

**STAFF'S REPORT IN RESPONSE TO**  
**THE COMMISSION'S ORDER FOR STAFF TO CONTINUE ITS**  
**ANNUAL REPORTING TO THE COMMISSION**  
**Case No. GO-99-155**

**BACKGROUND:**

The Commission opened this case on October 30, 1998, as a general investigatory case to receive information relevant to the adequacy of Laclede Gas Company's direct-buried copper service line replacement program and the effectiveness of Laclede's leak survey procedures. On May 18, 2000, the Commission approved a Unanimous Stipulation and Agreement (Agreement) among Laclede, Staff and the Office of the Public Counsel in which Laclede agreed to submit annual reports to Staff detailing direct-buried copper service line renewal (full replacement) and relays (partial replacement) completed, and agreed to submit additional reports confirming the achievement of other milestones under the Agreement. The Agreement provided that after the third year of the program, Laclede and Staff would review the progress and results of the program to determine future relay/renewal plans, including the rate of such future actions, and potential modifications to leak survey techniques and other related matters.

On August 1, 2003, Staff filed its Three-year Summary Report. Subsequent to the Staff's filing, the Commission issued a REPORT AND ORDER on March 5, 2004, in which the Commission approved Staff's recommendation that the Commission continue the current requirements of the previously approved Stipulation and Agreement, with annual reporting from Staff to the Commission. Subsequent to the filing of Staff's latest Annual Report, on August 30, 2006 the Commission issued an ORDER CONTINUING REQUIREMENTS OF UNANIMOUS STIPULATION AND AGREEMENT, in which the Commission approved Staff's recommendation that the Commission continue the current requirements of the previously approved Agreement, with annual Staff reports to the Commission and that Staff's next annual report be filed no later than September 1, 2007, unless otherwise ordered.

It should be noted that, unless otherwise ordered by the Commission, Laclede is required to follow, at a minimum, the Agreement until completion of the entire

program. If, at any time, Staff determines that the program requirements are inadequate, Staff will immediately bring its concerns and recommendations to the Commission.

## **REPORT OVERVIEW:**

This update report summarizes data obtained (through August 2007) during Staff's ongoing monitoring of the program's progress, addresses information relevant to the adequacy of Laclede's copper service line replacement program, and discusses the effectiveness of the Company's leak surveys and investigations. For purposes of this report, Staff will touch upon the major points of Laclede's program. This program does appear to be yielding a number of positive results.

Please note that, on August 8, 2007, the Company filed its VERIFIED APPLICATION OF LACLEDE GAS COMPANY (Application) in which the Company requested an adjustment in the current copper service line replacement program (Case No. GS-2008-0038). The following update report does not consider the Company's Application and only reports the status of the current program and Staff's recommendations based upon the status of the current program.

## **STAFF INVESTIGATION/ANNUAL REPORT**

### **1. Copper Service Line Replacements**

During program year seven (7) (12 months ending March 1, 2007), Laclede completed a total of 8,165 direct-buried copper service line replacements (main-to-meter). During the first seven (7) years of the program, Laclede has completed a total of 58,405 direct-buried copper service line replacements, which represents approximately 75 percent (75%) of the program's beginning total qualifying services (76,966). Through the end of program year seven (7), Laclede has averaged 8,344 direct-buried copper service line replacements each year, which exceeds the Agreement's criteria of an annual replacement rate of 8,000 direct-buried copper service lines. Details regarding the copper line replacements from 1999 through March 1, 2006 can be found in the Summary of Prior Years Actions section of this report.

**Conclusion:** The annual replacement rate (i.e. approximately 10% annually), based upon priority, with increased frequencies of leak surveys, continues to be successful, and unless otherwise ordered by the Commission, the annual requirement of a minimum of 8,000 direct-buried copper service line replacements (main-to-meter) should be maintained. The results of the replacement program are a substantial annual reduction in the number of direct-buried copper service lines in the system and a reduced leakage rate (through the first six (6) years of the program) for the lines that remain to be replaced.

## **2. Bar-hole Leak Surveys**

Laclede conducted its 2007 bar-hole leak survey during the months of March - July 2007. Laclede personnel conducted a bar-hole leak survey over 2,662 direct-buried copper service lines in Pressure Region I and conducted a bar-hole leak survey over 20,384 direct-buried copper service lines in Pressure Region II for a total of 23,046 direct-buried copper service lines bar-hole leak surveyed in 2007. Twenty-three new leaks were found in Pressure Region I and 127 new leaks were found in Pressure Region II for a total of 150 new leaks found during the 2007 direct-buried copper service line bar-hole leak survey. The 150 new leaks found during the 2007 bar-hole leak survey represents a 0.65 percent (0.65%) leak rate for the 2007 survey. The leakage rate for the 2007 survey is unchanged from the 2006 survey; however, the leakage rate for new leaks discovered on copper service lines has decreased 81% since the beginning of the program.

