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Executive Summary

Introduction

The Lee’s Summit Water Utilities Department (the Utility) provides water and sewer services to approximately 34,000 business and residential customer accounts in and around the City of Lee’s Summit, serving a population of about 95,000. The Utility purchases treated water for distribution to its customers from two primary suppliers, the cities of Kansas City and Independence. Wastewater is conveyed for treatment to either the Little Blue Valley or Middle Big Creek Sewer Districts. To deliver these essential services, the Utility must operate and maintain facilities, infrastructure, and business processes in a manner that ensures these systems are sustainable while meeting all regulatory requirements. The Utilities daily operations are wholly supported by revenue derived from water and sewer rates. The Utility is not a recipient of tax or other revenue sources available to City government. Water tap fees and connection fees have been established to support the growth of the system.

The Utility initiated the development of a strategic business plan in response to two issues. First, the Utility has not been able to effectively respond to a changing economic climate. Second, the Utility was uncertain of how long held policies and practices continued to correlate to current customer values. The development of a strategic business plan defines a process to move the Utility from its current performance and service levels to become an organization that provides services tailored to defined customer values and one that can be responsive to future changes within its socio-economic climate.

The strategic planning process breaks down into several specific tasks that must be evaluated in great detail. They include:

- Complete a valid and insightful survey to identify customer expectations and values;
- Complete a comprehensive assessment of the Utility’s business process, resources, assets and needs;
- Define the Utility in terms of service levels and best practices drawing upon customer, City Council, industry, and other pertinent input and resources;
- Identify gaps between present and desired performance;
- Develop a strategic plan including a prioritized list of change objectives with an implementation schedule and resource requirements.

The Utility secured the assistance of professional consultants in April 2010 to facilitate the development of a strategic plan. The consulting team completed customer and employee surveys; reviewed extensive planning and assessment documents, reviewed years worth of operating reports and conducted interviews with City Council, employees and other key stakeholders. A Community Advisory Group (CAG) was formed from a cross section of Utility customers and met to review and prioritize issues.
related to the Utility’s assessment. This assessment report was compiled as a tool to facilitate the strategic planning process.

Overview

The Utility ranks well when compared to other utilities and to accepted industry standards, earning higher marks for Product Quality, Customer Satisfaction, Operational Resiliency and Water Resources Adequacy. Water delivery and sewer collection services are provided reliably throughout the community and at a cost most often viewed as reasonable. Overall, the Utility is delivering great value but continues to ask, “What do customers really want,” and, “Will existing business practices continue to sustain the delivery of service well into the future?” These are complex questions related to nearly every facet of the organization that affect everything from long term financial strategies to daily maintenance activities.

To address these and other questions, the Utility embarked upon the development of a strategic business plan. This assessment report is the first step in the strategic planning process. This assessment compares the Utility’s current performance to customer expectations, industry standards and best management practices. More specifically, this assessment seeks to look through the clatter of daily activities to evaluate an array of details which may offer insight into business practices and processes - potentially uncovering what may be systemic issues putting the sustainability of desired service levels at risk.

The Effective Utility Management (EUM) guide is used as a framework to present assessment information about the Utility. The EUM is a tool prepared by the American Water Works Association (AWWA) listing 10 comprehensive facets of business every utility should consider when undergoing a performance assessment. Additional detailed assessment information may be found in Chapter 2 of this report. Assessment information alone does not provide direction. It will be tempered by consensus of the Community Advisory Group (CAG) after their review of Council interviews, customer surveys, and other data resources pertinent to each issue.
**Significant Findings**

A graphic summary of data compiled through the assessment process and based on the 10 EUM factors is presented below. In this sliding scale, a ranking of 1 indicates the Utility does not conform to the EUM recommendations, while a ranking of 5 indicates strong, or optimal, conformance.

*Figure ES-1 Summary Attribute Ratings*

Several positive assertions can be made from the overall assessment including product quality is good; there are sufficient resources for the time being; customers are satisfied; and the organization seems to be well optimized. While true at a high level, there are material issues to be found in the details of each factor. Each one must be understood at a component level if they are to provide direction to the Utility.

**Product Quality**

The delivery of clean water and conveyance of sanitary waste is done well. Potable water that meets regulatory requirements is purchased from suppliers and delivered to consumers. Sewer blockage rates continue to decline, and sanitary waste is delivered to a local sewer district for treatment. Areas that offer opportunity to increase service levels include:

- Adopt a renewal and replacement policy that addresses the backlog of rehabilitation projects;
- Complete the private infiltration and inflow (I/I) reduction programs to minimize sewer backups and overflows;
- Evaluate opportunities to improve existing fire flows in rural areas.
**Customer Satisfaction**

Surveys of all customer classes show solid levels of satisfaction with products, service levels, employee interactions, and billing processes. Customer contact data indicates service issue frequencies are comparable to industry expectations. Potential improvements include:

- Develop customer education programs to increase communication and awareness of Utility issues and customer services;
- Refinements to improve the customer complaint tracking within existing systems;
- Increase the availability of customer usage and billing information through the implementation of utility billing system recently awarded;
- Consider the installation of automated meter reading and other technologies to provide meter readings and greater usage details to reduce customer complaints.

**Employee and Leadership Development**

The employee satisfaction survey, the average number of training hours per employee, annual employee turnover rates, and perceived communication effectiveness are generally positive as compared to other Midwestern water and wastewater utilities. There are still areas where general improvements can be made:

- Attract well qualified candidates to fill critical position vacancies as they occur;
- Address facility inadequacies to improve employee effectiveness;
- Develop water and wastewater engineering resources;
- Develop and implement a succession plan;
- Develop and Implement formalized training programs for many employees in lieu of reliance upon on-the-job experiences;
- Encourage participation and leadership within community and industry related organizations.

**Operational Optimization**

The Utility implemented a geographically integrated, automated work order and asset management system in 2005. This system provides the Utility an edge when comparing it to industry averages. Although this system supports effective resource management and decision making, work flow efficiency is hampered by off-site material storage, crowded conditions and undersized facilities as confirmed by the 2007 Space Needs Assessment. In addition, the control system is technologically current but its ability to provide automated control may be underutilized. Areas to improve include:

- Increase operational efficiencies by constructing a functionally designed maintenance and operations facility;
- Maximize SCADA functionality;
- Complete asset condition assessments to take advantage of asset management system.
Financial Viability

The Utility's financial viability has declined as steady increases in water, wastewater treatment, and electricity costs continue to erode reserves. While bond rating of AA3 is high due to historically prudent and sound fiscal management practices, financial trends show a consistent and rapid decline in resources. The absence of an internal rate setting policy and other financial policies prevents the Utility from managing cost increases in an orderly manner. Opportunities to strengthen the Utility's financial position include:

- Implement a rate management policy to ensure orderly rate adjustments to protect bond ratings and fund capital reinvestment;
- Establish policies and methodologies that support revenue stability to minimize risks and strengthen bond ratings;
- Consider updating the sewer connection fee to fund development related system enhancements through a program similar to the water tap fee process that has proven to be effective.

