

**BEFORE THE PUBLIC SERVICE COMMISSION  
OF THE STATE OF MISSOURI**

In the Matter of an Investigation into	)	
City Utilities of Springfield Plastic Pipe	)	
Failures and the Adequacy of its Leak	)	<b><u>Case No. GS-2004-0257</u></b>
Survey Procedures, Installation	)	
Procedures and Replacement Criteria	)	

**STAFF'S STATUS REPORT REGARDING CITY UTILITIES OF  
SPRINGFIELD'S PLASTIC PIPE REPLACEMENT PROGRAM**

**COMES NOW** the Staff of the Missouri Public Service Commission, by and through counsel, and files its report discussing its investigation into plastic pipe leaks caused by rock impingement and City Utilities of Springfield's ("City Utilities") plastic pipe replacement program. Staff recommends City Utilities continue the current replacement program and leak survey schedule (based upon the replacement criteria for calendar year 2010 and beyond listed in the attached report). In support, Staff states:

1. On May 18, 2010, Staff and City Utilities filed a *Joint Recommendation Concerning Pipeline Replacement Schedule* ("Joint Recommendation"). The Joint Recommendation listed the parameters that Staff and City Utilities agreed to follow for year 2010 and beyond. On May 28, 2010, the Commission issued an *Order Adopting Joint Recommendation and Ordering Compliance with Pipeline Replacement Schedule*.

2. Attached is Staff's Status Report, covering the period of calendar year 2014, which discusses Staff's on-going investigation into plastic pipe leaks caused by rock impingement and City Utilities' plastic pipe replacement program.

3. City Utilities continues focusing its efforts on replacing plastic pipe that has experienced or could have failures due to rock impingement. City Utilities has been

concentrating efforts on replacing piping from City Utilities' "Plastic Pipe Failure-Rock/Dirt Mix Master List" as the other replacements are completed. Staff agrees with this approach, as set forth in the attached status report.

4. The attached status report discusses Staff's on-going monitoring and evaluation of the replacement of plastic pipe in City Utilities' system and City Utilities' leak survey techniques and results.

5. Staff has been and will continue to monitor the effectiveness of City Utilities' plastic main and service line replacement program and leak surveys.

6. If at any time Staff determines that the program requirements should be enhanced, it will immediately bring its concerns and recommendations to the Commission. Staff proposes filing another Status Report on April 5, 2016, covering calendar year 2015.

**WHEREFORE**, Staff requests the Commission accept Staff's Status Report attached hereto.

Respectfully submitted,

**/s/ Jeffrey A. Keevil**

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### **CERTIFICATE OF SERVICE**

I hereby certify that copies of the foregoing have been mailed, hand-delivered, or transmitted by facsimile or electronic mail to all counsel of record this 1<sup>st</sup> day of April, 2015.

**/s/ Jeffrey A. Keevil**

# **STAFF'S STATUS REPORT**

**Case No. GS-2004-0257**

**City Utilities of Springfield**

**April 1, 2015**

**BEFORE THE PUBLIC SERVICE COMMISSION**  
**OF THE STATE OF MISSOURI**

In the Matter of an Investigation into       )  
City Utilities of Springfield Plastic Pipe       )  
Failures and the Adequacy of its Leak       )  
Survey Procedures, Installation       )  
Procedures and Replacement Criteria       )

File No. GS-2004-0257

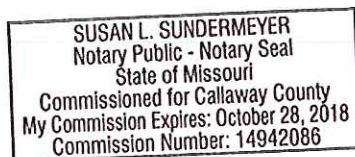
**AFFIDAVIT OF GREG WILLIAMS**

STATE OF MISSOURI       )  
                                      ) ss  
COUNTY OF COLE       )

Greg Williams, of lawful age, on oath states: that he participated in the preparation of the foregoing Status Report, to be presented in the above case; that the information in the Status Report was provided to him by City Utilities of Springfield; that he has true knowledge of the matters set forth in such Status Report; and that such matters are true to the best of his knowledge and belief.

  
\_\_\_\_\_  
Greg Williams

Subscribed and sworn to before me this 15<sup>th</sup> day of April, 2015.