**Conclusion:** While the bar-hole method for leak surveying demands more personnel time and effort, it is Staff's opinion that this method is far superior to other methods for detection of small leaks that previously might have gone undetected. Using this superior method of leak detection, coupled with conducting the surveys on an annual basis, helps achieve the program goals of: (1) early detection before the leak becomes hazardous and (2) prioritizing replacements. This procedure exceeds MoPSC minimum pipeline safety regulations that require 3-year leak surveys on most residential service lines.

For these reasons, the Staff recommends that Laclede continue to conduct an annual bar-hole leak survey of direct-buried copper service lines.

### 3. Leak Repairs

Expediting the removal of all leaks found during a bar-hole leak survey prior to conducting the subsequent year's bar-hole leak survey continues to enhance the downward trend in detected leaks during subsequent annual bar-hole leak surveys. Class 1 and 2 leaks are repaired immediately, and, in accordance with the Agreement, Class 3 leaks detected during an annual bar-hole leak survey are required to be repaired within six (6) months of discovery in Pressure Region I and within one (1) year of discovery in Pressure Region II. Laclede continues to exceed the requirements in the Agreement by repairing Class 3 leaks in Pressure Region I within an average time of approximately three (3) months from discovery and within an average time of approximately seven (7) months from discovery in Pressure Region II. The guideline in the Agreement exceeds MoPSC minimum pipeline safety regulations that require Class 3 leaks to be monitored every six (6) months until repaired (within 5 years of discovery).

All locations of detected leaks, along with other historical information, are used in a prioritization model for identifying replacement areas in a consistent manner and prioritizing the scheduling of these areas for replacement. It is critical that any upward trends in new leaks on replacement program pipelines be identified promptly, as upward trends can point to the need to refocus efforts to meet the program's goals and objectives of proper prioritization of leak replacements.

**Conclusion:** Annual bar-hole leak surveys provide better information to detect any upward trends in leakage rate totals and, the requirements in the Agreement calling for annual bar-hole surveys and for Class 3 leaks in Pressure Region I to be repaired within six (6) months and Class 3 leaks in Pressure Region II to be repaired within one (1) year should be continued.

## RECOMMENDATIONS<sup>1</sup>

The requirements contained in the Agreement are the three-point foundation of Laclede's current direct-buried copper service line replacement program.

- **Priority Replacements.** The annual requirement to replace 8,000 (approximately 10%) of the direct-buried copper service line replacements (main-to-meter) should be maintained, unless otherwise ordered by the Commission.
- **Leak Surveys.** The Staff recommends that Laclede continue to conduct an annual bar-hole leak survey of direct-buried copper service lines.
- **Timely Elimination of Discovered Leaks.** The Staff recommends the requirements in the Agreement calling for Class 3 leaks in Pressure Region to be repaired within six (6) months and Class 3 leaks in Pressure Region II to be repaired within one (1) year be continued.

Priority replacements, leak surveys, and timely elimination of discovered leaks must be considered together in order to achieve the purpose of the Agreement, which is protection of the public's safety, and each, must therefore, complement the other. At this time, Staff believes that the efforts of the parties in meeting the Agreement's requirements are achieving this purpose, and this is supported by the results discussed in the preceding report.

For the term of this program, Staff has and will continue to monitor the effectiveness of Laclede's direct-buried copper service line replacements 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.

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<sup>1</sup> As mentioned previously in this Report, on August 8, 2007, Laclede filed an Application with the Commission in which the Company requested an adjustment to the current replacement program (Case No. GS-2008-0038). On August 17, 2007, the Commission ordered the Staff to file its recommendation concerning Laclede's Application no later than September 6, 2007. Staff did not consider Laclede's request when writing this Report and consequently, Staff's recommendations contained in this Report are based upon the status of the current replacement program without consideration to Laclede's Application. Staff will make a separate filing of its recommendation concerning the Application filed by Laclede Gas Company.

## **SUMMARY OF PRIOR YEARS ACTIONS**

### **1. Copper Service Line Renewals**

Laclede replaced or eliminated a total of 50,240 direct-buried copper service lines during the first six (6) years of the program, which represents approximately 65 percent (65%) of the program's beginning total qualifying lines (76,966). The Agreement requires Laclede to replace or renew 8,000 lines annually and Laclede has exceeded the annual required rate of renewals. Laclede was permitted, under the terms of the Agreement's replacement requirements, to do partial replacement of certain copper service lines. However, during the beginning of the second year of the program, Laclede discovered efficiencies and benefits in conducting full main-to-meter replacements and since that time (including the second year of the program) has been replacing, main-to-meter, over 8,200 copper service lines each year. Staff, in the previous annual reports has recommended, unless otherwise ordered by the Commission, that Laclede continue to renew (main-to-meter replacement) a minimum of 8,000 direct-buried copper service lines annually.