Infrastructure Stability

The Utility makes a significant investment of resources to maintain water and sewer infrastructure to reliably meet customer and regulatory needs. These activities support bond ratings and the financial viability of the utility. Although the Utility continues to work toward comprehensive condition assessments for all infrastructures, annual capital reinvestment is only a fraction of annual depreciation. Areas to improve include:

- Accelerate investment in water line replacements and sewer line rehabilitation based upon a prioritized risk assessment and appropriate funding levels;
- Adopt a renewal and replacement policy;
- Determine actions necessary to implement city-wide goals based on the private inflow and infiltration pilot program;
- Construct facility to support the operation of the Utility;
- Evaluate options to reduce customer risk of sanitary sewer backups and service lateral repair costs;
- Develop a formal meter management and replacement program.
Operational Resiliency

Emergency response plans and physical resources, such as backup power and robust water distribution and sewer conveyance systems, along with employee and equipment resources exist to handle most situations. If necessary, additional resources from the private sector are also available to assist with emergencies. The Utility manages routine emergencies well but should consider planning for less frequent and more contingent risks. An appropriate accreditation or certification process may bring other opportunities to light. Specific recommendations to improve operational resiliency include:

- Further develop management and response plans for identifiable risks;
- Implement the additional risk management plans;
- Formally train employees on the emergency response plans;
- Pursue certification through American Water Works Association (AWWA).

Community Sustainability

The Utility currently utilizes a rate structure that promotes water conservation by its customers; however, opportunities exist for the Utility to implement practices that give greater consideration to its environmental impact and are more responsive to changing customer values. Possible enhancements include:

- Develop water conservation policy to support consumer awareness;
- Evaluate the community needs for financial assistance and develop a program;
- Incorporate LEED standards for new buildings, where cost effective;
- Utilize solar and wind energy where appropriate;
- Leverage alternative fuels to reduce carbon emissions;
- Investigate automated meter reading for the benefits of reduced carbon emissions;
- Support conservation programs to promote the use of local ponds and impoundments for lawn irrigation and other applications;
- Coordinate with the community sustainability plan under development by the City;

Water Resource Adequacy

Long term contracts for the purchase of water and treatment of sewerage are in place. These contracts and other agreements were developed in times of rapid growth and increasing demand. Water demand and waste water treatment projections should be revisited to reassess long term impacts. Alternative supply and treatment options should be investigated to mitigate cost fluctuations. Specific recommendations include:
- Recast water and wastewater projections to reflect recent development trends;
- Evaluate potential options to augment existing water supply contracts;
- Examine regional opportunities for delivery of water;
- Evaluate the potential benefits of connecting with Tri-County Water Authority;
- Complete the Jackson Cass Transmission improvements with Kansas City;
- Continue participation on Little Blue Valley Sewer District boards.

**Stakeholder Understanding and Support**

The community survey derived to measure customer satisfaction strongly indicated that there was limited understanding by customers of how the Utility is funded and what services are provided. Additional customer education is needed about rates, infrastructure and services to reduce misunderstandings that often result in customer complaints. Specific opportunities to improve customer understanding and support include:

- Consider drawing upon the Community Advisory Group as a permanent resource to increase stakeholder participation;
- Develop public awareness and education programs to increase stakeholder understanding;
- Conduct periodic customer satisfaction surveys to assess service levels and provide direction to the Utility;
- Solicit opportunities to contribute informational articles about the Utility;
- Issue informative press releases regarding significant initiatives and successes;
- Sponsor and support a community outreach initiative;
- Maintain the website with fresh and informative content;
- Provide informative content for broadcast on the City’s cable access channel.

**Summary**

Overall, the Utility continues to provide an excellent product and good customer service. There are a couple of critical issues the Utility must address to sustain the seamless provision of services. Financial viability, while it has been strong in past years, is in decline and must be addressed. Infrastructure stability will depend heavily on increased investment above historical levels especially as infrastructure continues to age. Addressing these key and other lesser issues will ensure the Utility continues in its record of good service.
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CHAPTER 2 - ATTRIBUTE ASSESSMENTS

Background

The City of Lee’s Summit experienced dramatic growth from the 1980’s through 2006 that challenged the delivery of water and sewer services and the development and maintenance of necessary infrastructure. Today, the Water Utilities Department (Utility) provides water and sewer service to approximately 34,000 customers over an area of 79 square miles. The water and sewer systems include over 1,000 miles in pipe lines that delivered nearly 3 billion gallons of potable water and conveyed 4 billion gallons of wastewater in 2009. The customers and infrastructure are supported by 59 employees organized into three functional departments: Operations, Support Services and Engineering.

The Utility has completed infrastructure master plans; cost of service studies; rate studies; operational analyses; facility needs studies; employee surveys; and other evaluations necessary to the basic function and success of a modern water and sewer utility. Long term contracts are negotiated with Kansas City and Independence for water supplies and with the Little Blue Valley Sewer District for sewage treatment. Regulatory agencies with jurisdiction over the Utility include the Missouri Department of Natural Resources (MDNR) and the United States Environmental Protection Agency (EPA). Customers include residential, commercial and industrial users within and near the City boundaries.

The Utility serves a suburban population that includes a large residential customer base, some commercial and a relatively small number of industrial accounts. The population centers are concentrated in three areas. One to the north along I-470, one in the central area around the historical downtown and one around the Raintree Lake area on the southern end. The service area is 11 miles long from north to south and 8 miles wide from east to west. Large tracts of land remain undeveloped and the population densities are relatively low. This is significant in the utility business where costs per customer are influenced by population density and proximity to water supplies and wastewater treatment resources.

Scope

The scope of this report includes:

- Evaluation of Utility practices and performance measurements;
- Where applicable, compare performance measurements to industry benchmarks;
- Complete a statistically valid survey of customer perspectives and opinions;
- Gather opinions and perspectives about the WUD from elected officials, employees and other local agencies;
- Organize the assessment as described in Effective Utility Management by the American Water Works Association (AWWA);
- Incorporate opinions and perspectives gained from a community advisory group into the overall assessment.

**Introduction**

This chapter provides detailed assessments on each of the ten attributes described in Chapter 3. This assessment is a comprehensive examination of operating information, financial data, master plans, contracts, surveys and interviews for the purpose of rating the Utility in the ten attributes associated with effective water and sewer utilities. Each measurement item is rated on a scale of 1 to 5 where 1 is the lowest and 5 is highest. This scale is consistent with the American Society of Civil Engineer’s approach to use an A, B, C, D and F system for rating infrastructure where “C” (or 3) is regarded as average. Many of the ratings are based on direct comparisons to benchmarking or industry data. Others are based on the consulting team’s professional judgment. The overall results are indicated in Figure 2-1.

*Figure 2-1 Overall Attribute Ratings*

The Community Advisory Group (CAG) was engaged through six, two to three hour meetings to learn about the Utility, review the attribute ratings and offer comments to reflect community values. Input from the CAG is noted under each attribute. Each attribute discussion includes the information considered, an overall attribute rating and recommendations to be considered for the strategic plan.
Product Quality

The Product Quality attribute considers the perceptions of customers and regulators about the Utility’s products. From the customer perspective, those products include the characteristics (taste, odor, pressure, reliability) of the water supplied to their homes and businesses and the successful conveyance of wastewater away from their homes or businesses. From a regulator’s perspective, product quality includes compliance with federal, state and local regulations in treating and conveying water and wastewater. Regulators include the U.S. Environmental Protection Agency (USEPA) and the Missouri Department of Natural Resources (MDNR).

Potable water is purchased from the Cities of Kansas City, Missouri and Independence, Missouri. Raw wastewater is conveyed to the Little Blue Valley Sewer District (LBVSD) and the Middle Big Creek Sewer Sub District (MBCSSD) interceptors for wholesale treatment and discharge to the natural environment. The measurement items under Product Quality and the ratings are indicated in Figure 2-2.

