues to believe

that this is a technically feasible and reasonable project, and was confirmed in its position that it is the least cost overall solution by the Consortium's study. However, opponents of the project publicly stated that they would continue to fight any efforts to pursue this project, making a delay of implementation almost inevitable. Although the drought of 1999 may have tempered some of the public debate, it was clear that this course of action would require extensive legal expenditures.

Fourth, Kentucky American Water could work diligently with other utilities to pursue a regional solution, which may reduce controversy surrounding a solution and provide economies of scale for all participants. Kentucky American Water recognized that this still would take at least 3 to 5 years to provide additional water, and reviewed immediate efforts that could be undertaken cost effectively to reduce the potential impact to customers during maximum demand conditions or prolonged drought conditions until a regional solution was in place. Kentucky American Water acted promptly to develop and implement immediate efforts to address this problem by reducing the potential impact on customers, while acting with other utilities to develop and implement a viable regional plan for addressing this problem.

29. Q. WHAT IMMEDIATE EFFORTS WERE UNDERTAKEN?

A. In its report filed with the PSC on March 21, 2001, Kentucky American Water indicated it had an immediate source of raw water supply deficit of 21 million gallons per day, which will grow to 25 million gallons per day in 2020. Kentucky American Water also indicated it had an immediate treatment capacity deficit of 10.94 million gallons per day which was projected to grow to 18.66 million gallons per day in 2020.

The treatment capacity deficit is based on the "reliable" or rated capacity of a treatment plant which is defined as the maximum permitted production capacity, with the largest single mechanical unit at the plant assumed to be out of service. The KRS has a rated capacity of 40 million gallons per day, and the RRS has a rated capacity of 25 million gallons per day. Further, this definition assumes treatment of average raw water quality. However, Kentucky American Water recognized that there is a very small probability

that the largest single mechanical unit at the plant will be out of service on the absolute maximum demand day, and that raw water quality on historical maximum demand days is better than average. This meant that the KRS actually has an operational capability much higher than 40 million gallons per day. In fact, Kentucky American Water had processed as much as 53 million gallons of water on a single day with optimum raw water quality. In November 2000, the Drinking Water Branch ("DWB") of the DOW granted an approval for the temporary re-rating of the KRS to a reliable capacity of 45 mgd during the summer months, provided that water quality standards are maintained. Furthermore, Kentucky American Water requested and received a letter from the DWB on February 26,2001 stating that "in instances where a water system must exceed the reliable plant capacity on any given day, the DWB may allow a system to run at the higher rate provided that health standards are met and proper disinfection is maintained. This approval is considered temporary…." In summary Kentucky American Water could then produce up to 76 million gallons from its production facilities during the summer when demands are high and raw water quality is typically good to meet customer demands without being in violation of DWB regulation or policy. This provided additional short-term treatment capability to meet the projected maximum day demand in the short term.

Next, Kentucky American Water reviewed the RRS and determined that for a relatively small investment, the operational capability of the RRS could be expanded from 25 million gallons per day to 30 million gallons per day. This would entail eliminating some hydraulic bottlenecks in the plant and improving chemical feed systems, while not increasing overall rated plant capacity which would require much more extensive mechanical improvements. These improvements would generally improve the efficiency of the plant during average operations as well. Kentucky American Water submitted the plans to the DOW for approval, and received a Certificate of Convenience and Necessity from the PSC. Construction was completed on the improvements in 2003. Additional integration at the RRS as part of the ongoing improvements to the Distributed Controls System will further enhance these operational efficiencies. This raises the overall treatment plant capability, providing optimum raw water quality to 80 million gallons per

day. While not sufficient as a long-term solution, it provides a measure to meet Kentucky American Water's obligation to its customers in the short term while a long-term solution is being implemented.

