

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)

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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.

7. As discussed in greater detail in the attached Status Report, for future reporting purposes City Utilities has proposed that its 12-month reporting schedule, which currently covers the time period of January through December, be changed to cover the period of October through September (which would coincide with City Utilities' fiscal year). Staff recommends approval of the change in reporting schedule.

8. By implementing this new schedule, the next 12-month reporting schedule would cover the period between October 1, 2015 and September 30, 2016 (three months of which have been included in this current Status Report; after September 30, 2016, each annual reporting period would include 12 months of new data). Also by implementing this new schedule, City Utilities' semi-annual reports to

Staff would be for periods covering October 1 through March 31 and from April 1 through September 30.

9. Given the new reporting schedule addressed above, Staff proposes filing another Status Report on or before January 10, 2017, covering the period from October 1, 2015 through September 30, 2016.

WHEREFORE, Staff requests the Commission accept Staff's Status Report attached hereto and approve the change in reporting schedule discussed above and in the attached Status Report.

Respectfully submitted,

/s/ Jeffrey A. Keevil

Jeffrey A. Keevil
Deputy Counsel
Missouri Bar No. 33825
Attorney for the Staff of the
Missouri Public Service Commission
P. O. Box 360
Jefferson City, MO 65102
(573) 526-4887 (Telephone)
(573) 751-9285 (Fax)
jeff.keevil@psc.mo.gov

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 5th day of April, 2016.

/s/ Jeffrey A. Keevil

STAFF'S STATUS REPORT

Case No. GS-2004-0257

City Utilities of Springfield

April 5, 2016

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STAFF'S STATUS REPORT

CASE NO. GS-2004-0257

EXECUTIVE SUMMARY:

This is Staff's sixth 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 2015, City Utilities replaced a total of 8.02 miles of DuPont Aldyl A[®] 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).

It is Staff's opinion that City Utilities' replacement of DuPont Aldyl A[®] polyethylene piping during CY2016 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 their efforts on replacing piping from City Utilities' "Plastic Pipe Failure -

Rock/Dirt Mix Master List” (Master List)¹ 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 1, 2015. That Report detailed City Utilities’ plastic pipe monitoring, evaluation and replacement program for calendar year 2014. 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 1, 2015 Report, Staff indicated it would file “another Status Report on or before April 5, 2016”.

STATUS REPORT:

During the time period January 1, 2015 through December 31, 2015, City Utilities experienced thirteen leaks due to rock impingement, of which nine were on high-pressure piping (60 psig), and two were on intermediate pressure piping (15-35 psig), and two were on low pressure piping (0-5 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, 2015, 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

¹ 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.

this historical data, including the more recent rock impingement leak information, the primary 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 2015).

Recommendations - Replacement Criteria for Calendar Year 2010 and Beyond:

1. City Utilities shall replace the remaining pre-1985 “high-pressure” DuPont Aldyl A[®] polyethylene piping (services lines 1¼ inches in diameter and larger and mains) at a rate of at least 6 miles annually².

During the time period of January 1, 2015 through December 31, 2015, City Utilities replaced 8.02 miles of plastic piping and 559 plastic service lines. The total replacement mileage includes 7.39 miles of replaced main (both pre-85 and post-85 plastic mains all pressure categories) and .63 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.

² Replacements of “high-pressure” DuPont Aldyl A[®] piping installed in 1985 and after, and other lower pressure categories of DuPont Aldyl A[®] piping is considered as a lower priority for replacement, 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' Supervisor Natural Gas/Water Engineering evaluates each location for nearby and adjacent piping replacement before assigning the job to the Natural Gas/Water 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/Water 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[®] piping that was manufactured before 1985 (pre-1985) that was installed in a rock-dirt backfill. Replacements of “high-pressure” DuPont Aldyl A[®] piping installed in 1985 and after, and other lower pressure categories of DuPont Aldyl A[®] 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[®] 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[®] piping in the total annual replacement mileage. To date, City Utilities has replaced 35.68 miles of pre-1985 high-pressure (60 psig) plastic main and associated service lines, and 18.69 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[®], 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 2015. 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 a 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 2015. One aboveground leak was found during these leak surveys, but no rock impingement leaks were observed.