**Figure 2-2 Product Quality Rating**

![Graph showing Product Quality ratings](image)

**Drinking Water Flow, Pressure and Availability**

The Utility maintains a calibrated water model and continues to conduct master plan capital improvements in anticipation of development and growth patterns. The community survey indicates that 85% of respondents are satisfied with water pressure and 98% are satisfied with the reliability. As indicated in the Water Master Plan, domestic and fire protection needs are reliably provided throughout the Utility’s service area with the exception of a few areas. There are 6 homes along Hamblen Road, south of the Resource Recovery Park, with no water service.
Fire protection east of Milton Thompson and Smart Roads, outside city limits, is consistent with rural water supply standards that were in place while under the direction of the former Jackson County Public Water Supply District #14. To increase the fire protection service level to an urban standard, the capital cost for these improvements in 2011 dollars is approximately $12 million based on a Master Plan conducted for the District. The rating given is a 4.

**Drinking Water Quality and Testing Programs**
The community survey indicates that 89% of respondents are satisfied with their water quality. The Utility is accomplishing all the USEPA and MDNR requirements for water quality and testing and is rated a 5.

**Drinking Water Compliance Rate**
Drinking water compliance rate quantifies the percentage of time each year that a water utility meets all the health-related drinking water standards in the U.S. National Primary Drinking Water Regulations. The Utility has a one hundred percent drinking water compliance rate for the year of 2009 and has achieved that level of compliance in prior years. The rating given is a 5.

**Notice of Violations**
The notice of violations measures the number of violations the Utility has received in the last five years. These notices come from the Missouri Department of Natural Resources (MDNR) based on investigations of reports from the Utility and the public. This measurement applies to both the sanitary sewer conveyance and water distribution systems. In the past five years, the Utility received one notice of violation (NOV) from MDNR for a sanitary sewer overflow (SSO) as a result of human error in the operation of a pump station. The Utility responded promptly by engaging MDNR staff and then revising operating procedures to prevent a future occurrence. The Utility's revised operating procedures will minimize the risk for similar incidents in the future. Additionally, the Utility ranks very high in the areas of sewer backups and overflows. These are typically the areas that cause water and wastewater utilities to receive NOV’s. As a result, the Utility is rated a 4.

**Insurance Service Office Ratings**
The Insurance Service Office classifies water utilities for their ability to protect property from fires. The classification considers both the water Utility and the local fire department in classifying a city from Class 1 to Class 6, with Class 1 being the best. The classification is then used to set property insurance rates. The Utility has a Class 1 rating based on system capacity, water storage volumes and system maintenance programs. This is the best possible classification so the Utility is rated a 5.
Unplanned Water Service Disruptions

The 2001 Optimization Study indicates the number of water main breaks to be about 150 per year. The most recent 3 year average is about 115 breaks per year. About 100 miles of piping has been added to the water distribution system since 2001. The reduction in break frequencies is primarily attributed to cooler temperatures, wetter summers, lower demands and more effective rehabilitation programs. The Utility is responding appropriately to water main breaks with resources to make repairs and programs to categorize breaks, monitor trends and replace sections of piping with excessive break histories. There is a $25 million backlog in rehabilitation projects that if completed would further reduce the number of breaks per year. The rating given is a 4 for the quality of effort to reduce the breaks and to quantify the resource needs to further reduce the number of breaks.

Sewer Backups

Sewer backups into private buildings are caused by inadequate sewer capacity combined with excessive flows, collapsed pipes, offset joints and obstructions. Typical obstructions include roots, grease and debris. Occasionally, obstructions are the result of vandalism. Most of the problems occur in older neighborhoods where sewers systems were constructed with clay tile pipe. Backups associated with rain events are typically excluded from this number as they are more related to the capacity of the installed lines and rain amounts rather than maintenance or repair. From 2006-2009, the Utility averaged 28 non-rain related backups per year on public mains, or 6 per year per 100 miles of main. The number of backups decreased each year and in 2009 was down to 14. The industry goal is to minimize or eliminate all backups through best management practices.

Best management practices include the development and adoption of a Management, Operation, and Maintenance (MOM) program. The Utility was among the first in the state of Missouri to submit such a program. An audit of the City’s MOM program was completed as a component of the Wastewater Master Plan. This audit indicated that the Utility is implementing all major elements of the MOM and is continuously looking for ways to improve system performance in a cost effective manner. Additionally, the audit revealed no gaps in the program for the categories of equipment and collection system maintenance, internal video inspection and sewer cleaning. These are the areas that most impact the potential for non rain related sewer backups.

The Wastewater Master Plan also identified peak flows and evaluated the capacity of the existing collection and conveyance system to convey these flows without backups of wastewater into homes and businesses. The Master Plan went on to recommend system capacity improvements as well as an infiltration and inflow (I&I) removal program. To date, the Utility has completed a portion of the recommended system capacity improvements and initiated a pilot I&I removal program. These programs must continue to be successful in reducing I&I. As a result of the improved backup history resulting from the MOM program, planned collection system capacity improvements and I&I removal programs, the Utility is rated a 4.
Sewer Overflow Rate
The Utility tracks sanitary sewer overflows (SSOs) and records an estimate of the overflow volume, the cause and a description of the event. Over the period 2005-2009, there were 20 SSO events. Of the SSO events, 10 (50%) were related to debris in the line, 6 (30%) were related to collapse or line failure, 3 (15%) were due to operations errors, and 1 (5%) was related to rain or wet weather. The USEPA found that nationwide, approximately 70% of SSOs are attributed to blockages, 14% to wet weather and I&I, and 7% to line breaks (USEPA report to Congress: Impacts and Control of CSOs (combined sewer overflows) and SSOs, 2004). The sewer overflow rate is the number of overflow events per year per 100 miles of sanitary main. In 2009, the Utility overflow rate was 0.85, which is in the top quartile of AWWA benchmark survey. The median value was 2.66, the top quartile was 1.28 and the bottom quartile was 6.25. The USEPA has reported that 70% of communities report between one and four SSO events annually (USEPA report to Congress: Impacts and Control of CSOs and SSOs, 2004). The Utility is rated a 5.

Consumer Confidence Reporting
The USEPA requires public water utilities to mail Consumer Confidence Reports (CCR’s) by July 1, annually. These reports must include:

- Source of the drinking water;
- Brief on the susceptibility to contamination of the local drinking water source;
- How to get a copy of the water system's complete source water assessment;
- The level (or range of levels) of any contaminant found in local drinking water, as well as USEPA's health-based standard (maximum contaminant level) for comparison;
- Likely source of contaminants in the local drinking water supply;
- Potential health effects of any contaminant detected in violation of an EPA health standard, and an accounting of the system's actions to restore safe drinking water;
- Water system's compliance with other drinking water-related rules;
- Educational statement for vulnerable populations about avoiding Cryptosporidium;
- Educational information on nitrate, arsenic, or lead in areas where these contaminants may be a concern;
- Phone numbers of additional sources of information, including the water system and USEPA's Safe Drinking Water Hotline.

The Utility's 2010 Consumer Confidence Report was successfully issued and appears to comply with the intent of the requirements. The Utility was rated a 5.
Product Quality Summary

Table 2-1 includes a summary of the measurement items, information sources, AWWA benchmarks (where applicable); the Utility’s numeric value (where applicable) and the Utility’s rating on a scale of 1 (lowest) to 5 (highest).

