Exhibit No.:	
Issue(s):	Rate Design
Witness/Type:	James S. Landon/Surrebuttal
Sponsoring Party:	City of Warrensburg, et al.
Case Nos.:	WR-2000-281

SURREBUTTAL TESTIMONY

OF

JAMES S. LANDON

Submitted on Behalf of the Intervenors

City of Warrensburg, Missouri
City of St. Peters, Missouri
City of O'Fallon, Missouri
City of Weldon Spring, Missouri
St. Charles County, Missouri
Central Missouri State University
Hawker Energy Products, Inc.
Harmon Industries, Inc.
Stahl Specialty Company
Swisher Mower and Machine Company

MISSOURI-AMERICAN WATER COMPANY

Case No. WR-2000-281

May 25, 2000

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the matter of Missouri-American Water Company's tariff sheets designed to Implement general rate increases for water and sewer service provided to customers in the Missouri area of the company.	)))))	Case No. WR-2000-281

AFFIDAVIT OF JAMES LANDON

STATE OF MISSOURI)
) SS
COUNTY OF JOHNSON)

James Landon, of lawful age and being first duly sworn, deposes and states:

1. My name is James Landon. I am the City Manager for the City of Warrensburg, Missouri.

2. Attached hereto and made a part hereof for all purposes is my Surrebuttal Testimony consisting of pages 1 through ___ and Exhibits _____. I hereby swear and affirm that my statements contained in the attached statement are true and correct to the best of my knowledge and belief.

James Landon

Subscribed and sworn to me this 23rd day of May, 2000.

Notary Public

My Commission Expires:
6/24/00

CYNTHIA GABEL
NOTARY PUBLIC STATE OF MISSOURI
JOHNSON COUNTY
MY COMMISSION EXP. JUNE 24,2001

SURREBUTTAL TESTIMONY

OF

JAMES S. LANDON

MISSOURI-AMERICAN WATER COMPANY
CASE NO. WR-2000-281

Q. PLEASE STATE YOUR NAME AND ADDRESS.

A. James S. Landon. I reside at 809 Thrush Terrace, Warrensburg, Missouri 64093, and my business address is P. O. Box 1018, Warrensburg, Missouri 64093.

Q. ON WHOSE BEHALF ARE YOU TESTIFYING?

A. Intervenors: City of Warrensburg, Missouri, City of St. Peters, Missouri, City of O'Fallon, Missouri, City of Weldon Spring, Missouri, St. Charles, County, Missouri, Central Missouri State University, Hawker Energy Products, Inc., Harmon Industries, Inc., Stahl Specialty Company and Swisher Mower and Machine Company.

Q. CAN YOU DESCRIBE YOUR EDUCATION AND WORK EXPERIENCE?

A. Yes. Attached hereto is Exhibit A which contains this information.

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

A. I am the City Manager for the City of Warrensburg, Missouri.

Q. WHAT IS THE PURPOSE OF YOUR SURREBUTTAL TESTIMONY?

A. My surrebuttal testimony will address certain rate design arguments raised by the rebuttal testimony of MAWC witness William M. Stout.

Q. PLEASE DISCUSS THE REBUTTAL TESTIMONY OF MR. STOUT WITH REGARD TO THE RATE DESIGN ISSUE.

A. At page 9 of his direct testimony, Mr. Stout raises doubts that district specific pricing ("DSP") will promote salutary financial accountability, avoid investments in extravagant and unnecessary facilities and permit customers a say in the investments that are made in their district. Mr. Stout concludes at page 13, lines 8-21, that "The creation of a system that provides greater encouragement for customers to seek compromises in the manner in which their water is treated in order to avoid the resultant cost is a very slippery slope." First of all I believe that Mr. Stout seriously underestimates the ability of local rate payers, civic leaders and interested local concerns to understand problems in the water system, analyze them and arrive at well-considered, least cost solutions.

Q. WHY DO YOU SAY THAT?

A. Because in Warrensburg, we recently went through such a process in connection with Warrensburg's water quality in Case No. WO-98-203.

