BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of the Coordinated Effort	)	
Concerning Missouri-American Water Company's	)	Case No. WO-2004-0609
Facilities Located in Its Jefferson City District.	)	

JOINT REPORT

COME NOW Missouri-American Water Company (MAWC), the City of Jefferson (Jefferson City), and the Staff of the Missouri Public Service Commission (Commission) and state as follows as their Joint Report:

BACKGROUND

1. Within the context of Commission Case No. WR-2003-0500, MAWC, Jefferson City and the Commission Staff executed a Stipulation and Agreement as to Jefferson City Fire Suppression Issues (Stipulation). The Stipulation was filed with the Commission on March 4, 2004, and approved by the Commission by order dated April 6, 2004.

2. This Stipulation required the parties to convene in a coordinated effort to study certain MAWC facilities located in the Jefferson City District, as they relate to fire suppression. The parties were to jointly prepare and submit to the Commission, or, in the event a joint report is impractical, each separately prepare and submit, a report describing the results of the study including recommendations, if any, regarding the maintenance, improvement, or replacement of the facilities studied.

3. At the request of MAWC and Jefferson City, the Commission established this case as a vehicle for the cooperative study by order dated July 6, 2004.

4. Persons participating in this project include: Dave Hagan of AmerenUE, MAWC personnel Michael Gray, Gilbert Cole, Steve Ridenhour, and Kevin Eveler, Jim Heisserer (electrical P.E. and V.P. with Ross & Baruzzini), Alan Bax of the PSC Energy Department, Jim Merciel and Jerry Scheible of the PSC Water and Sewer Department, and Jefferson City Fire Chief Robert Rennick. These people met several times to discuss and investigate the matters identified in the Stipulation and, as a result, have developed the following report.

REPORT

MAWC, Jefferson City and the Staff have undertaken a "coordinated effort to study the following MAWC facilities located in the Jefferson City District, as they relate to fire suppression: 1) the reliability of the high and low service pump power supplies located at the Company's plant on West Main Street; 2) overall capacity, to include water towers, storage tanks and emergency water supplies for the Jefferson City District (to include future needs in light of growth); 3) portable intake pumping devices and facilities (with consideration of the possibility of low level flows of the Missouri River); and 4) the possible replacement of water mains of less than six inches in diameter. It is recognized that an examination of related costs and all possible sources of funding are an integral and necessary parts of the study."

The results of this coordinated effort are as follows:

1) Reliability of Electric Supply to High and Low Service

Electric service to the water treatment plant (Plant) is normally provided from one of two feeder circuits. One feeder circuit originates in a substation that serves east Jefferson City and the other feeder circuit originates in a substation that serves west Jefferson City. These feeder circuits meet at a location just in front of the Plant on West Main Street. The feeder circuit from the west terminates at the pole where the service drop goes into the switch gear. The feeder circuit from the East continues past this aforementioned terminal pole for approximately 200 feet. This creates a degree of vulnerability to the Plant's electric service with both feeder circuits on identical poles for this approximate 200 feet. For example, should one of these poles be struck by a vehicle, electrical service to the Plant could be interrupted. In an attempt to reduce this potential hazard, guard rails are being installed in front of these poles. This installation should be completed by mid-summer.

The two feeder circuits described above are routed into the same switch gear as a fail safe measure; if one circuit is lost, the switch gear will automatically switch to the other circuit. There is, however, a low voltage circuit breaker connected to the transformers that service the Plant. Historically, this circuit breaker has tripped (open the electrical connection) on any low

voltage condition exceeding 0.5 second that occurred for any reason. This safety feature is designed to prevent damaging the electric power driven equipment at the Plant.

The time it takes to automatically switch between the two feeder circuits exceeds the 0.5 second trip setting of this low voltage circuit breaker. Thus, if the automatic transfer switch was activated, a low voltage condition was created that tripped the low voltage circuit breaker, which resulted in a loss of power to the Plant.

In this scenario, normal power to the Plant from one of the two feeder circuits must be restored manually. This present investigation revealed that the trip setting on the low voltage circuit breaker could be extended. This allows this circuit breaker to remain energized on a temporary low voltage condition caused by the operation of the automatic transfer switch. The trip setting on the low voltage circuit breaker has been adjusted such that the breaker can withstand an operation of the automatic transfer switch but remain sensitive to low voltage conditions of sufficient duration that could cause damage to the Plant's electrically driven equipment.

An analysis of the electrical system that serves the greater Jefferson City area illustrates that disturbances that occur elsewhere in town should not adversely affect the power supply to the treatment plant, nor to the four other remote electric pump facilities which the company operates.

2) Storage Capacity

The storage capacity was found to be a total of 3.5 million gallons. This includes 2.0 million gallons of storage existing in clear wells at the Plant and 1.5 million gallons existing in a ground storage tank and pumping facility constructed in the distribution system in 2002.

An analysis of the storage requirements for Jefferson City was done by the Engineering Department of MAWC. This analysis shows that clear well storage at the Plant is sufficient to supply equalization volume for the peak hour demand during the maximum day of record in the last 10 years, while simultaneously providing a 3,500 gallons per minute fire flow for three hours.