<table>
<thead>
<tr>
<th>Measurement Item</th>
<th>Information Source(s)</th>
<th>AWWA Median</th>
<th>Utility Value</th>
<th>Utility Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drinking Water Flow, Pressure and Availability</td>
<td>Community Survey, Water Master Plan, Council Interviews</td>
<td>--</td>
<td>--</td>
<td>4</td>
</tr>
<tr>
<td>Drinking Water Quality and Testing Programs</td>
<td>Operations</td>
<td>--</td>
<td>--</td>
<td>5</td>
</tr>
<tr>
<td>Drinking Water Compliance Rate</td>
<td>Operations</td>
<td>100 %</td>
<td>100 %</td>
<td>5</td>
</tr>
<tr>
<td>Notice of Violations</td>
<td>Operations</td>
<td>--</td>
<td>1 in 5 years</td>
<td>4</td>
</tr>
<tr>
<td>Insurance Service Office Rating</td>
<td>Support Services</td>
<td>--</td>
<td>Class 1 (highest)</td>
<td>5</td>
</tr>
<tr>
<td>Unplanned Water Service Disruptions</td>
<td>Operations</td>
<td>--</td>
<td>115 breaks per year</td>
<td>4</td>
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<tr>
<td>Sewer Backups</td>
<td>Operations</td>
<td>--</td>
<td>14</td>
<td>4</td>
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<tr>
<td>Sewer Overflow Rate</td>
<td>Operations</td>
<td>2.66</td>
<td>0.85</td>
<td>4</td>
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<tr>
<td>Consumer Confidence Reporting</td>
<td>Support Services</td>
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<td>5</td>
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</table>

The Utility is delivering a high quality product and the overall rating is a 5-. Related recommendations from the 2001 Optimization Study to track maintenance data more effectively have been successfully implemented. Comments from the CAG included suggestions to evaluate water service levels to customers outside the city limits and to reduce the number of water service disruptions. Recommendations for potential improvement include:

- Adopt a renewal and replacement policy that addresses the backlog of rehabilitation of projects;
- Complete the private infiltration and inflow (I&I) reduction programs to minimize sewer backups and overflows;
- Evaluate opportunities to improve existing fire flows in rural areas.
- Continuing Maintenance, Operation and Management (MOM) programs;
Customer Satisfaction

Customer Satisfaction includes measurements related to customer experiences with the Utility. Customers contact the Utility employees through billing functions, service requests, development activities and general inquiries for information about water and sewer services. The measurement items under Customer Satisfaction and the associated ratings are indicated in Figure 2-3.

**Figure 2-3 Customer Service Rating**

<table>
<thead>
<tr>
<th>Customer Satisfaction</th>
<th>Customer Service Complaints</th>
<th>Technical Quality Complaints</th>
<th>Meter Service Requests*</th>
<th>Sewer Service Requests*</th>
<th>Water Service Requests*</th>
<th>Same Day Response Rate</th>
<th>Service Disruption - under 4 hours</th>
<th>Service Disruption - 4 to 12 hours</th>
<th>Billing Accuracy Rate</th>
<th>Overall Customer Satisfaction</th>
<th>Accounts with Negotiated Payments*</th>
<th>Account Shut Offs*</th>
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</thead>
<tbody>
<tr>
<td>0</td>
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</table>

*Not rated but recommend monitoring trends.

Customer Service Complaints

Customer service complaints are defined as an expression of dissatisfaction conveyed to a Utility employee who has the responsibility and ability to take action to resolve the complaint. The Utility notes customer contacts within the billing system and/or the asset management system. However, while each system is able to track an issue through to completion, neither system in their current form provides a method to segregate complaints from basic service requests. The Utility should modify the current systems to coordinate the reporting, tracking and resolution of complaints to ensure that customer service is quantifiable and professionally managed. Customer service complaints are measured by the number of complaints per 1000 customers per year. The Utility estimates it has 2.54 complaints per 1000 customers per year. The AWWA median benchmark is 3.40, the upper quartile is 0.5 and the bottom quartile is 9.7 complaints per 1,000 customers per year. The Utility is near the median and rated a 3.
Technical Quality Complaints
Technical quality complaints are measured by the number of complaints per 1000 customers per year. Technical quality includes water quality, taste, odor, appearance, pressure, sewage backups and overflows, disruptions of water or wastewater service and any other services related to the core service of the Utility. The Utility has 2.55 complaints per 1,000 customers per year. The AWWA median benchmark is 3.0 with a top quartile of 1.6 and a bottom quartile of 6.3 complaints per 1,000 customers per year. The Utility is near the median value and rated a 3.

Meter Service Requests
The number of meter service requests measures the number of requests responded to that relate to meter specific issues. In 2009, the Utility received and responded to 377 requests for a meter service which ranged from customer concerns about water pressure, meter accuracy, meter well grade, and service interruption due to freezing. There are no benchmarks for this value. The number is valuable for monitoring trends to determine staffing levels and the condition of capital assets.

Sewer Service Requests
Sewer service requests measures the number of requests annually to maintain or repair the sanitary sewer system. The department received 162 requests in 2009. There are no benchmarks for this value. The number is valuable for monitoring trends to determine staffing levels and the condition of capital assets.

Water Service Requests
Water service requests measure the number of requests annually to establish new service, complete initial meter reads; obtain meter reads for final billing and to re-read meters. In 2009, the Utility received 5,478 customer requests for new water service and 2,628 customer requests to terminate services. Service interruptions related to non-payment were accounted for separately. There are no benchmarks for this value. The number is valuable for monitoring trends to determine staffing levels and the condition of capital assets.

Same Day Service Rate
Same day service rates measures the percentage of customer service requests (water or sewer) that are reconciled on the same day as the complaint. The Utility responded to service requests on the same day 96% of the time. Although there are no benchmarks for this value, it demonstrates a high level of performance in responsiveness. The Utility is rated a 5.
**Water Service Disruptions (Main Breaks) – Unplanned (less than 4 hours)**
The disruption of water service is measured by duration and the number per 1,000 customers per year. The duration is the time period from the beginning of the disruption to the re-establishment of service. This measurement covers those events lasting less than 4 hours. The Utility has a rate of 3.39 per 1000 customers per year. The median AWWA survey value is 2.47, the top quartile is 1.30, and the bottom quartile is 6.89. The Utility was given a rating of 3.

**Water Service Disruptions (Main Breaks) – Unplanned (between 4 and 12 hours)**
This measure is identical to the previous measurement but is for disruptions lasting from 4 to 12 hours. The Utility has a rate of 0.40 per 1000 customers per year. The AWWA median survey value is 0.45. The upper quartile is 0 and the bottom quartile is 1.78. The Utility was given a rating of 3.

**Billing Accuracy Rate**
Billing accuracy is a product of meter reading and billing systems. The Utility primarily utilizes handheld meter reading devices that are synchronized with the utility billing system for billing purposes. Meters are physically read monthly; however, there are occasions were a meter cannot be read due to weather. The current utility billing system has been in place since the mid 1980’s and has seen little in the way of enhancements over the past 5 years. The current system will be replaced and should be operational in 2012. The new system capabilities include enhancements to customer access of their account information. Billing accuracy rate measures the corrections needed per 10,000 bills invoiced to the water Utility’s customers. The Utility has a billing accuracy rate of 7.0 corrections per 10,000 bills for the years of 2008 through 2009. The AWWA survey median value is 7.7. The upper quartile is 1.5, and the bottom quartile is 20.4 corrections per 10,000 bills. The Utility is above the median but well below the top quartile. The Utility was given a rating of 3.

**Overall Customer Satisfaction**
The *2001 Optimization Study* recommended a customer satisfaction survey. As described in Chapter 4, a survey was completed in 2010. The survey indicates that 87% of the respondents are satisfied with the Utility services. This represents the upper quartile of a 100 point scale so the Utility is rated a 5. The survey includes several related questions, all of which give the Utility comparably high marks for professionalism, responsiveness, adequacy and reliability of Utility services.
Accounts with Payment Plans
The Utility offers payment plans in the form of an extension of time (usually one-month) to customers. The number of payment plans arranged over the course of 2009 was 2,430. There are no benchmarks for this value. The number is valuable to monitor trends associated with bad debt write-offs and planning for staffing needs to handle payment plan requests.