Q. WHAT IS CASE NO. WO-98-203?

A. Case No. WO-98-203, entitled: "In the Matter of an Investigation into Water Quality for Missouri-American Water Company's Warrensburg District", was a new case created by the Commission in its Report and Order dated November 6, 1997 in WR-97-237, MAWC's last rate case. In its order the Commission required: "That a new case shall be established by separate order for the purpose of receiving and evaluating the results of the investigation made by Missouri-American Water Company into the hardness, odor, and taste of the water supply in the City of Warrensburg. The City of Warrensburg shall be granted intervention in that case."

Q. PLEASE DESCRIBE THE PROCESS AND RESULTS OF THAT CASE.

A. From January 1998 through November of 1999, the Company, PSC Staff and a Committee of Warrensburg representatives (residential and industrial rate payers, a plant specialist from CMSU, loaned engineers from local businesses and civic leaders) met and reviewed alternative solutions to what was recognized a very real problem with the odor, taste and hardness of Warrensburg's water. I was personally involved in this process. At least six different approaches were examined over a twenty-two month period. In October of 1999, the parties concluded that an ozonation system costing approximately $5.2 million was the best and most cost effective solution. A summary of these conclusions were memorialized in "The Final Report of Sources of Supply and Water Quality Issues" and filed with a Motion to Close Case in WO-98-203 on October 28, 1999. (A copy of this Report is marked Exhibit B and attached hereto).

Q. HAS THIS OZONATION SYSTEM BEEN CONSTRUCTED AND PLACED IN SERVICE IN WARRENSBURG?

A. Yes, the plant recently went online in April 2000, and the Company has assigned the plant's cost of approximately $5.2 million to the rate base in the pending rate case.

Q. WHAT WERE THE EXPECTATIONS OF THE WARRENSBURG WATER CUSTOMERS REGARDING THIS NEW PLANT, PARTICULARLY PAYMENT FOR IT?

A. During the 22 month period of investigation there were continuous public meetings, news articles and radio coverage regarding the cause of Warrenburg's poor water quality and the various alternatives that MAWC and Warrensburg were looking at to

solve it. During this process, it was made known throughout the community that any new plant would be paid for by Warrensburg ratepayers in higher water rates.

Q. WAS THE OZONATION PLANT SELECTED FOR WARRENSBURG THE LEAST EXPENSIVE ALTERNATIVE?

A. No, there were alternative solutions that were cheaper and some that were more expensive. We believe that the solution we helped select was the most cost effective solution.

Q. WHAT CONCLUSIONS CAN YOU DRAW FROM THIS CASE THAT WOULD RELATE TO THE COMMISSION'S CONSIDERATION OF WHETHER TO SELECT DSP OR STP RATE DESIGN IN THIS CASE?

A. First of all, I would like to commend the Commission for acting to establish the Warrensburg water quality docket. I would note also that the PSC Staff and the Company were very effective in helping us to sort through the various alternative solutions. Warrensburg went into this process with the attitude that we had a water quality problem and even though it was going to be expensive to solve, Warrensburg was going to pay its own way and no other district should be required to pay to fix Warrensburg's problem. This is the essence of DSP. In my opinion, the DSP approach built responsibility, accountability and realism into our decision making process. It was a very healthy and educational process for all concerned.

Q. COULD NOT THE SAME RESULT HAVE BEEN ACHIEVED THROUGH STP?

A. I do not think so. There is an entirely different dynamic for a district trying to solve a problem when they know that the cost will be shared by other districts. It is only

human nature for a district to be less focused and less insistent on a cost-effective solution when they know that six other districts will be helping them pay for the improvement.

