EXHIBIT A

INDEX

STAFF'S STATUS REPORT
CASE NO. GS-2004-0257

BACKGROUND:

A natural gas incident occurred in Springfield, Missouri at the Ozark Empire Fairgrounds on June 18, 2003, in which natural gas leaking from a plastic pipe resulted in an explosion of the Frisco Building. An employee of the Ozark Empire Fair was fatally injured. The leak in the plastic pipe was the result of a rock impingement that caused the pipe to fail, resulting in natural gas escaping into the lower level of the Frisco Building. The Energy Department–Gas Safety/Engineering Staff (Staff) conducted a formal investigation of the incident and filed its Gas Incident Report (Case No. GS-2004-0040) on December 16, 2003.

During the incident investigation, records provided to the Staff by City Utilities indicated other instances of stress-induced cracking failures on plastic pipe due to rock impingement. Based upon that information, Staff recommended that the Commission establish a separate case (Case No. GS-2004-0257) for the purpose of examining and evaluating City Utilities' plastic pipe failures, leak survey techniques, installation and backfill procedures, replacement criteria, and adequacy of their program activities.

The Commission opened this case on December 30, 2003, as an investigatory case to receive information and conduct an investigation into the failure mechanisms of both plastic mains and service lines used by City Utilities of Springfield. On June 16, 2004, Staff filed its report in Case No. GS-2004-0257, which summarized Staff's investigation into City Utilities' plastic mains and service lines. The Report contained eight recommendations for City Utilities to undertake in development of a comprehensive plastic pipe replacement program and requested that the Commission issue an order directing City Utilities to file a response regarding the recommendations within 60 days of the filing of Staff's report. On August 16, 2004, City Utilities filed its response to Staff's recommendations. On September 10, 2004, the Commission issued an order for Staff to file a Status Report, no later than October 12, 2004, on the ongoing nature of the monitoring, evaluation, and replacement of the plastic pipe in City Utilities' system.

On October 12, 2004, Staff filed its Status Report, which contained an analysis of City Utilities' August 16, 2004 response to the eight recommendations contained in Staff's

report filed June 16, 2004. This filing also included a proposal for Staff to file another status report on June 16, 2005. In its June 16, 2004 Status Report, Staff believed that City Utilities satisfactorily complied with all eight of Staff's recommendations as outlined below:

1. City Utilities began tracking leaks due to rock impingement in 1998, and has added some additional leak locations dating back to 1991, based upon information found during the investigation. These prior leak locations were compiled into a "Plastic Pipe Failure Master List." Since that time, this list has been the primary source for performing Gas Main Renewals in the City Utilities Gas System.

   The Plastic Pipe Failure Master List contained 97 locations where a leak occurred due to rock impingement, and was subsequently repaired. In 37 of the 97 locations, City Utilities replaced the piping that was installed under the same work order number for the main segment in question. At each prior leak location, City Utilities reviewed its record to determine the length of pipe that was installed under the work order number for the main segment number in question. This method was chosen because it was felt that the length of pipe installed under the same work order number on a main segment would most likely have been installed using the same methods and in the same environmental conditions.

   These sections of plastic pipe are included in a replacement program. The remaining sections of pipe on the Plastic Pipe Failure Master List totaled 7.1 miles of piping yet to be replaced. City Utilities began replacing these sections over a three (3) year period, on August 16, 2004. City Utilities indicated that 861 associated service lines will also be replaced concurrently with these main replacements.

   Any new segment of pipe (as described above) where a failure due to rock impingement is discovered will be replaced within a minimum of three (3) years from the date of its discovery. Factors such as the number of leaks, operating pressure and environmental conditions shall be considered in the timing the replacement of the pipe.

2. City Utilities' current policy is to replace the gas service line from the main to meter if a leak due to rock impingement is found and verified. There are 181 locations on the referenced list where only a portion of the service line, where the leak occurred, was replaced. City Utilities will replace all of these plastic services in their entirety from the main to the meter by December 31, 2005.

   City Utilities has also agreed to replace the associated service line concurrently with any mains that have to be relocated due to other construction projects. In addition, City Utilities is replacing all plastic service lines that were installed prior to June 16, 2004, when performing plastic main renewals. Also, all plastic service lines installed prior to 1983 are being replaced when renewing a steel main or performing a relocation of a main.