Account Shut Offs due to Non-Payment
This item measures the number of accounts shut off within a year. In fiscal year 2009, the total number of customer shutoffs as a result of nonpayment was 5,413. In fiscal year 2010, there were 4,808 shut-offs to 2,946 accounts indicating that over one-third of the accounts were shut-off multiple times. The number of shut offs in 2010 due to non-payment was down 11% in comparison to 2009. There are no benchmarks for this value. The number is valuable for monitoring trends to determine staffing levels and response resource needs.
Customer Satisfaction Summary
Table 2-2 includes a summary of the measurement items, information sources, AWWA benchmarks (where applicable), the Utility’s numeric value (where applicable) and the Utility’s rating on a scale of 1 (lowest) to 5 (highest).

<table>
<thead>
<tr>
<th>Measurement Item</th>
<th>Information Source</th>
<th>AWWA Median</th>
<th>Utility Value</th>
<th>Utility Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Service Complaints</td>
<td>Customer Survey, Support Services, Operations</td>
<td>3.4 complaints per 1000 customers per year</td>
<td>2.54 complaints per 1000 customers per year</td>
<td>3</td>
</tr>
<tr>
<td>Technical Quality Complaints</td>
<td>Customer Survey, Support Services, Operations</td>
<td>3.0 complaints per 1000 customers per year</td>
<td>2.55 complaints per 1000 customers per year</td>
<td>3</td>
</tr>
<tr>
<td>Meter Service Requests</td>
<td>Support Services</td>
<td>--</td>
<td>11,431 in 2009</td>
<td>Monitor Trend</td>
</tr>
<tr>
<td>Sewer Service Requests</td>
<td>Support Services</td>
<td>--</td>
<td>162 in 2009</td>
<td>Monitor Trend</td>
</tr>
<tr>
<td>Water Service Requests</td>
<td>Support Services</td>
<td>--</td>
<td>12,563 in 2009</td>
<td>Monitor Trend</td>
</tr>
<tr>
<td>Same Day Response Rate</td>
<td>Support Services</td>
<td>--</td>
<td>96%</td>
<td>5</td>
</tr>
<tr>
<td>Disruption Service to Customers - under 4 hours</td>
<td>Operations</td>
<td>2.47 per 1000 Customers - Unplanned</td>
<td>3.33 per 1000 Customers - Unplanned</td>
<td>3</td>
</tr>
<tr>
<td>Disruption Service to Customers - 4 to 12 hours</td>
<td>Operations</td>
<td>0.45 per 1000 Customers</td>
<td>0.4 per 1000 Customers</td>
<td>3</td>
</tr>
<tr>
<td>Billing Accuracy Rate</td>
<td>Operations</td>
<td>7.7 corrections per 10,000 bills</td>
<td>7.0 corrections per 10,000 bills</td>
<td>3</td>
</tr>
<tr>
<td>Overall Customer Satisfaction</td>
<td>Community Survey, Council Interviews</td>
<td>--</td>
<td>87% satisfied</td>
<td>5</td>
</tr>
<tr>
<td>Negotiated Payments</td>
<td>Support Services</td>
<td>--</td>
<td>2,430 in 2009</td>
<td>Monitor Trend</td>
</tr>
<tr>
<td>Account Shut Offs Due to Nonpayment</td>
<td>Support Services</td>
<td>--</td>
<td>4,808 in 2010</td>
<td>Monitor Trend</td>
</tr>
</tbody>
</table>

Based on employee interviews and the community survey, Utility employees understand the importance of being committed to customer service. The community survey includes several questions related to reliability, responsiveness and satisfaction of specific services with an overall rating of 87%. The Utility is proactively monitoring several other values to effectively manage staffing levels, resource requirements and capital assets. Overall, the Utility is given a rating of 4. Opportunities to improve include taking steps to:
• Implement refinements to improve customer complaint tracking;
• Increase customer education and availability of information;
• Reduce the number of service disruptions;
• Evaluate the feasibility of automated meter reading (AMR) to reduce potential customer complaints.
Employee and Leadership Development

The employee and leadership development attribute includes consideration for training, collaboration, knowledge retention and safety. Effective utilities practice continuous learning and continuous improvement throughout the organization. The department includes a director and two assistant directors, one for support services and one for operations as indicated in Figure 2-4. A third assistant director of engineering has been approved but is not yet filled. The support services group includes the front office staff that handles billing, customer inquiries and the meter reading / meter maintenance staff. The total number of full time equivalents (FTE’s) in this group is 16. The operations groups include staff responsible for operating and maintain the piping systems, pump stations, water storage tanks and wastewater holding basins. The total number of FTE’s in this group is 40. Equipment operators and maintenance workers are cross trained between water and sewer needs and shared among managers. The total number of FTE’s is 59. The measurement items under Employee and Leadership Development and the ratings are indicated in Figure 2-5.

Figure 2-4 Water Utilities Department Organization Chart
**Figure 2-5 Employee and Leadership Development**

* Not rated but recommend monitoring trends.

**Annual Voluntary Turnover Rate**
A stable work force is important for consistently delivering high quality water utility services. Three measures include voluntary turnover, retirement turnover and experience turnover, all expressed as a percentage of the total on an annual basis. Only information on voluntary turnover was available. From 2005 to 2010, the average annual voluntary turnover was about 6%. There are no AWWA survey data for comparison. Complex issues tied to the economy, alignment of values between employees and management, market competitiveness and hiring effectiveness influence this measurement. The Utility should continue to monitor this value.

**Employee Job Satisfaction**
In 2005, Utility employees responded to a survey indicating that 59% were satisfied. A 2010 employee survey indicated that the majority of employee respondents indicated the Utility was a “good place to work.” In the same survey, a larger majority of over 75% indicated they were “committed to the Utility”. Employee interviews conducted by the consultant team generated comments indicating some disparity in satisfaction levels among different employee groups. These are complex issues tied to communication, alignment in values and organizational focus on a common mission. Dissatisfaction was expressed about overcrowding in the operations building and the need for a more functional building for the meter reading staff. All three groups interviewed want to deliver quality services, want to be challenged and want the opportunity to grow. The Utility management team has openly sought employee opinions, acknowledges the concerns and continues to address them. The Utility overall is rated a 3.
Employee Health and Safety Severity Rate
The employee health and safety severity rate measures the days away from work multiplied by 200,000 then divided by the total hours worked by all employees. In 2009, the severity rate was 9.6, in 2010 it was 19.8. The increase is associated with a single event in 2010. AWWA also tracks the severity rate for employees of a water and/or wastewater Utility. For the Midwest region, the AWWA employee health and safety severity rate median was 14.2. The top quartile severity rate is 0.7 and the bottom quartile is 69.9. The Utility is rated a 3.

Management Effectiveness in Communicating Expectations
In 2010, the Utility conducted a survey that addressed management effectiveness in communication. Over 70% of employees agreed or strongly agreed that the manager keeps them informed of job responsibilities. From the employee interviews, the desire for better understanding, better communication and follow through were consistent themes. The Utility operations group maintains a new employee orientation program and a well structured meeting schedule to encourage effective communication. The orientation program covers safety, job requirements, performance expectations and extensive cross training. The meetings are appropriate in frequency and scope. The Utility is rated a 4.