Q. ARE THERE ANY OTHER REASONS WHY YOU OPPOSE STP?

A. Yes, in Warrensburg with respect to MAWC, we want to be able to focus only on Warrensburg's water issues. However, under STP, Warrensburg would constantly have to watch what is going on in the other districts with respect to new plant. It is not healthy for the Commission to establish a rate design system that encourages districts to be concerned about the perception that another district is about to build a new "gold-plated" plant, whether such a perception is real or not. STP rate design creates unhealthy inter-district suspicion and resentment. It would be a futile exercise for each district to try to "police" the other districts yet STP would essentially foster such vigilance. Given the limited resources of the Commission Staff and the districts, it would be wiser for the Commission to establish a rate design methodology that has built-in checks and balances against excessive spending at the local level. I believe that for a company, configured as MAWC is, a DSP rate design provides those safeguards.

Q. ARE THERE ANY OTHER REASONS WHY YOU FAVOR DSP RATE DESIGN FOR MAWC?

A. Yes. This is the second MAWC rate case that the City of Warrensburg felt compelled to intervene in to protect its interests. Prior to this case, the City also intervened in two Missouri Cities Water rate cases. In addition, the City of Warrensburg intervened in the MAWC Class Cost of Service docket, Case No. WO-98-204. Interventions in these

cases are an expensive and time consuming for the City of Warrensburg. If the Commission were to adopt a DSP rate design, it is very unlikely that the City of Warrensburg (or any other district) would need to allocate scarce resources to intervene in future rate cases. DSP rate design provides a fair, objective and easily understood way to price water in each district. If DSP were adopted by the Commission, the districts, would have greater peace of mind and assurance that they would be paying only for improvements that have occurred in their own districts.

Q. WHAT IS YOUR RECOMMENDATION TO THE COMMISSION REGARDING RATE DESIGN?

A. I recommend that the Commission adopt DSP rate design and move towards DSP pricing in each district in a measured, gradual basis as suggested by Mr. Harwig in his direct testimony. I also recommend that, along with adopting DSP rate design, the Commission require MAWC to meet in a formal manner, similar to that required by the Commission in WO-98-203, with representatives from each district every time MAWC plans to build a new plant that constitutes a twenty percent (20%) increase over the existing rate base of that particular district.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

EXHIBIT
A

RESUME SUMMARY

JAMES S. LANDON
809 Thrush Terrace
Warrensburg, Missouri 64093
660/747-9131(Office) 606/747-7535(Home)
email: jlandon@warrensburg-mo.com

WORK EXPERIENCE

CITY MANAGER, Warrensburg, Missouri (pop. 17,000), February of 1995 to present. Warrensburg is the home of Central Missouri State University with a student enrollment of 12,000. It is a full service city with 135 employees and an annual budget of $11 million.

CITY MANAGER, Toledo, Oregon (pop. 3,300), August of 1991 to February of 1995. Toledo is a full service city with 45 employees and an annual budget of $6 million.

ASSISTANT TO CITY MANAGER/DIRECTOR OF PLANNING, Ardmore, Oklahoma (pop. 23,000), May of 1988 to August of 1991. Ardmore is a full service city with 250 employees and an annual budget of $19 million.

COORDINATOR OF PLANNING AND COMMUNITY SERVICES, Cherry Creek School District, Englewood, Colorado (student pop. 25,000), May of 1982 to May of 1988. As an administrator for a local school district, I was involved in numerous local government activities.

PLANNER, Douglas County, Colorado (pop. 40,000), October of 1981 to May of 1982.

PLANNER, Clark County, Las Vegas, Nevada (county pop. 500,000), November of 1979 to October of 1981.

EDUCATION

Master of Public Administration, University of Colorado, 1987.
Bachelor of Science in Geography with an emphasis in Planning/Community Development from Oregon State University; graduated 1979 with high scholarship honors.