30. Q. WHAT HAS KENTUCKY AMERICAN WATER DONE IN REGARD TO PROVIDING ADDITIONAL RAW WATER SUPPLY?

A. Clearly, the efforts described above did not add a single drop of water to the Kentucky River or Jacobson Reservoir. Kentucky American Water has worked in support of the KRA on its efforts to enhance the raw water available to withdraw from the Kentucky River. Further, Kentucky American Water has discussed at length with the DWB its withdrawal permit. Working with the BWSC, Kentucky American Water has requested and received in 2001 and 2002 a temporary adjustment to allowable withdrawals of its permit number 0200. The adjustments were valid only through December 31 of each year. Kentucky American Water has requested again in 2004 this temporary adjustment, and expects to receive a similar adjustment. This temporary adjustment provides additional raw water withdrawal capabilities during early stages of dry conditions, thus minimizing the impact to Kentucky American Water's customers during short dry periods and potentially during a moderate prolonged drought.

31. Q. WHAT IS THE STATUS OF THE KRA DAM IMPROVEMENTS?

A. In 1999, the LFUCG indicated in its resolution that based on the schedule of improvements as presented by the KRA, construction work on Dam #10 of the Kentucky River should be started within the 2002-2004 time period. At the time, many parties felt that this schedule was overly optimistic. Kentucky American Water was extremely limited in its ability to assist in meeting that schedule other than providing its support to the efforts. The KRA received authorization for $22 million for federal funding for stabilizing and improving Dam 10 through the USCE. The KRA directed the USACE to include raising the dam height by six feet to provide additional raw water storage in the pool. As recent as February 2001, the USACE indicated that project construction could be underway within three and a half years. However, the environmental assessment process has taken longer than expected and is not complete. Again, this is not due to a

lack of effort or desire to implement enhancements as much as the process to initiate changes. Kentucky American Water is not aware of update to the projected schedule. The BWSC has included an enhancement to Dam 10 in its analysis, but has not included any further enhancements through the 2020 planning horizon based on the delays that have occurred on Dam 10 efforts.

32. Q. HOW HAS KENTUCKY AMERICAN WATER GROWN IN RECENT YEARS?

A. Kentucky American Water has added 33,426 since the drought of 1988, over 82% of which have been in Fayette County. Including the acquisition of Tri-Village and Elk Lake, 10,950 new customers have been added since the drought of 1999, with over 72% of which have been in Fayette County. The growth since 1988 represents 31% of our customers while the growth since 1999 alone represents 10% of our customers. The Bluegrass Area Development District estimates that over 35,000 manufacturing jobs in the region are associated with the Toyota plant in Scott County. It is expected that growth will continue to occur in the central Kentucky area through 2020, and Kentucky American Water intends to continue to meet its obligation to provide customer water demands.

33. Q. DOES KENTUCKY AMERICAN WATER PROPOSE AN INCREASE TO ITS TAP FEES?

A. Yes. Kentucky American Water requested the addition of a tap fee in Case No. 2000-120. The tap fees were modified from the original submission, but approved for all customers in that proceeding. The tap fees at that time were based on a three-year average cost of the installation of new services. New services are installed through a contractor, who competitively bids on annual contract for this work. Kentucky American Water employees oversee the installation of all new service and meter settings.

Since 1999, the cost of installing taps has increased. The proposed new tap fees for the Central Division are:

¾ x 5/8 " meter -	$510 (increased from $440)
1" meter	$945 (increased from $765)

2” meter $4,250 (increased from $3,175)

34. Q. WHY HAVE THE TAP FEES INCREASED?

A. The contractor costs for the installation of new services have increased, based on insurance issues following September 11, 2001. Materials costs have gone up with inflation. And Kentucky American Water labor costs have increased due to more stringent verification of the accuracy of work and tracking of materials. In 1999 Kentucky American Water initiated a trial of allowing the services contractor to purchase materials in order to reduce company labor for tracking, purchasing and maintaining materials. The contractor was allowed a handling cost on the price of the materials. However, after three years Kentucky American Water recognized that vendors were resistant to providing material at the low national contract prices to local contractors. Overall materials costs were increasing to Kentucky American Water, therefore in 2003 Kentucky American Water retained the responsibility for purchasing and tracking materials which requires more company labor.