Training Hours per Employee
The Utility reported that each employee receives about 19.75 hours of training per year. The AWWA benchmark median is 18.8, the lower quartile is 12.2 and the upper quartile is 33.3 hours per year. The Utility is slightly above the median and is given a rating of 3.

Organizational Development and Succession Planning
Organizational development and succession planning are important to maintain stability in delivering high quality services. The Utility should further develop its engineering resources to address on-going operational issues as well as the planning necessary to address the Utility’s needs. Lacking a succession plan has created historical challenges in filling critical management, technical and supervisory positions. The addition of the Assistant Director of Engineering position has not been completed due to a lack of qualified candidates that match the experience and skills necessary.

Leadership development can occur in many ways through professional organizations, community involvement, learning (formal and informal) and mentoring. Utility employees participate modestly in professional organizations like the American Water Works Association. The majority of leadership development appears to be self-driven. Best management practices include personal development plans, mentoring programs, reading, community involvement, professional involvement and formal leadership training. The operations division is challenged to develop supervisors from the work force in a system that is more beneficial to union members than supervisors. The Utility is given a rating of 2.
Continuous Improvement
The regulations and technologies impacting a water utility are constantly changing. Continuous improvement is important to keep pace with these challenges. The Utility has completed optimization studies and implemented recommendations. Completing this assessment demonstrates a willingness to be examined and to identify areas for improvement. Other steps can be taken as described in programs like the Malcolm Baldridge Quality award and the AWWA utility certification program. The management team rated the Utility a 3, emphasizing areas of improvement had already been identified prior to this assessment. The AWWA median self-rating was a 4.0 with a quartile range from 2.0 to 4.0.

Employee and Leadership Development Summary
Table 2-3 includes a summary of the measurement items, information sources, AWWA benchmarks (where applicable), the Utility’s numeric value (where applicable and the Utility’s rating on a scale of 1 (lowest) to 5 (highest).

<table>
<thead>
<tr>
<th>Measurement Item</th>
<th>Information Source</th>
<th>AWWA Median</th>
<th>Utility Value</th>
<th>Utility Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Voluntary Turnover Rate</td>
<td>Utility Management Team</td>
<td>--</td>
<td>6% over 5 years</td>
<td>Monitor Trends</td>
</tr>
<tr>
<td>Employee Job Satisfaction</td>
<td>Employee Surveys and Interviews</td>
<td>--</td>
<td>--</td>
<td>3</td>
</tr>
<tr>
<td>Employee Health &amp; Severity Rate</td>
<td>Utility Management Team</td>
<td>14.2 days away per hours worked</td>
<td>19.8 days away per hours worked</td>
<td>3</td>
</tr>
<tr>
<td>Management Communication Effectiveness</td>
<td>Employee Surveys and Interviews</td>
<td>--</td>
<td>--</td>
<td>4</td>
</tr>
<tr>
<td>Training Hours per Employee</td>
<td>Utility Management Team</td>
<td>18.8 hours/year</td>
<td>19.75 hours/year</td>
<td>3</td>
</tr>
<tr>
<td>Employee Leadership Development</td>
<td>Utility Management Team</td>
<td>--</td>
<td>--</td>
<td>2</td>
</tr>
<tr>
<td>Continuous Improvement</td>
<td>Self rated</td>
<td>4</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

The overall strength for the Utility is in the effort and commitment to communicate expectations for higher levels of performance. These expectations may not be well received by all employees, but they are communicated. Leadership development is the lowest rated measurement. The Utility should
embark on efforts that allow the best employees to develop and advance within the department. The overall rating for this attribute is a 3. Recommendations for improvement include:

- Attract highly qualified candidates to address position vacancies;
- Address facility inadequacies to improve employee effectiveness;
- Establish a succession management plan;
- Further develop engineering resources;
- Develop system that encourages advancement from work force to supervisory positions;
- Reward best practices and celebrate successes to encourage a continuous improvement culture among all employee groups;
- Develop and implement more effective training programs and reduce reliance on field experience;
- Elevate participation in key professional organizations, community activities and leadership development;
- Continue toward improving supervisor and employee relations in select areas.
Operational Optimization

Operational optimization includes the prudent management of resources and the effective use of information and technology in delivering services. The Utility employs 59 full time equivalent employees (FTEs). In 2009, the Utility served approximately 33,354 water accounts and 30,805 sewer accounts. The measurement items under Operational Optimization and the ratings are indicated in Figure 2-6.

*Figure 2-6 Operational Optimization*

Customer Accounts per Employee (Water and Wastewater)
The Utility serves an area of more than 79 square miles. The populations are concentrated in three areas, and there are large undeveloped tracts of land between these areas. Lee’s Summit in comparison to most utilities has a very low population density and therefore more miles of piping infrastructure per customer than utilities in the AWWA benchmark survey. The Utility has 579 water accounts per employee. The AWWA benchmark survey median value was 604, the upper quartile was 413 and the lower quartile was 780 accounts per employee. The Utility has 561 wastewater accounts per employee. The AWWA benchmark survey median value is 584, the upper quartile was 485 and the lower quartile was 762 wastewater accounts per employee. In both categories, the Utility is close to the median and rated a 3.

Customer Service Cost
The Utility spends an average of $38.34 per year per customer account to provide customer service. This is slightly below the AWWA median benchmark of $39.80. The upper quartile is $19.71 and the lower AWWA quartile is $51.17. Since the Utility is very close to the median value, the rating is a 3.
**Number of Meters Read**
The efficiency of meter readers can be measured by dividing the number of meters read in a day by the number of employees reading meters. For this measurement item, the Utility has a value of 202 meters read in a day. There are no AWWA benchmarks for this measurement because the numbers are highly variable depending on the level of technology, difficulty of access and density of development. This measure should be monitored for trends to plan staffing levels.

**Employees per Hundred Miles of Pipeline**
The 2001 Optimization Study indicated the maintenance staff level at 33.7 FTE’s for 900 miles of piping. The resulting ratio is 3.7 FTE’s per 100 miles of pipe. In 2009, the operations group included 36 FTE’s maintaining 1,000 miles of piping for a ratio of 3.6 FTE’s per 100 miles of piping. In 2001, the maintenance staffing levels were characterized as “reasonable”. The miles of piping have increased and the FTE’s have increased to maintain a consistent ratio. This measurement should be monitored to plan staffing needs and deliver the customer expected level of service.

**Number of Wastewater Maintenance Employees**
The Utility has 16 FTE’s or employees dedicated to maintaining the wastewater collection system. There are no AWWA benchmarks for this measurement but the U.S. Environmental Protection Agency’s (USEPA) Guide for Evaluating CMOM Programs at Sanitary Sewer Collection System recommends staffing requirements based on population served. The CMOM guide recommends 21 to 32 full-time maintenance employees (including supervisors and dispatchers) to serve a population of 90,000.

These guidelines are highly dependent on the age of infrastructure, the quality of construction and system complexity. While approximately 20% of the existing system is clay pipe, much of Lee’s Summit’s wastewater infrastructure is less than 30 years old and the system is only moderately complex. Additionally, it appears that the Utility outsources a portion of the positions recommended by the USEPA, including construction inspectors. With these considerations, it is reasonable for the Utility to have slightly fewer employees than generally recommended by USEPA. However, as the infrastructure ages, additional maintenance will be required and the number of employees may need to increase. This measure should be monitored for trends to plan staffing needs and deliver the customer expected level of service.