MEMBERSHIPS

Missouri City Management Association - Broad of Directors
Rural Missouri Worker's Compensation Trust Broad of Directors
Warrensburg Rotary
Warrensburg Chamber of Commerce
Warrensburg Main Street, Inc.
Warrensburg Area Economic Development Corporation
Whiteman Air Force Base Community Council
International City/County Management Association
National League of Cities

EXHIBIT
B

MISSOURI-AMERICAN WATER COMPANY
WARRENSBURG SERVICE AREA

FINAL REPORT OF SOURCE OF SUPPLY AND WATER QUALITY ISSUES
October 26, 1999

PURPOSE

Missouri-American Water Company (MAWC) has addressed each of the following water supply and water quality concerns for the Warrensburg Service Area:

- Taste and Odor
- Water Hardness (Scaling)
- Capacity
- Supply

This summary report references several reports and technical memoranda to provide a concise summary of the resolution of these issues. For the taste and odor issue, the following documents prepared by CH2M Hill are referenced:

Sulfide Treatment Evaluation for the Warrensburg District Water Treatment Plant (CH2M HILL—January 1998) *(filed January 9, 1998)*

Technical Memorandum: Long-Term Centaur GAC Pilot Testing Data Evaluation—Missouri-American Water Company (CH2M HILL—June 1998) *(filed July 10, 1998)*

Technical Memorandum: Missouri-American Water Company, Warrensburg Bromate Formation Study (CH2M HILL –June 1998) *(filed July 10, 1998)*

For the supply issue, the following hydrogeological study reports prepared by Burns and McDonnell are cited:

Phases I and II Hydrogeological Study - Warrensburg Service Area

(Burns and McDonnell - March, 1999)

APPENDIX A

Source of Supply Hydrogeological Study, Phase III: Groundwater Flow and Chemical Transport (Burns and McDonnell - June, 1999)

CONCLUSIONS

- Ozonation is the least cost feasible process for rectifying the taste and odor issues at Warrensburg.

- Ozonation is an accepted process for ensuring complete and rapid oxidation of sulfide.

- The use of a sequestering agent is effective in controlling scaling and mineral deposition and should result in longer appliance life.

- MAWC has adequate source of supply facilities in service to reliably meet customer demands through the year 2010 in the Warrensburg Service Area. Hydrogeological studies have indicated that sufficient ground water is available to meet projected increased customer demands through at least 2020. The additional capacity may be obtained by installation of an additional well located either south or east of the existing MAWC wellfield.

- The current Total Dissolved Solids (TDS) concentration in the existing ground water supply is approximately 350 mg/L, and has not significantly changed over the last 35 years. Mineralized water with elevated TDS concentrations is present west of the existing wellfield. Results of sampling of private wells and monitoring wells has helped establish the location of the mineralized water with the 500 mg/L concentration front located approximately 1.7 miles west of MAWC Well No. 5. The 1000 mg/L TDS concentration front is located approximately 5 miles west of Well No. 5.

- The mineralized water is moving eastward due to ground water withdrawals by MAWC and other users. MAWC has installed Monitoring Well No. 3 at a location 0.7 mile west of Well No. 5 to serve as a "sentinel well" for early detection of increased TDS concentrations.

- Water quality modeling has been performed in conjunction with hydraulic modeling to evaluate the rate at which the mineralized water interface is migrating eastward. MAWC has adopted the consultant's recommendation to use the easternmost wells as baseload units to help delay the migration of the elevated TDS interface. With the conservative assumption of annual water withdrawals equivalent to the 2020 demand by MAWC, TDS concentrations in

Monitoring Well No. 3 are expected to rise to 400 mg/L by 2015, and reach 500 mg/L by 2022. The 500 mg/L TDS interface would reach the most easterly baseload well (Well No. 7) by 2044.

- Immediate construction of two new baseload wells east of the existing wellfield would further delay migration of the 500 mg/L TDS interface to Monitoring Well No. 3 by approximately 20 years and indefinitely postpone TDS impacts on baseload wells. This alternative has a capital cost of approximately $1,800,000. MAWC will evaluate the priority of this project in comparison with other capital improvements.