Meter costs also continue to rise with the continued installation of Automated Meter Reading (“AMR”). Kentucky American Water continues to use niche deployment of AMR, and has not included the cost of an AMR meter in the tap fee.

35. Q. ARE THE TAP FEES IN THE NORTHERN DIVISION CHANGING?

A. Yes. When Kentucky American Water merged with both the Tri-Village and Elk Lake in Owen County, both systems already had a tap fee for a ¾” x 5/8” meter. These were $530 and $360 respectively. With the efforts of the New Columbus project, it appears that the $530 for the Tri-Village taps remains an appropriate amount. Kentucky American Water proposes to add a tap fee for 1” and 2” meters at the same cost of the Central Division tap fees of the same size.

Since the acquisition of Elk Lake, Kentucky American Water has only installed three taps. Since there is not a significant number installed to have an accurate basis to determine an increase in that cost, Kentucky American Water proposes that the ¾” x 5/8”

meter tap fee remain at $360. Kentucky American Water proposes that a 1" and 2" tap fee be created for Elk Lake as well at the same cost of the Central Division tap fees of the same size.

36. Q. KENTUCKY AMERICAN WATER'S LEAK DETECTION HAS BEEN DISCUSSED IN PRIOR CASES. WHAT IS ITS CURRNT STATUS?

A. Kentucky American Water continues to focus on aggressive leak detection and sponsors a comprehensive program that utilizes cutting edge technology. Kentucky American Water has begun to be recognized as an expert in leak detection, being asked to assist other water utilities and customers. Over the last five years, Kentucky American Water has conducted 95,295 soundings, which has resulted in an unaccounted-for water level of 11.9%. Over the same time period, we have added 176 miles of main. In 2001, Kentucky American Water submitted a bid to the KRA to provide leak detection services on an as-needed basis to other utilities within the Kentucky River Basin, paid for by the KRA. The Kentucky Rural Water Association had previously conducted this effort. Under those efforts, Kentucky American Water has successfully assisted the City of Hazard, the City of Jackson, Georgetown Municipal Water and Sewer Services, and the City of Versailles with leak detection efforts.

As part of the ongoing efforts, Kentucky American Water continually reviews its program. During 2002, a trend of increasing unaccounted-for water seemed to be occurring. Kentucky American Water undertook a thorough review of the program, and made revisions to the program including more aggressive system soundings.

37. Q. WATER QUALITY CONTINUES TO BE A TOPIC OF MAJOR EMPHASIS WITH ONGOING REGULATIONS. WHAT EFFORTS HAS KENTUCKY AMERICAN WATER MADE IN RECENT YEARS REGARDING WATER QUALITY?

A. The US Environmental Protection Agency ("USEPA") first established drinking water regulations in the mid 1970s. The first regulations were amended in 1986 and again in 1996. The 1996 Safe Drinking Water Act Amendments also set many new specific time

deadlines for the regulation of various contaminants with phased-in schedules desired to form a seamless process from proposal to implementation. In addition to parameters in raw water, the distribution system is regulated under complex monitoring and reporting schemes that include total Coliform bacteria, disinfectant residual, and the corrosion byproducts lead and copper. Kentucky American Water has maintained compliance with applicable requirements in these areas through attention to treatment, distribution system operation, disinfection and corrosion control.

Turbidity (a measure of light reflected by water – usually attributable to very small particles) has also been regulated in water for many years as an indicator of various contaminants – particularly microbes. More stringent regulation has occurred over recent years. Kentucky American Water has continued to excel at providing high quality water to its customers, meeting all of the new and challenging regulations, as demonstrated by its progressive efforts with its Partnership for Safe Water.

38. Q. EXPLAIN THE PARTNERSHIP FOR SAFE WATER.

A. The Partnership for Safe Water was developed through the cooperation of the USEPA, the AWWA, the National Association of Water Companies, the Association of State Drinking Water Administrators, the American Water Works Research Foundation and the Association of Metropolitan Water Agencies. The purpose of the partnership is to encourage participants to identify areas that will enhance their ability to prevent the entry of parasites such as *Cryptosporidium* and *Giardia* into the potable water supply and to voluntarily implement those processes that are appropriate for the systems, while at the same time, minimizing capital investments.