This analysis did not include the distribution system storage tank volume that is also available. In other words, clear well storage volume alone is sufficient. However, in addition to the need to utilize electric pumps to use water from the clearwell facilities, the distribution ground storage tank requires a pumped pressure boost using two electrically run booster pumps. The existence of the storage tank provides additional reliability for both peak flows and emergency demands within the boosted portion of the system. Water from this storage facility is also available to the non-boosted portion of the system if needed.

In addition to the storage capacity present in the Jefferson City system, there are three emergency interconnects between the Jefferson City system and Cole County Public Water Supply Districts Number 1 and Number 2. These interconnects serve as further redundancy should the Company's primary source of redundancy, the 1.5 million gallon ground storage tank, not be available.

Future storage capacity needs are evaluated on an ongoing basis. This evaluation process takes into consideration currently foreseeable potential demands such as the 20 year Jefferson City Correctional Center redevelopment project as well as other growth anticipated in the Jefferson City system. Growth in demand resulting from this project or others may necessitate the construction of additional storage capacity, and/or pumping stations. Such improvements will be constructed as necessary to meet demand.

3) Low River Stages

Water depths on the Missouri River are managed by The Army Corps of Engineers. Until the recent past, Missouri River depths were compatible with MAWC intake pumping facilities. In recent years, owing to environmental concerns, the Army Corps of Engineers has been operating the Missouri River under conditions that generate extremely shallow depths at the Jefferson City system's intake pumps. Without the assistance of temporary additional measures, these intake pumps, under these extremely shallow river depth conditions, could not produce the supply required to meet the highest demands on the system. A permanent improvement to the

intake pumps was completed in 2004 to address the more shallow operating depths that continue to exist on the Missouri River.

4) Replacement of Small Water Mains

For purposes of this study, "small water mains" are defined as those of 6 inches or less in diameter. An examination of a map of the Jefferson City water distribution system was conducted to identify these mains. Most of the mains fitting this description are in the older, downtown section of Jefferson City. There are approximately 25,000 feet of water mains 4 inches or less in diameter in the downtown area.

MAWC's main replacement projects are identified as the result of various circumstances. These include Jefferson City requests due to street renovations or relocations, "looping" of dead-end mains, water quality issues and/or frequent maintenance problems. Many of the mains replaced by MAWC in Jefferson City are in the older downtown section of Jefferson City. As these mains are replaced and capacity is available for fire protection, additional fire hydrants will be installed as needed.

Since MAWC's acquisition of the Jefferson City system in 2001, the Company has invested an average of approximately $100,000 per year in the replacement of aging water mains. This represents approximately 6,000 feet of water mains that have been replaced since MAWC's acquisition of the Jefferson City system. MAWC plans to continue the same $100,000 funding level per year, plus an additional 3% per year inflation adjustment, as a minimum, for the next 10 years to replace aging water mains.

In its annual planning process the Jefferson City system prioritizes mains for replacement. Going forward, it will, in this process, take into consideration pending street improvements and any specific area the Fire Chief wants to be considered as well as the Correction Center redevelopment needs. There will be a meeting annually with MAWC and the Jefferson City Fire Chief so that the Fire Chief's specific concerns can be considered as a part of the main replacement prioritization process.

SUMMARY

1. **Electric**: The investigation determined that there are two AmerenUE service feeds to the water treatment plant (Plant) from two different substations. One substation serves east Jefferson City and the other serves west Jefferson City. An overview observation of electrical feed to the Jefferson City area shows that electrical issues that could arise elsewhere in town are not likely to adversely affect the power supply to the treatment plant, nor to the four other remote electric pump facilities which the company operates. Both of the feeds are on the same poles in the plant, creating some measure of vulnerability. If one of the poles were to be struck by a vehicle, there is the possibility the plant could lose all electrical service. This potential vulnerability is being addressed by the installation of guard rails in front of these poles. This installation should be completed by mid-summer.
2. **Storage:** An analysis of the storage requirements for Jefferson City was done by the Engineering Department of MAWC. This analysis shows that clear well storage at the Plant is sufficient to supply equalization volume for the peak hour demand during the maximum day of record in the last 10 years, while simultaneously providing a 3,500 gallons per minute fire flow for three hours
3. **Low river stages:** It was determined that without the assistance of temporary additional measures, the intake pumps, under extremely shallow river depth conditions, could not produce the supply required to meet the highest demands on the system. A permanent improvement to the intake pumps was completed in 2004 which addressed the more shallow operating depths that continue to exist on the Missouri River.
4. **Main replacements:** MAWC annually plans the prioritization of small mains for replacement in the Jefferson City system. Going forward, it will, in this process, take into consideration any specific area the Fire Chief wants to be considered as well as the Correction Center redevelopment needs. There will be a meeting annually with Missouri American Water Company and the Jefferson City Fire Chief so that the Fire Chief's

specific concerns can be considered as a part of the main replacement prioritization process. MAWC plans to continue a $100,000 funding level per year, plus an additional 3% per year inflation adjustment, as a minimum, for the next 10 years to replace aging small water mains.

WHEREFORE, MAWC, Jefferson City and the Staff respectfully request that the Commission consider this Joint Report and, thereafter, issue its order: closing this case and granting such further relief as the Commission should deem to be reasonable and appropriate.

Respectfully submitted,

/s/ Dean L. Cooper

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CERTIFICATE OF SERVICE

The undersigned certifies that a true and correct copy of the foregoing document was sent by electronic mail, on July 1, 2005, to the following:

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