  
\_\_\_\_\_  
Notary Public

**BEFORE THE PUBLIC SERVICE COMMISSION**  
**OF THE STATE OF MISSOURI**

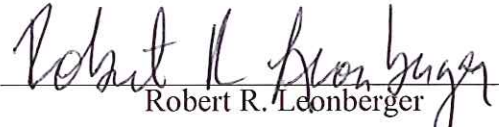
In the Matter of an Investigation into       )  
City Utilities of Springfield Plastic Pipe       )  
Failures and the Adequacy of its Leak       )  
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File No. GS-2004-0257

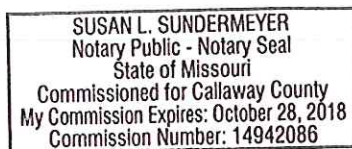
**AFFIDAVIT OF ROBERT R. LEONBERGER**

STATE OF MISSOURI       )  
                                              ) ss  
COUNTY OF COLE       )

Robert R. Leonberger, of lawful age, on oath states: that he participated in the preparation of the foregoing Status Report, to be presented in the above case; that the information in the Status Report was provided to him by City Utilities of Springfield; that he has true knowledge of the matters set forth in such Status Report; and that such matters are true to the best of his knowledge and belief.

  
Robert R. Leonberger

Subscribed and sworn to before me this 1<sup>st</sup> day of April, 2015.



  
Notary Public

## EXHIBIT A

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## **STAFF'S STATUS REPORT**

### **CASE NO. GS-2004-0257**

#### **EXECUTIVE SUMMARY:**

This is Staff's fifth status report concerning the schedule and recommendations in the *Joint Recommendation Concerning Pipeline Replacement Schedule* ("Joint Recommendation") filed on May 18, 2010, and approved by the Commission on May 28, 2010. This status report discusses Staff's on-going investigation into plastic pipe leaks caused by rock impingement and City Utilities of Springfield's ("City Utilities") plastic pipe replacement program. This status report summarizes data obtained from City Utilities' semi-annual reporting since the adoption of the May 18, 2010 Joint Recommendation, as well as data obtained during Staff's ongoing monitoring and evaluation of the replacement of plastic pipe in City Utilities' system and City Utilities' leak survey techniques and results.

Based upon Staff's review and observations, during calendar year 2014, City Utilities replaced a total of 6.60 miles of DuPont Aldyl A<sup>®</sup> polyethylene ("PE") plastic piping. The Staff recommends continuing the current replacement program and leak survey schedule (based upon the replacement criteria for calendar year 2010 and beyond listed in this report).

The Staff believes that City Utilities' replacement of DuPont Aldyl A<sup>®</sup> polyethylene piping during CY2015 and beyond will be enhanced as "additional miles" of this piping (separate from and in addition to the already required replacement of 6 miles per year) are being targeted and replaced in conjunction with City Utilities' ongoing Water Main Renewal Project.

City Utilities implemented all of Staff's Recommendations in calendar year 2010 and has continued to follow the Recommendations through this reporting period.

City Utilities continues focusing its replacement efforts on replacing plastic pipe that has experienced or could have failures due to rock impingement. City Utilities has been concentrating efforts on replacing piping from City Utilities' "Plastic Pipe Failure-Rock/Dirt



Mix Master List” (Master List)<sup>1</sup> as the other replacements are completed. Staff agrees with this approach because the level of replacements of pipe to date has generally lowered the number of rock-impingement leaks since 2007 on City Utilities’ pre-1985 pipe operating at high pressure that is in a rock-dirt mix backfill.

## **BACKGROUND:**

Since April 30, 2009, Staff has filed “annual Status Reports” (“Reports”) outlining the progress City Utilities had made in the replacement of pre-1985 “high-pressure” DuPont Aldyl A® PE piping that was ordered in the November 1, 2007 *Order Adopting Joint Recommendation*.

Staff filed the latest of these annual Reports on April 15, 2014. That Report detailed City Utilities’ plastic pipe monitoring, evaluation and replacement program for calendar year 2013. The Report further indicated that City Utilities had complied with the replacement program schedule as listed in the Joint Recommendation adopted by the Commission on May 28, 2010. In the April 15, 2014 Report, Staff indicated it would file “another Status Report on or before April 1, 2015”.

## **STATUS REPORT:**

During the time period January 1, 2014 through December 31, 2014, City Utilities experienced fourteen leaks due to rock impingement, of which thirteen were on high-pressure piping (60 psig), and one was on intermediate pressure piping (15-35 psig). The leaking service lines were replaced main-to-meter at the time of discovery. The mains where leaks were found were repaired and those main segments were added to the Master List for replacement at a future date.