**Meter Reading Costs**
The Utility’s meter reading costs are $0.66 per meter. There are no AWWA benchmarks for this measurement and the values are highly variable depending on the level of technology, difficulty of access and density of development. Automated meter reading (AMR) systems have been installed in some areas as a pilot program to assist in the evaluation of the effectiveness of current meter reading.
This measure should be monitored for trends to plan staff and resource needs. It is valuable for assessing options for automated meter reading.

**Unaccounted Water Rate**
Unaccounted water is the difference between the incoming meters from the wholesale suppliers (less than 15 meters) and the summation of the customer accounts (approximately 34,000 meters) expressed as a percentage of the total incoming volume for the year. The Utility’s unaccounted for water in 2009 was 12%. Unaccounted rates in the range of 10% to 15% are generally deemed acceptable. Rates above 15% to 20% warrant action to reduce the rate through best management practices like replacing old meters and capturing unmetered uses from theft, flushing programs, hydrant testing and water main breaks. This rate should be monitored for trends to evaluate the success of these practices. The Utility is rated a 3.

**Facility Needs**
A *Space Needs Assessment* completed in May 2007 identified several deficiencies based on current staffing levels. These include crowded and inefficient work spaces, lack of dedicated file space, lack of conference space, limited crew support space (lockers, restrooms, break rooms, training rooms), lack of dedicated vehicle storage space, inadequate welding/fabrication space, inefficient parts, inventory and pipe storage and lack of a dedicated System Control and Data Acquisition (SCADA) control room. The report identified space needs for projected future staffing needs as well and recommending a $11.1 M facility to provide adequate space. Based on the results of the Space Needs Assessment, the Utility is given a rating of 2.

**Performance Measurement**
The performance measurement rating is a self-rating that assesses how well utilities gather data for various measurements. The Utility implemented a geographically integrated, automated work order and asset management system in 2005. This system supports effective resource management and decision making. As indicated by the volume of measurement data provided for this report and the operational tracking of labor hours and material costs for 76 different activities, measuring performance is an inherent and every day practice in the Utility. The Utility was rated a 4. According to AWWA, the median for this item is 3.0 with quartiles ranging from 3.0 to 4.0.
Operational Optimization Summary

Table 2-4 includes a summary of the measurement items, information sources, AWWA benchmarks (where applicable), the Utility’s numeric value (where applicable) and the Utility’s rating on a scale of 1 (lowest) to 5 (highest).

**Table 2-4 Operational Optimization Ratings**

<table>
<thead>
<tr>
<th>Measurement Item</th>
<th>Information Sources</th>
<th>AWWA Median</th>
<th>Utility Value</th>
<th>Utility Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Accounts per Employee (Water)</td>
<td>Support Services</td>
<td>604 accounts per employee</td>
<td>579 accounts per employee</td>
<td>3</td>
</tr>
<tr>
<td>Customer Accounts per Employee (Wastewater)</td>
<td>Support Services</td>
<td>584 accounts per employee</td>
<td>561 accounts per employee</td>
<td>3</td>
</tr>
<tr>
<td>Customer Service Costs</td>
<td>Support Services</td>
<td>$39.80 per account</td>
<td>$38.34 per account</td>
<td>3</td>
</tr>
<tr>
<td>Meters Read</td>
<td>Support Services</td>
<td>--</td>
<td>39 Meters per Employee per Day</td>
<td>Monitor Trends</td>
</tr>
<tr>
<td>Employees per Hundred Miles of Pipeline</td>
<td>Operations</td>
<td>--</td>
<td>5.6 employees per hundred miles</td>
<td>Monitor Trends</td>
</tr>
<tr>
<td>Number of Wastewater Maintenance Employees</td>
<td>Operations</td>
<td>--</td>
<td>37</td>
<td>Monitor Trends</td>
</tr>
<tr>
<td>Meter Reading Costs</td>
<td>Support Services</td>
<td>--</td>
<td>$0.66 per meter</td>
<td>Monitor Trends</td>
</tr>
<tr>
<td>Unaccounted Water Rate</td>
<td>Support Services, Operations</td>
<td>10 to 15%</td>
<td>12%</td>
<td>3</td>
</tr>
<tr>
<td>Facility Needs</td>
<td>Report</td>
<td>--</td>
<td>--</td>
<td>2</td>
</tr>
<tr>
<td>Performance Measurement</td>
<td>Self rated</td>
<td>3</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

The overall staffing levels appear to be well optimized in comparison to other similar operations. The lowest rating is in facility needs based on the Space Needs Assessment that the operations and meter reading staff need better facilities to improve their operational effectiveness. Comments from the CAG included recommendations to fund a new operations and maintenance facility. The Utility has come a long way in recent years to significantly elevate their practices in collecting performance data and optimizing resources. For example, the Operations Division is tracking volume, labor hours and material costs for 76 different activities. The overall rating for this attribute is a 4-. Opportunities to improve include taking steps to:

- Fund and construct a new operations facility;
- Maximize the SCADA system capabilities for trouble shooting, remote control and data sharing;
- Complete asset condition assessments and continue to collect, monitor and respond to key data observations;
- Update the business analysis for automated meter reading.
Financial Viability

The Financial Viability attribute considers the Utility’s overall fiscal health and sustainability. The indicator attributes monitored for financial viability consider both the current state of the Utility’s finances and how prepared the Utility is to deal with future financial needs. The cost of treatment for wastewater and the cost of water purchasing are considered as part of this attribute.

The subset of measurement items that are part of the Financial Viability section include:

- Operation and Maintenance Cost Ratio – Cost per Account
- Operation and Maintenance Cost Ratio – Cost per MG
- Cost of Service Recovery
- Debt Service Ratio
- Interest Coverage
- Accounts Receivable Collection Ratio
- Accounts Receivable Turnover Ratio
- Bad Debt Ratio
- Revenue to Expense Ratio
- Bond Rating
- Operational Reserves
- Liquidity Ratio
- Comparison of Rate Adjustments to the Consumer Price Index
- Rate Affordability
- Planned Maintenance Ratio

The above measurement items were further condensed into 3 categories and rated as indicated in Figure 2-7.

Figure 2-7 Financial Viability

Operation and Maintenance Cost Ratio (Cost per Account)
This ratio is calculated as Total O&M Expenses divided by the Total Metered Accounts and serves as an indicator of the efficiency of water and sewer operations. As derived from available historical information, operation and maintenance cost per customer has decreased approximately 0.62% and
1.57%, respectively, for the water and sewer systems on an average annual basis over the last five fiscal years. This is primarily due to the fact that the system expenditures have remained relatively constant while the number of customers has increased. However, as shown in the table below, each of the last three fiscal years have varied ranging from -1.17% to 3.56%. The ratios for water and wastewater can be seen in Table 2-5. As with all of the ratios listed, tracking the ratios is valuable for monitoring trends that indicate an improvement or decline in Utility performance.