1. Taste and Odor Issue

Sulfide is present at concentrations of approximately 0.3 mg/L in the ground water that is used as the source of supply for the Warrensburg Service Area. Sulfide is objectionable even at very low levels because of the characteristic "rotten egg" taste and odor. The existing treatment process at Warrensburg consists of induced aeration followed by chlorination. However, this process has not been completely effective and customers complain about "rotten egg" or "metallic" taste and odor in their water.

An evaluation of alternative treatment methods was completed in January, 1998, and is presented in the report prepared by CH2M Hill, titled "Sulfide Treatment Evaluation for the Warrensburg District Water Treatment Plant". Alternative oxidant schemes were evaluated for their efficacy in improving the taste and odor of the water, but were not judged to be effective.

The use of granular activated carbon (GAC) for removal of sulfide was compared to ozonation for the oxidation of sulfide. The capital and operating costs for GAC and ozonation were compared to the use of filtration for removal of sulfide and precipitated forms of sulfur. Based on the estimated revenue requirements, which takes into account both capital and operating costs, the GAC was initially identified as the least cost project, followed closely by ozonation. However, a subsequent pilot study of GAC revealed that the GAC is not feasible at Warrensburg due to premature breakthrough of sulfide. CH2M Hill authored a follow-up technical memorandum summarizing the results of the GAC study, dated June 24, 1998.

Further review indicated that ozonation is the least cost feasible process to address the taste and odor issue at Warrensburg. Ozone is a powerful oxidant and the reaction with sulfide is nearly instantaneous. A number of ground water systems have installed ozone for the oxidation of sulfide. For example, Orlando Utilities Commission is implementing ozonation in six

treatment plants with a combined capacity of nearly 200 mgd to solve sulfide related taste and odor issues.

The addition of ozone to water containing bromide results in the formation of bromate. Bromate is now regulated by the Safe Drinking Water Act and the MCL is set at 0.010 mg/L. Bench scale ozonation testing was performed by CH2M Hill and results are presented in the Technical Memorandum dated June 26, 1998. The Bromate Formation Study showed that proper control of the ozone residual will successfully limit the formation of bromate. The design of the treatment plant control system will limit ozone residual and maintain the bromate concentrations well below the MCL.

Construction of the ozonation system and other plant improvements has commenced. Completion of the improvements at Warrensburg is scheduled for May, 2000. The total project cost is estimated to be $5,200,000.

2. Water Hardness (Scaling)

The water hardness at Warrensburg is approximately 226 mg/L which falls into the middle range with other potable water supplies in Missouri. The primary water hardness related problem at Warrensburg is deposition of mineral scale (scaling). As a result of customer complaints about shortened appliance life due to scaling and heating element failure, MAWC initiated the introduction of a phosphate based sequestering agent in late 1998. The sequestering agent has the ability to prevent scaling by keeping the hardness related minerals (calcium and magnesium) in solution. The particular product being used can remain effective at elevated temperatures and subsequently limit scaling in appliances that heat water. Results to date indicate the sequestering agent is effective in preventing scaling and deposition of minerals in customer appliances. Permanent facilities are being included in the sulfide removal project for storage and feed of the sequestering agent.

3. Capacity Issue

In 1998, MAWC completed pump modifications to Wells No. 5 and No. 6 as well as the installation of an additional well (Well No. 9). The current nominal well capacities are as shown in the table below.

Existing Warrensburg Well Capacities

	Capacity, mgd (gpm)
Well No. 5	1.0 (700)
Well No. 6	1.1 (800)
Well No. 7	1.4 (950)
Well No. 8	1.2 (850)
Well No. 9	1.4 (975)
Total	6.1 (4,275)
Total with largest unit out of service	4.8 (3,300)

The historical maximum day demand was 3.9 mgd which occurred in 1993. As a result of the capacity improvements completed in 1998, the well capacities will be adequate through the year 2010. Based on the 1997 Comprehensive Planning Study demand projections, no additional wells are required until approximately 2015 to meet customer demands.

4. Supply Issue

A hydrogeological study was initiated in 1998 to determine feasible alternatives for locating future wells and to better understand the potential impact of mineralized ground water located west of the existing MAWC wellfield. This work has been completed and summarized herein.