For the time period of 1999 through December 31, 2014, records indicate 93% of rock impingement leaks have been on pre-1985 piping and 80% have been on piping operating at high-pressure (60 psig operating systems); 15% have been on piping operating at intermediate pressure (15-35 psig), and 5% were on piping operating at low pressure (0-5 psig). Based upon this historical data, including the more recent rock impingement leak information, the primary

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<sup>1</sup> The “Master List” lists pipe segments that need to be replaced, scheduled for replacement and that have been replaced based upon rock impingement leaks, piping segments in a rock-dirt mix backfill and other criteria as listed in recommendation 4.

focus of the replacement program must be on the replacement of pre-1985 high-pressure (60 psig) plastic piping.

The recommendations in the Joint Recommendation are listed below, followed by the current status of each recommendation. City Utilities met these recommendations during the period of this status report (CY 2014).

**Recommendations - Replacement Criteria for Calendar Year 2010 and Beyond:**

1. City Utilities shall replace the remaining pre-1985 “high-pressure” DuPont Aldyl A<sup>®</sup> polyethylene piping (services lines 1¼ inches in diameter and larger and mains) at a rate of at least 6 miles annually.

*During the time period of January 1, 2014 through December 31, 2014, City Utilities replaced 6.60 miles of plastic piping and 602 plastic service lines. The total replacement mileage includes 5.60 miles of replaced main (both pre-85 and post-85 plastic mains all pressure categories) and 1.00 mile of replaced 1¼-inch and larger diameter service lines.*

2. City Utilities shall continue its practice of replacing nearby or adjacent pipe segments that are beyond the specific piping in the same work order number because the piping was installed in the same time period and could likely have been installed using the same methods and in the same environment.

*City Utilities’ Supervisor Natural Gas Engineering evaluates each location for nearby and adjacent piping replacement before assigning the job to Gas Engineering personnel and these piping segments are included in the replacement program.*

3. City Utilities shall continue its practice of replacing the service lines associated with the main replacements.

*City Utilities has continued its practice of replacing all gas service lines associated with the main replacements.*

4. The replacements shall be prioritized based on risk factors, such as Maximum Allowable Operating Pressure (MAOP), date of installation, installation in rock-dirt backfill, history of leaks due to rock impingement, continuous pavement areas, areas of high population density, areas of previous leakage, and other appropriate criteria.

*City Utilities' Supervisor Natural Gas Engineering evaluates each location per the above criteria and the Master List before prioritizing and assigning the job.*

5. The primary focus of the replacement program shall be on “high-pressure” DuPont Aldyl A<sup>®</sup> piping that was manufactured before 1985 (pre-1985) that was installed in a rock-dirt backfill. Replacements of “high-pressure” DuPont Aldyl A<sup>®</sup> piping installed in 1985 and after, and other lower pressure DuPont Aldyl A<sup>®</sup> piping would normally be a low priority, but can be included in the total annual mileage if the segments have experienced leaks, are in a rock-dirt backfill, or if the piping is connected to a higher priority segment that is being replaced.

*City Utilities' primary focus of the replacement program must be on high-pressure DuPont Aldyl A<sup>®</sup> piping that was manufactured before 1985. City Utilities' Supervisor Natural Gas/Water Engineering evaluates each location and prioritizes the job assignment as contained in the recommended criteria. City Utilities has*

*included the replacement of intermediate and low pressure DuPont Aldyl A<sup>®</sup> piping in the total annual replacement mileage. To date, City Utilities has replaced 31.87 miles of pre-1985 high-pressure (60 psig) plastic main and associated service lines, and 16.09 miles of pre-1985 low (less than 5 psig) and intermediate (15-35 psig) plastic gas main and associated service lines since the beginning of City Utilities' replacement program in 2004.*

6. Staff has agreed that, depending on City Utilities' investigation into their distribution integrity management program (DIMP), the provisions of this replacement program may be adjusted, with Commission approval. The U.S. Department of Transportation-Pipeline and Hazardous Materials Safety Administration Final Rule (DIMP) took effect February 2, 2010, and operators were required to have an Integrity Management program in-place and implemented by August 2, 2011. If, at any time during the review of their DIMP program, City Utilities discovers more essential and higher priority areas on which it must concentrate its replacement efforts, such as rock impingement leaks on lower pressure PE piping and PE piping installed after 1984, City Utilities will bring these issues to Staff's attention and notify the Commission.