3. City Utilities has modified their Plastic Pipe Failure Report form to include a specific category for "Rock Impingement" and a place for comments. City Utilities has also developed written instructions to guide field employees in completing this form. City Utilities' field employees are currently using the new form.

4. City Utilities conducted training regarding the proper way to complete this form for all affected employees on September 14, 2004. Staff attended this training session.

5. City Utilities has developed a Plastic Pipe Exposed Pipeline Condition Report form to document the backfill conditions surrounding the plastic piping. City Utilities has also developed instructions to guide field employees in completing this form each time a plastic pipe (main or service) is exposed. City Utilities conducted training on the proper way to complete this form for all affected employees on September 14, 2004 (attended by Staff). City Utilities field employees are currently using this new form.

   If it is discovered that the backfill conditions surrounding the plastic piping contains rocks or other debris that could be detrimental to the piping, City Utilities will extend the excavation in both directions until suitable conditions are found. If extending the excavation in both directions is impractical, an engineering evaluation will be performed to determine the appropriate remedial action.

6. City Utilities modified its Gas Construction Standards on June 16, 2004, to require a minimum of 4 to 6 inches of bedding material around all newly installed plastic gas service lines that involve open trenches. This bedding material will typically be limestone sand. City Utilities has proposed that other suitable materials or alternate protection methods, such as, rock shield sleeves may be evaluated and used in the future.

   Staff's review of City Utilities' Construction Standards indicated that since at least 1977, their standards have contained specifications to use select dirt or AG limestone backfill in rocky areas during installation when directed by the Engineering Department. The revised standard specifically requires the use of 4 to 6 inches of limestone bedding material around plastic pipe when being installed.

7. City Utilities will continue its current practice of performing quarterly leak surveys of the downtown business areas.

   City Utilities will perform an annual leak survey on the following items: the remaining non-replaced segments of pipe contained within the "Plastic Pipe Failure Master List," the plastic services that were only partially replaced (until such time as they are renewed), and the segments where gas main leaks were repaired, but were not verified to be due to rock impingement.

   City Utilities, during routine FI leak surveys as required by the Missouri Pipeline Safety Regulations, will perform a bar-hole reading using a Combustible Gas Indicator (CGI) near the service riser where no opening exists around the riser for plastic services located under vent-restrictive surfaces. City Utilities has developed and implemented written procedures for this bar-hole survey over vent restrictive surfaces.

   City Utilities has also conducted an instrument leak survey of <u>all</u> pre-1982 plastic gas piping during the first half of 2004. During this survey, City Utilities treated all underground leaks on plastic piping as either a Class 1, or a Class 2 leak, giving them a higher priority than they may have otherwise had. City Utilities will continue to classify all underground leaks on all plastic piping (mains and services) as either Class 1, or Class 2. City Utilities'

Operations and Maintenance Manual has been changed to reflect these procedures.

8. (This item refers to a list of plastic pipe leaks on mains from 1983-2004 in which the primary leak cause description was vague, or unclear, as to whether rock impingement was involved, or not. Staff proposed that these locations be spot-checked for backfill conditions and if rocks and other debris were found against the pipe wall, these mains would be systematically replaced). City Utilities reports that of the 255 prior leak locations included on Staff's list, 56 locations were duplicated on the Plastic Pipe Failure Master List and either have been, or will be replaced. City Utilities will perform the recommended spot checks on the remaining 199 locations and will document the results. City Utilities proposes that 33% (or 67 locations) be checked each year until all locations are checked. Any locations that are found to have rocks or other debris against the pipe wall will be added to the list of plastic piping to be replaced as discussed under Item 1.

In addition, City Utilities agreed to provide the Staff semi-annual reports as outlined below:

- Results of the quarterly business district leak surveys.
- Results of leak surveys of plastic piping beneath vent restrictive surfaces.
- Results of annual leak surveys.
- The status of plastic service line and main replacements made to date.
- Schedules and records of training for personnel who are involved in documenting leak repairs of plastic pipe due to rock impingement, determining backfill conditions and whom is responsible for determining the extent of plastic piping that is in an environment conducive to rock impingement.

INTRODUCTION:

Subsequent to the filing of STAFF'S STATUS REPORT on October 12, 2004, the Commission issued an ORDER DIRECTING FILING in which the Commission agreed with Staff's proposal to file another status report on June 16, 2005 and directed the Staff to do so. The Staff, in its October 12, 2004 filing, proposed to file the June 16, 2005 update report to allow Staff sufficient time to complete an analysis of the plastic pipe replacement program and leak survey data provided from City Utilities semi-annual

reporting. This proposal was necessary to provide the Commission with a comprehensive update report detailing the results of the plastic pipe replacement program and leak surveys completed since Staff filed its Status Report on October 12, 2004.