In early 1996 Kentucky American Water voluntarily joined the USEPA in a "Partnership For Safe Water," thereby agreeing to optimize treatment as much as feasible, without capital improvement, to lower filter water turbidity to less than 0.1 ntu.

There are four phases to the Partnership: 1) commitment, 2) data collection, 3) self-assessment and correction and 4) third-party assessment based on a composite correction program (CCP). Kentucky American Water has fulfilled the first three phases of this program.

The Self-Assessment Partnership Phase for that program began in January, 1996. The self-assessment process established voluntary water quality limits for turbidity levels within the treatment plant and in finished water. These limits are more stringent than current USEPA regulations and many require operational, engineering and administrative changes. By voluntary participation, Kentucky American Water has demonstrated its commitment to water quality improvement. Because of the improved water quality, Kentucky American Water believes that the microbial safety of our water for its consumers has been improved.

39. Q. HOW HAS KENTUCKY AMERICAN WATER PERFORMED AS A MEMBER OF THE USEPA PARTNERSHIP?

A. Kentucky American Water was one of 20 utilities recognized nationally for the successful completion of the portion of Phase III self-assessment of the EPA Partnership in 1998. During 1999 Kentucky American met the USEPA Partnership Goals 100% of the time at both plants. Each month, over 95% of filtered water samples were at or below 0.1 ntu. This high level of performance has been sustained through 2000-2003. In June 2003, Kentucky American Water's treatment facilities were two of only 17 nationally to receive 5-Year Directors awards for this ongoing commitment to treatment performance excellence.

40. Q. WILL KENTUCKY AMERICAN WATER BE PREPARED TO MEET THE NEW REGULATIONS?

A. As a result of Kentucky American Water's participation in the USEPA Partnership and the staff's ongoing operator training and instrumentation proficiency, Kentucky American Water was prepared to meet the IESWTR turbidity requirements and has

maintained seamless compliance as the new more stringent filtered turbidity regulations took effect in 2002. Kentucky American Water successfully added more automated on-line monitoring and data collection equipment and procedures to meet new individual filter turbidity monitoring requirements of the IESWTR. The next round of microbial regulation – the Long Term 1 Enhanced Surface Water Treatment Rule will apply the IESWTR requirements to systems serving less than 10,000 populations, so this will have no direct impact on Kentucky American Water Central Division. Kentucky American Water has worked diligently with the City of Owenton and Tri-Village to make sure that the Northern Division will also meet those requirements. The Long Term 2 Enhanced Surface Water Treatment Rule will require additional Cryptosporidium treatment for those facilities determined to have elevated Cryptosporidium levels in source water based on a two-year source water testing program. It is unclear what changes may be required at this time, but it is likely that ultraviolet disinfection application may be needed.

Largely attributable to Kentucky American Water's conversion in 1988 to chloramines for distribution disinfection, the company seamlessly met Phase I of the disinfection byproduct regulation (effective January 2002), which reduced the THM Standard to 80 μg/L for a four quarter running average and added a new haloacetic acid (HAA) disinfection byproduct maximum contaminant limit of 60 μg/L. Kentucky American Water's four-quarter running averages for THMs and for HAAs have consistently met these limits. The most recent year's running annual averages were 43/24 μg/L for THMs/HAAs. Through prudent studies and operations, both of Kentucky American Water's treatment facilities have consistently met the Total Organic Carbon (TOC) removal requirements, also effective January 2002 as part of the Stage 1 Disinfectants/Disinfection Byproducts Rule. The next set of D/DBP regulations is projected to limit DBPs based on maximum retention time sites monitored quarterly to determine a Locational Running Annual Average ("LRAA"). In this stage, the maximum retention time site LRAA MCL is to be 120/100 μg/L for THM/HAA; lowered to 80/60 μg/L in Stage 2. The LRAA levels at current maximum retention sites in Kentucky American Water's system are well below both Stage 1 and Stage 2 limits. These future

DBP regulations will necessitate sample site evaluation after extensive evaluation of DBP occurrence throughout the distribution systems at multiple sites. This Initial Distribution System Evaluation ("IDSE") consists of one year of testing (or alternative approved model) projected be completed by mid 2006. The results of the IDSE will determine sites to be used for future DBP compliance sampling. Kentucky American Water is working with American Water as part of a distribution system hydraulic/water quality modeling effort.