*City Utilities has filed its Distribution Integrity Management Program (DIMP) and Staff has reviewed the plan. If at any time the DIMP risk analysis process identifies higher priority areas than the segments of its system covered by the Joint Recommendation order, City Utilities will arrange discussions with Staff and notify the Commission of the higher priority areas.*

## **Recommendations - Non-Replacement Criteria for Calendar Year 2010 and Beyond:**

In addition to the above replacement program, City Utilities will continue to meet the following requirements of the original agreement.

7. An annual leakage survey shall be conducted over pre-1985, 60 psig plastic piping. In addition, an annual leakage survey shall be conducted over post-1985 and/or low and medium pressure main segments that have exhibited splits or are confirmed to be in rock-dirt mix backfill.

*City Utilities' Gas Leak Survey Department completed the annual leak surveying of pre-1985 ALDYL A<sup>®</sup>, pre-1985 high-pressure (60 psig) and post-1985 and/or low and medium pressure main segments that have exhibited splits or have been confirmed to be in rock/dirt backfill in December 2014. During these leak surveys, one (1) rock impingement leak was found. City Utilities is in the process of conducting the current annual leakage surveys over pre-1985 high-pressure (60 psig) and post-1985 and/or low and medium pressure main segments that have exhibited splits or have been confirmed to be in rock/dirt backfill. City Utilities will report these annual leak survey results to Staff in the July 1, 2015 through December 31, 2015 semi-annual report.*

8. Quarterly leak surveys shall be conducted of the downtown business district.

*City Utilities conducted leak surveys of the downtown business district during January, April, July and October of 2014. No rock impingement leaks on plastic piping were found.*

9. Any plastic piping that is exposed will be inspected for proper backfill, and if rock-dirt mix backfill is found, the main segments or larger diameter service lines (1¼-inch diameter and larger) shall be added to the Master List.

*From January 1, 2014 through December 31, 2014, City Utilities found a rock/dirt mix backfill in approximately 24% of the locations where plastic piping was exposed for various reasons. These locations were added to the Master List for annual leak surveys and replacement. Since inception of the program in 2004, City Utilities has found a rock/dirt mix backfill in approximately 20% of the locations where plastic piping was exposed for various reasons.*

10. Semi-annual reports and monthly updates shall be submitted to Staff.

*City Utilities continues to submit semi-annual reports to Staff covering the previous six months of the program to include the results of annual leak surveys and the status of plastic main and service line replacements to date. City Utilities submitted semi-annual reports dated July 18, 2014 (covering the reporting period of January 1, 2014 through June 30, 2014), and January 15, 2015 (covering the reporting period of July 1 through December 31, 2014), and has submitted twelve (12) monthly updates. City Utilities has committed to continuing to submit monthly updates covering rock impingement leaks. Staff will continue to review these monthly updates and semi-annual reports.*

11. The mileage of pre-1985, 60 psig mains that remain in the distribution system shall be provided to Staff.

*City Utilities had approximately 75.45 miles of pre-1985 high-pressure (60 psig) plastic main in the distribution system at the beginning of the replacement program. City Utilities has replaced approximately 31.87 miles of pre-1985 high-pressure (60 psig) and approximately 16.09 miles of pre-1985 intermediate and low pressure plastic gas main since the beginning of the 2004 City Utilities' replacement program. To date, approximately 43.58 miles of pre-1985 high-pressure (60 psig) plastic main remain in City Utilities' distribution system.*

12. Staff and City Utilities shall continue to monitor the effectiveness of the Replacement Program. If at any time, Staff determines that the program requirements should be enhanced, it will immediately bring its concerns and recommendations to the Commission.

*City Utilities reports that it is closely monitoring its plastic gas piping system. Staff reviews the monthly and semi-annual reports submitted by City Utilities to monitor the effectiveness of the replacement program. As leaks due to rock impingement are identified, these main segments are added to the Master List and annually leak surveyed until they are replaced. Factors, such as location, pressure and number of leaks are being taken into consideration when scheduling plastic pipe replacement projects. As plastic gas mains are being renewed, City Utilities is replacing all of the plastic service lines installed prior to June 2004 along with the main. Staff will continue to review the monthly updates and semi-annual reports (see item 10) and, if needed, make immediate recommendations to the Commission.*

## **SUMMARY**

Staff has been and will continue to monitor the effectiveness of City Utilities' plastic main and service line replacement program and leak surveys. A review of information recently provided by City Utilities indicated three (3) rock impingement leaks have been reported in the first two months of 2015.

If at any time Staff determines that the program requirements should be enhanced, it will immediately bring its concerns and recommendations to the Commission. Staff proposes to file another Status Report on or before April 5, 2016.