REPORT OVERVIEW:

The following Status Report pertains to Staff's on-going investigation into plastic pipe leaks due to rock impingement and the plastic pipe replacement program. This Status Report summarizes data obtained from City Utilities' semi-annual reports for the period of June 2004 through May 2005, during Staff's ongoing monitoring, evaluation, replacement of plastic pipe in City Utilities' system, and leak survey techniques and results. For purposes of this report, Staff will touch upon the major points of City Utilities' program. Staff notes that this program does appear to be yielding positive results.

STAFF STATUS REPORT

1. Plastic Main and Service Line Replacements

During the time period of June 2004 through May 2005, City Utilities has experienced 22 leaks due to rock impingement. These leaks have been added to the "Plastic Pipe Failure Master List" and included in the replacement program to be replaced within 3 years of discovery. 9,550 feet (1.8 miles) of plastic main have been replaced along with 5 plastic service lines from this list. 199 additional plastic service lines have been replaced during other routine work, such as during new construction or relocation projects.

City Utilities has indicated that they have been focusing their replacement efforts on replacing plastic service lines that could have had failures due to rock impingement and completing unprotected steel yard line replacements (included in a separate replacement program). City Utilities reported that their efforts will be focused on renewing piping from the "Plastic Pipe Failures Master List" as the other replacements are completed. Currently there are 78 locations (including both mains and services) totaling 9.3 miles to be replaced from the master failure list. These locations are to be replaced within 3 years of August 16, 2004. Based on the master failure list, 93% of these leaks have been on pre-1982 piping and 79% have been operating at high pressure.

The Staff believes that an aggressive, prioritized plastic piping replacement program, with increased leak surveys over certain categories of plastic piping, continues to be successful and, therefore recommends that the current replacement rate and category of plastic piping be maintained at this time.

2. Main-to-Meter Replacements of Partially Replaced Plastic Service Lines

At the beginning of the replacement program there were 181 locations where only a portion of the plastic service line, where the leak occurred, was replaced. Staff believed the leaks at these locations may have been related to rock impingement. City Utilities had reason to believe that a portion of these leaks were not caused by rock impingement. Staff met with City Utilities on several occasions to review the corresponding leak records.

After review of these leak records, Staff felt there was sufficient data to indicate that 77 leaks were due to causes other than rock impingement. As a result, the list was reduced to 104 plastic service lines that need to be replaced, main-to-meter. The replacement of these 104 plastic services began during January 2005. To date, 67 of these plastic service lines have been replaced, main-to-meter.

Currently, the replacement program, as agreed to by City Utilities, requires all of these plastic service lines to be replaced by December 31, 2005. City Utilities has aggressively been replacing these plastic service lines and continues to replace any newly discovered leaking service lines, main-to-meter, determined to have been damaged by rock impingement.

The Staff believes that the aggressive replacement of these plastic service lines and the immediate replacement, main-to-meter, when new leaks are discovered on plastic service lines that are caused by rock impingement, continues to be successful and, therefore, recommends that this replacement rate should be maintained at this time. Current results of this portion of the program are a substantial reduction in the number of partially replaced service lines due to rock impingement.

3. Leak Report Forms and Related Training

City Utilities modified their "Plastic Pipe Failure Report" form, "Gas Leak" form and "Gas Leak Repair" form to include a specific category for "Rock Impingement". Their computer "Integrated Gas" database was modified to track the new rock impingement category from the leak forms. The new forms went into effect January 1, 2005 and the computer modification went into operation with the 2005 leak data.

These modifications greatly enhance City Utilities' ability to identify leaks due to rock impingement and allow for more consistency in reporting these types of leaks. These modifications will also enhance City Utilities' ability to track rock impingement leaks for replacement prioritization.

City Utilities' employees involved in these efforts received training on the proper identification of leaks due to rock impingement and the proper procedures for completing the modified "Plastic Pipe Failure Report" form on September 14, 2004. Additional training was conducted on the modified "Gas Leak" and "Gas Leak Repair" forms on December 8, 2004.