The study has determined that ground water is available south and east of the existing wellfield with quality similar to the current supply. Wells could be installed in these rural locations with minimal impact on adjacent water users.

The initial phases of the hydrogeological study consisted of collection of data for the purpose of determining historic and present water quality and hydrogeologic conditions. The third and last phase of the study was ground water modeling to determine availability and quality of ground water in the region.

The study successfully identified the location and concentration gradient of the ground water with elevated TDS. Figure II-3 of the *"Phases I and II Hydrogeological Study"* by Burns and McDonnell is enclosed showing the location of TDS isoconcentration lines and their proximity to the existing MAWC wellfield. The TDS concentration for the existing wellfield has

been stable at 350 mg/L since the wellfield was constructed in 1963. The 500 mg/L TDS isoconcentration line lies approximately 1.7 miles west of the westernmost MAWC production well (Well No. 5). Withdrawals of significant volumes of water from the aquifer by MAWC and others is inducing the movement of the elevated TDS water eastward. Ground water modeling was performed to assess timeframes and the results of various control strategies.

Three monitoring wells were installed during the initial phases of the study. Monitoring Well No. 3 is located approximately 0.7 mile west of Well No.5 and its primary function is to serve as a "sentinel" well. Elevated TDS will be detected in Monitoring Well No. 3 before the TDS interface reaches the existing wellfield. Monitoring Well No. 2 was installed 1.8 miles east of the most easterly well (Well No. 9) in an area that could be used for relocation or expansion of the existing wellfield. Monitoring Well No. 1 was located approximately 1.5 miles south of Well No. 9.

The results of flow and quality modeling were based on MAWC withdrawals of 3.21 mgd which is the projected average customer demand in 2020. Current annual average customer demand is 2.3 mgd. Based on the conservative 2020 demands, and preferential use of the easternmost wells, it is projected that TDS concentrations in Monitoring Well No. 3 will begin to rise in 2014, reaching concentrations of 400 mg/L by 2015 and 500 mg/L by 2022. The TDS concentration in Well No. 7 would begin increasing about 2020 and reach 500 mg/L by 2044.

The modeling results also evaluated the effect of installing two baseload wells approximately two miles east of the existing wellfield. The benefit of this alternative is an immediate slowing of the migration rate of the elevated TDS interface. For example, a 500 mg/L TDS concentration in Monitoring Well No. 3 would be postponed by approximately 20 years compared to the "no construction" alternative. In addition, the rate of TDS increase would be diminished by moving the pumping center eastward. However, the construction of two replacement baseload wells, and a transmission pipeline to deliver the water to the existing wellfield piping network, has a capital cost of approximately $1,800,000. MAWC should consider the benefit of this project in comparison with the other water supply needs in prioritizing their capital improvements.

SUMMARY

In accordance with the Company's comprehensive planning study process, MAWC has identified high priority water supply and water quality concerns at Warrensburg and has

subsequently addressed each issue. Ozonation will address chronic taste and odor concerns caused by the natural sulfide present in the deep well water. Ozonation is an accepted means of ensuring complete and rapid oxidation of sulfide. Scaling problems due to water hardness are being addressed through the use of a sequestering agent that chemically binds the minerals responsible for water hardness.

As a result of well field improvements in 1998, including installation of an additional well, adequate supply capacity is available to reliably meet customer demands through the year 2010. A detailed ground water study has shown that additional ground water, of similar quality to the existing supply, is readily available east of the existing wellfield. The study has shown that well field management options are available to slow the eastward movement of the mineralized water. If no new wells are constructed, it is projected that the TDS in Well No. 7 will begin to increase by 2020 and rise to 500 mg/L by 2044, assuming MAWC ground water withdrawals equivalent to 2020 demand projections. Construction and operation of additional wells east of the existing wellfield could slow the eastward migration of the mineralized water by at least 20 years.