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

From January 1, 2015 through December 31, 2015, City Utilities found a rock/dirt mix backfill in approximately 36% 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 21% 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 6, 2015 (covering the reporting period of January 1, 2015 through June 30, 2015), and January 29, 2016 (covering the

reporting period of July 1 through December 31, 2015), and has submitted ten (10) monthly updates in which an additional two (2) updates are included within the July and January semi-annual reports. 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 35.68 miles of pre-1985 high-pressure (60 psig) and approximately 18.69 miles of pre-1985 intermediate and low pressure plastic gas main since the beginning of the 2004 City Utilities' replacement program. To date, approximately 39.77 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. If at any time Staff determines that the program requirements should be enhanced, it will immediately bring its concerns and recommendations to the Commission.

For future reporting purposes, City Utilities has proposed that Semi-Annual Reports which cover the time period of January through December for each calendar year be changed to cover the time period of October through September, which would coincide with City Utilities' fiscal year. In Staff's opinion this proposal would allow for a more efficient scheduling process for the replacement of the remaining miles of "high-pressure" DuPont Aldyl A[®] plastic piping that was manufactured before 1985 (pre-1985) and was installed in a rock-dirt mix backfill. Staff recommends approval of the change in reporting schedule.

By implementing this new schedule, the 12-month reporting schedule would cover the period between October 1, 2015 and September 30, 2016. Three of these months (October 1, 2015 through December 31, 2015) have already been included with this current status report, and 9 months (January 1, 2016 through September 30, 2016) would be new data. After September 30, 2016, each annual reporting period would include 12 months of new data (October 1 through September 30). Semi-annual reports would be for periods covering October 1 through March 31 and from April 1 through September 30. The Staff would continue to receive the Monthly

Reports as usual throughout these new reporting periods and the leakage surveys required by the “Recommendations for Calendar Year 2010 and Beyond” would not be affected by this new reporting schedule.

Given this new reporting schedule, the Staff proposes that the next Status Report be filed on or before January 10, 2017. This Status Report would focus on the January 1, 2016 through September 30, 2016 (new) information that City Utilities submits to Staff, however for purposes of calculating annual miles replaced the period would be from October 1, 2015 through September 30, 2016. In subsequent reporting years, annual miles replaced would be for a period of October 1 through September 30 (12 months).

**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 KATHLEEN A. MCNELIS

STATE OF MISSOURI)
) ss
COUNTY OF COLE)

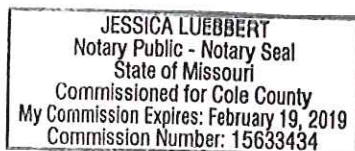
COMES NOW, Kathleen A. McNelis, and on her oath declares that she is of sound mind and lawful age; that she contributed to the attached Staff Report; and that the same is true and correct according to her best knowledge and belief.

Further the Affiant sayeth not.



Kathleen A. McNelis

Subscribed and sworn before me on this 4th day of April, 2016.





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 Survey Procedures, Installation)
Procedures and Replacement Criteria)

File No. GS-2004-0257

AFFIDAVIT OF GREG A. WILLIAMS

STATE OF MISSOURI)
) ss
COUNTY OF COLE)

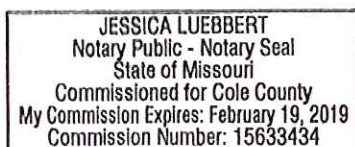
COMES NOW, Greg A. Williams, and on his oath declares that he is of sound mind and lawful age; that he contributed to the attached Staff Report; and that the same is true and correct according to his best knowledge and belief.

Further the Affiant sayeth not.



Greg A. Williams

Subscribed and sworn before me on this 4th day of April, 2016.





Notary Public