4. Exposed Plastic Piping Inspections

Since implementing the "Exposed Plastic Gas Piping" inspection form on September 14, 2004, City Utilities has conducted 1,498 plastic piping inspections through May 2005. Of these 1,498 locations approximately 92% were inserted, had either sand, select fill, or had other acceptable backfill around the pipe. 130 locations (approximately 8%) were identified as having rock-dirt mix backfill around the plastic pipe. Of these locations 47 were plastic mains and 83 were plastic service lines. To date, 3 of these main segments and 19 of the service lines, from the exposed Plastic Piping Inspection list with rock-dirt mix backfill, have been replaced. The remaining locations are being leak surveyed and will be completed by August 2005. The results of these leak surveys will be used to evaluate and to determine the appropriate remedial action and replacement prioritization for the remaining locations with rock-dirt mix backfill. Also, once City Utilities has completed performing inspections on the plastic mains and service lines, and have made good progress replacing pipe on the Plastic Pipe

Master List, they will use results from the exposed piping reports to prioritize additional replacements based upon age, pressure, size, etc.

The results of the exposed pipe inspections are used as a prioritization model for identifying and scheduling the replacement of other areas in a consistent manner. It is critical that any upward trends of bad backfill in new locations where rock-dirt backfill exists be identified promptly so efforts to prioritize these areas for replacement can be evaluated in a timely manner to prevent possible rock impingement leaks.

The Staff believes this on-going field monitoring program, designed to identify other possible areas that may be susceptible to rock impingement, is an integral part of the replacement program and has yielded valuable information for actions to be taken to prevent possible future rock impingement leaks.

5. New Plastic Main and Service Line Installations

Following Staff's recommendation in its June 16, 2004 Report, City Utilities revised their Gas Construction Standards to specifically require a minimum of 4 to 6 inches of bedding material around all newly installed plastic piping (mains and services) in an open trench. This bedding is typically limestone sand and is used regardless of the trench conditions. Protective bedding material has been used on all newly installed plastic piping, regardless of the trench conditions, during the previous two 6-month reporting periods (June 2004 through May 2005). Plastic service line piping that is being plowed-in is installed in a casing pipe. The casing pipe is in contact with the earth and is used as a protective sleeve for the service line piping.

Generally, thermoplastic pipe is very ductile and can undergo considerable deformation without damage. However, proper installation techniques are required to ensure that the pipe is evenly supported and physically shielded from potential damage. Backfilling plastic pipe in accordance with sound bedding procedures, such as those being practiced by City Utilities, should help ensure that large rocks and other objects do not come in contact with the pipe, greatly reducing the possibility that the pipe may be damaged.

6. Leak Surveys and Repairs

Quarterly leak surveys of the downtown business district (the entire district was considered as a vent-restrictive location) were conducted during July and October 2004 and during January and April 2005. During these surveys 2 Class I (required to be immediately repaired) belowground leaks were found, 2 Class II (required to be repaired within 45 days of discovery and checked every 15 days until repaired) leaks were found (1 belowground and 1 aboveground), and 24 Class III (must be repaired within 5 years and checked every 6 months until repaired) aboveground leaks were found. All of these leaks have been repaired. It should be noted that City Utilities treats all leaks on plastic piping as either a Class I or Class II leak, assigning them a higher leak repair priority than may otherwise be required.

The annual leak survey of the remaining segments of piping listed on the "Plastic Pipe Failure Master List", the remaining service lines that were only partially replaced, and the segments of piping where gas main leaks were repaired, but were not verified to be due to rock impingement, was completed December 2, 2004. During this survey 2 Class III belowground leaks were found (both leaks were on steel valves), 1 Class I aboveground leak was found, and 3 Class III aboveground leaks were found. All of these leaks have been repaired. City Utilities is currently conducting a second leak survey, which began approximately April 1, 2005, over the same category of piping. Thus far 1 Class I belowground leak has been found, 2 Class II belowground leaks have been found, and 23 Class III aboveground leaks have been found.

As previously noted in item number 4, City Utilities is leak surveying locations where exposure of the plastic piping indicated rock-dirt mix backfill around the pipe. These locations are being leak surveyed with completion expected by August 2005. The results of the leak survey will be used to evaluate the remaining locations to determine the appropriate remedial action and replacement prioritization.