### **2. Bar-hole Leak Surveys**

Laclede successfully completed an annual bar-hole leak survey for each of the first six (6) program years, with each survey completed by July 1<sup>st</sup> of each year. In 1999, Laclede first completed a bar-hole leak survey producing a 3.4 percent (3.4%) leak rate. Laclede's 2002 bar-hole leak survey, of approximately 60,000 direct-buried copper service lines, produced a leak rate of 1.1 percent (1.1%). The reduction in leak rate from 1999 to 2002 was approximately a 68 percent (68%) reduction in discovery of new leaks during annual bar-hole leak surveys. Laclede's 2003 bar-hole leak survey of approximately 52,000 direct-buried copper service lines yielded a new leak discovery rate of slightly over one (1) percent (1.06%), but still below Year 2002 new leak rates. Laclede's Year 2004 bar-hole leak survey of approximately 44,624 direct-buried copper service lines yielded a total of 409 leaks, which represents a 0.92 percent (0.92%) leak rate for the 2004 survey and a 72 percent (72%) decrease in the leak rate since the beginning of the program. Laclede's Year 2005 bar-hole survey of approximately 37,557

direct-buried copper service lines yielded a total of 284 leaks, which represents a 0.76 percent (0.76%) leak rate, which is slightly less than the 2004 leak rate. This equates to a 78 percent (78%) decrease in the leak rate since the beginning of the program. Laclede's Year 2006 bar-hole survey of approximately 30,772 direct-buried copper service lines yielded a total of 201 leaks, which represents a 0.65 percent (0.65%) leak rate, which is slightly less than the 2005 leak rate. This equates to an 81 percent (81%) decrease in the leak rate since the beginning of the program. As reported in Staff's August 2003 Three-Year Summary Report, and Staff's 2004, 2005 and 2006 Annual Reports, results from bar-hole leak surveys have shown a continuing downward trend in the leak discovery rate (percentage) of new leaks discovered on copper service lines.

The Agreement mandates practices that provide for early leak detection on direct-buried copper service lines. Therefore, the Staff has recommended that, as it pertains to leak surveys, Laclede continue to perform an annual bar-hole leak survey. The Agreement specifically states that an annual bar-hole survey shall be conducted for the first three (3) program years. Because, at the time of Staff's Three-Year Summary Report, and 2004, 2005, and 2006 Annual Reports, no other testing method had been shown to be superior in the detection of sub-surface leaks than strategically placing bar-holes over certain service line locations and conducting a leak survey, the Staff continued to recommend that the annual bar-hole leak surveys continue.

### **3. Leak Repairs**

Any Class 1 or 2 leak is repaired immediately. Otherwise, in accordance with the Agreement, leaks detected during an annual bar-hole leak survey are required to be repaired within six (6) months, or at the latest, within a year of discovery, depending on whether the leaks are located in Pressure Regions I (direct-buried copper service lines that can operate above 35 psig) or II (these same service lines operate below 35 psig). These leak repair requirements are more stringent than MoPSC Pipeline Safety Regulations, which generally require that Class 3 leaks, which are not considered to be a hazard, be monitored every six (6) months and repaired within five (5) years.

For the first three (3) years of the program, Laclede repaired most Class 3 leaks in Pressure Region I within an average time of three (3) to four (4) months after discovery, instead of the six (6) months allowed under the Agreement. During the fourth, fifth, and sixth year of the program, Laclede repaired Class 3 leaks in Pressure Region I within an average time of three (3) months (down from the first three (3) years of the program). While the Agreement requires Class 3 leaks in Pressure Region II to be repaired within one (1) year of discovery, Laclede averaged seven (7) to nine (9) months for these repairs during the first three (3) years of the program. During the fourth, fifth, and sixth year of the program, Laclede was repairing Class 3 leaks in Pressure Region II within an average time of seven (7) months (down from the first three (3) years of the program).

Making timely repairs prior to the subsequent bar-hole leak survey: (1) provides for more accurate studies of data; (2) facilitates determination of leak trends in leak totals; and (3) improves detection of differences in areas where corrosion may be more or less active. For these reasons, Staff recommended maintaining the timely repair requirements of six months for Pressure Region I leaks, and one year for Pressure Region II leaks, as stated in the Agreement.

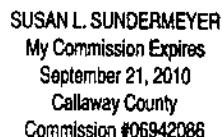


In the Matter of the Adequacy of Laclede Gas  
Company's Service Line Replacement Program and  
Leak Survey Procedures.

STATE OF MISSOURI )  
COUNTY OF COLE )

Richard A. Fennel  
Richard A. Fennel

Subscribed and sworn to before me this 31<sup>st</sup> day of August, 2008.



Susan L. Sundermeys  
NOTARY PUBLIC