Additional chemicals needed to maintain good microbial removals (turbidity performance) while maintaining organics removal and low total system DBPs, have translated into increased chemical and waste disposal costs since the prior rate request.

41. Q. HOW HAVE THESE WATER QUALITY EFFORTS IMPACTED OPERATIONS?

A. In addition to providing high quality of water to its customers, Kentucky American Water has become a resource for assisting other utilities. This reputation was a large contributor to the acquisition of Tri-Village and Elk Lake.

Tri-Village purchased all of its water from the City of Owenton, which represented about half of the water the utility produced. By 1999, the DOW had been requiring for several years that the Tri-Village and Owenton systems conduct THM monitoring and regularly issue health-based public notices for elevated THMS. Owenton was being pushed hard by the DOW to relocate its raw water intake, but was struggling to keep the project moving. Kentucky American Water agreed to help resolve the DBP issue as part of the purchase agreement of Tri-Village. Kentucky American Water personnel began working with the treatment plant personnel in Owenton to address treatment plant changes that could reduce THM levels until the intake could be relocated. Kentucky American Water assisted the City of Owenton on keeping the intake project moving forward. Kentucky American Water implemented operational changes for the Tri-Village distribution system.

42. Q. WHAT OTHER ISSUES LED TO THE MERGER OF THE TRI VILLAGE AND ELK LAKE WATER SYSTEMS?

A. Both systems were limited in resources for operations. Tri-Village maintained a staff of four to cover main breaks, meter reading and billing. Elk Lake had its own treatment plant with a single operator, who was terminating employment to pursue another opportunity. Both systems had been limited in infrastructure maintenance and investment, with no comprehensive planning. In one instance, customers had been extended service but could not be provided required pressure, and so they were not being billed.

With the merger of the systems, Kentucky American Water upgraded processes for material purchase, changed distribution system operations to improve water quality, and was able to decommission the Elk Lake treatment plant and connect to the Tri-Village distribution system. Kentucky American Water corrected the above-mentioned low-pressure situation, and began using its national contracts to purchase material, thus reducing costs. Kentucky American Water retained all four Tri-Village employees, and added a working supervisor in the area. In cooperation with the Owen County Judge-Executive, Kentucky American Water began a program extend new mains into currently unserved areas of Owen County. As a result, of the improved water quality and new main extensions, Kentucky American Water also began sales of water to the Peaks Mill Water District in Franklin County to alleviate a low-pressure problem for a few customers. An alternative solution within the Peaks Mill system would have been extremely expensive.

43. Q. ARE YOU FAMILIAR WITH THE CONSERVATION PROGRAM?

A. Yes. In 1992 I was in charge of an extensive expansion of Kentucky American Water's conservation program, which included a number of customer programs and community education. Over the years, it became clear that the most effective efforts were in the community education. In 2001, Kentucky American Water filed a Conservation Initiatives Plan with the Public Service Commission, and initiated an evaluation of its conservation education programs to develop a comprehensive approach to encouraging

water conservation. The evaluation led to additional focus on community education in mixed delivery methods with a recognizable slogan. Kentucky American Water has continued using the slogan "Water. Its Worth Using Wisely." Kentucky American Water has used other one-time promotions to keep the program fresh wile reinforcing television and radio messages. The program has been continually reinforced with customer surveys and focus groups.

The success of the program continues to be demonstrated in the survey numbers and can now be seen in the reduced per customer average usage as discussed in Dr. Edward Spitznagel's direct testimony. Kentucky American Water plans to continue its Conservation Initiatives and periodically evaluated for potential changes in future year.

44. Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.