City Utilities began tracking service lines located under vent restrictive surfaces with the beginning of the 2005 normal leak surveys. When this type of condition is found, City Utilities is drilling two 2-inch diameter bar holes at the riser location and sampling the subsurface atmosphere in these bar holes with a

combustible gas indicator (CGI). To date, 250 vent restrictive locations have been identified and leak surveyed. No leaks have been detected during these surveys.

While the increased frequency of leak surveys demands more personnel time and effort, it is Staff's opinion that the extra leak surveys help in achieving some of the program's goals of early detection before a possible rock impingement leak becomes hazardous and assists in prioritizing replacements. These leak survey frequencies exceeds MoPSC minimum pipeline safety regulations that require 1-year and 3-year leak surveys on business districts and on most residential areas, respectively.

As noted in the preceding paragraph, all detected leaks are part of the prioritization process for identifying areas in a consistent manner and prioritizing the scheduling of these areas for evaluation and/or replacement. It is critical that any upward trends in new leaks on replacement program piping be identified promptly, as upward trends can point to the need to refocus efforts to adjust requirements to meet the program's goals and objectives.

In addition, during January through May 2004, City Utilities voluntarily conducted a leak survey over all plastic piping that was installed prior to 1982. All of these leaks have been repaired and Staff is currently reviewing the corresponding leak repair records to ascertain the leak cause. City Utilities has indicated that all of these leaks were due to causes other than rock impingement.

The Staff believes that the timely repairs of observed leaks prior to the subsequent leak survey provides better information to detect any upward trends in leakage rate totals. City Utilities has agreed to treat and repair all leaks on plastic piping as a Class I leak, or Class II leak. This exceeds the MoPSC minimum pipeline safety regulations that require Class III leaks to be monitored every 6 months until repaired (within 5 years of discovery).

For these reasons, the Staff recommends that City Utilities continue to conduct leak surveys at the current increased frequency and over the current category's of plastic piping. The Staff also recommends that City Utilities continue repairing all leaks on plastic piping as a Class I leak, or a Class II leak.

7. Spot-Checks of Plastic Mains

City Utilities has reviewed the individual leak reports for prior main leak locations (1983-2004), as recommended by Staff, to spot-check to determine the pipe bedding condition near the pipe wall (33% per year and, if rocks or other debris is found against the pipe wall, the piping would be replaced). Of the original 255 leaks on the list, City Utilities felt that there was sufficient documentation to indicate that 104 of these leaks were caused by other than rock impingement. In addition, City Utilities has provided documentation to verify that 118 locations had already been replaced, were listed twice, or were already listed on the Plastic Failure Master List.

The Staff met with City Utilities personnel on March 22, 2005 to discuss the 104 locations that they believed sufficient documentation existed (leak repair reports) to indicate that the leaks were caused by other than rock impingement. City Utilities provided Staff with the leak repair forms for these locations for review. To date, Staff has not determined the status of these locations for possible spot-checking. Pending Staff's review of the 104 locations that City Utilities believed could be removed from the spot-check list and the 118 locations that can be removed from the list, City Utilities has agreed to spot-check the remaining locations (approximately 33) during 2005. City Utilities has performed one spot-check to date.

The Staff will continue to work with City Utilities to determine the disposition of the 104 locations for possible spot-checks. The Staff will expedite their review of the leak reports for these 104 locations and provide City Utilities guidance for the location and number of spot-checks to perform. Until such time Staff has completed its review of the 104 locations, City Utilities should continue to perform spot-checks on the 33 locations noted above.

FINAL SUMMARY

The recommendations contained in Staff's June 16, 2004 report and implemented into City Utilities' gas safety program are the foundation of City Utilities' continuing plastic pipe replacement program. All of these recommendations must be considered together in order to achieve the purpose of the replacement program, which is protection of the public's safety, and each, therefore, complement the other. At this time, Staff believes

that the efforts of the parties in meeting the objectives of the recommendations have been achieved, and this is supported by the results discussed in the preceding report. Based upon these observations, the Staff recommends that the Commission continue with the current recommendations proposed in Staff's June 16, 2004 report and implemented by City Utilities.

The Staff proposes to file an update report with the Commission summer of 2006. This will allow Staff sufficient time to complete an analysis of the plastic pipe replacement program and leak survey data provided from City Utilities' semi-annual reporting for the last half of 2005 and first half of 2006, so Staff may provide the Commission with a comprehensive update report detailing the results of the plastic pipe replacement program and leak survey completed since this reporting period.

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.