### Table 2-5 Operation & Maintenance Cost Ratio (Cost per Account)

<table>
<thead>
<tr>
<th>Description</th>
<th>Fiscal Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2006</td>
</tr>
<tr>
<td>Water System</td>
<td></td>
</tr>
<tr>
<td>Expenditures</td>
<td>$10,868,716</td>
</tr>
<tr>
<td>Metered Account</td>
<td>31,542</td>
</tr>
<tr>
<td>Ratio ($/customer)</td>
<td>$344.58</td>
</tr>
<tr>
<td>Annual Change</td>
<td>--</td>
</tr>
<tr>
<td>Sewer System</td>
<td></td>
</tr>
<tr>
<td>Expenditures</td>
<td>$9,650,777</td>
</tr>
<tr>
<td>Metered Account</td>
<td>28,135</td>
</tr>
<tr>
<td>Ratio ($/customer)</td>
<td>$343.02</td>
</tr>
<tr>
<td>Annual Change</td>
<td>--</td>
</tr>
</tbody>
</table>

Notes:

### Operation and Maintenance Cost Ratio (Cost per MGD)

This ratio is calculated as Total O&M Expenses divided by the Total Million Gallons Billed and serves as an indicator of the efficiency of water and sewer operations. As derived from available historical information, operation and maintenance cost per MGD billed has increased approximately 6.79% and decreased approximately 0.78%, respectively, for the water and sewer systems on an average annual basis over the last five fiscal years. However, as shown in the table below, the water system has shown significant increases in the cost per MGD in the last three fiscal years. This can be attributed in part to increase unit cost of purchased water combined with lower sales volumes. The ratios can be seen in Table 2-6 for wastewater and water.
### Table 2-6 Operation & Maintenance Cost Ratio (Cost per MG)

<table>
<thead>
<tr>
<th>Description</th>
<th>Fiscal Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2006</td>
</tr>
<tr>
<td><strong>Water System</strong></td>
<td></td>
</tr>
<tr>
<td>Expenditures</td>
<td>$10,868,716</td>
</tr>
<tr>
<td>Gallons Billed (1,000 gal)</td>
<td>3,655,952</td>
</tr>
<tr>
<td>Ratio ($/kgal)</td>
<td>$2.97</td>
</tr>
<tr>
<td>Annual Change</td>
<td>--</td>
</tr>
<tr>
<td><strong>Sewer System</strong></td>
<td></td>
</tr>
<tr>
<td>Expenditures</td>
<td>$9,650,777</td>
</tr>
<tr>
<td>Gallons Billed (1,000 gal)</td>
<td>2,423,093</td>
</tr>
<tr>
<td>Ratio ($/kgal)</td>
<td>$3.98</td>
</tr>
<tr>
<td>Annual Change</td>
<td>--</td>
</tr>
</tbody>
</table>

**Notes:**

\(^{[1]}\) Fiscal year 2010 based on estimated year-end information.

### Cost of Service Recovery

A rate study was completed in 2007 which recommended increasing rates. A cost of service study completed in 2010 shows the Utility will have operating deficits without rate increases. Rates will have to increase or the level of service will have to decrease to eliminate the deficits.

### Debt Service Ratio

This indicator is the total liabilities divided by the total assets. The Utility value for this indicator is 12.5 which is in the top quartile of AWWA Midwest respondents. The median value is 29. The top quartile value is 19.6, and the bottom quartile value is 37.3. The Utility is rated as a 5 for this item.

### Interest Coverage

This ratio is calculated as Total System Operating Income divided by the Total System Interest Expense and indicates the ability of a Utility to pay interest expenses associated with outstanding debt. The lower the ratio the more the Utility is burdened by debt. The ratio has continued to decline significantly in 2009 and 2010. The interest expenses can be seen from 2006 to 2010 in Table 2-7.
### Table 2-7 Interest Coverage

<table>
<thead>
<tr>
<th>Description</th>
<th>Fiscal Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2006</td>
</tr>
<tr>
<td>Total System</td>
<td>Operating Income</td>
</tr>
<tr>
<td></td>
<td>Interest Expense</td>
</tr>
<tr>
<td></td>
<td>Ratio</td>
</tr>
<tr>
<td></td>
<td>Annual Change</td>
</tr>
</tbody>
</table>

**Notes:**

### Accounts Receivable Collection Ratio

This ratio is calculated as Accounts Receivable (Charges for Services/ 365) and indicates effectiveness of collecting on accounts receivable by calculating the average number of days it takes the Utility to turn receivables to revenues. This ratio should remain stable or decline over time. Based on available information, this ratio is within industry standards. The data for this measurement item can be seen in Table 2-8.

### Table 2-8 Accounts Receivable Collection Ratio

<table>
<thead>
<tr>
<th>Description</th>
<th>Fiscal Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2006</td>
</tr>
<tr>
<td>Total System</td>
<td>Charges for Services</td>
</tr>
<tr>
<td></td>
<td>Accounts Receivable</td>
</tr>
<tr>
<td></td>
<td>Ratio (%)</td>
</tr>
<tr>
<td></td>
<td>Annual Change</td>
</tr>
</tbody>
</table>

**Notes:**
[1] Revenues for fiscal year 2010 based on estimated year-end information; accounts receivable not available.
**Accounts Receivable Turnover Ratio**

This ratio is calculated as Charges for Services/ ((Beginning Year AR + Ending Year AR)/2) and indicates the level of risk associated with accounts receivable. A low ratio, or turnover rate, indicates receivables are being held longer and are less likely to be collected. This ratio should remain stable over time. Based on available information, this ratio is within industry standards. The data for this measurement item can be seen in Table 2-9.

**Table 2-9 Accounts Receivable Turnover Ratio**

<table>
<thead>
<tr>
<th>Description</th>
<th>Fiscal Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2006</td>
</tr>
<tr>
<td>Total System</td>
<td></td>
</tr>
<tr>
<td>Charges for Services</td>
<td>$27,863,510</td>
</tr>
<tr>
<td>BY Accounts Receivable</td>
<td>2,151,660</td>
</tr>
<tr>
<td>EY Accounts Receivable</td>
<td>2,262,923</td>
</tr>
<tr>
<td>Ratio (%)</td>
<td>12.62</td>
</tr>
<tr>
<td>Annual Change</td>
<td>--</td>
</tr>
</tbody>
</table>

**Notes:**
[^1] Revenues for fiscal year 2010 based on estimated year-end information; accounts receivable not available.

**Bad Debt Ratio**

The Bad Debt Ratio is the percentage of billings that are not collected. The bad debt ratios can be seen in Table 2-10. The Bad Debt Ratio is low and does not represent a significant portion of the system revenue. The bad debt represents money owed the Utility that has been deemed collectible. Uncollectible accounts receivable are essentially a loss of revenue and, therefore should be minimized. An increase to the bad debt ratio over a period of time is a negative indicator since it generally indicates greater risk or loss of revenue.

**Table 2-10 Bad Debt Ratios**

<table>
<thead>
<tr>
<th>Description</th>
<th>Fiscal Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2007</td>
</tr>
<tr>
<td>Total System</td>
<td></td>
</tr>
<tr>
<td>Bad Debt Ratio</td>
<td>0.69%</td>
</tr>
<tr>
<td>Annual Change</td>
<td>--</td>
</tr>
</tbody>
</table>

**Notes:**
[^1] Revenues for fiscal year 2010 based on estimated year-end information; accounts receivable not available.
Revenue to Expense Ratio
This ratio is calculated as Total System Revenues divided by the Total System Expenditures and serves as an indicator of the sufficiency of user rates and fees to recover the costs to provide water and sewer services. As derived from available historical information, the ability of revenues to cover the total cost of system expenditures has declined significantly over the last five fiscal years. Based on unaudited information provided by the Utility, and as shown in the table below, the water system failed to recover system expenditures in fiscal year 2009. This can be attributed in part to lower sales volumes. The ratios from 2006 to 2010 can be seen in Table 2-11.

*Table 2-11 Revenue to Expense Ratio*

<table>
<thead>
<tr>
<th>Description</th>
<th>Fiscal Year 2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010 <img src="fnote" alt="1" /></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Water System</strong></td>
<td>$14,793,646</td>
<td>$13,528,940</td>
<td>$14,195,150</td>
<td>$15,191,143</td>
<td>$16,150,957</td>
</tr>
<tr>
<td>Expenditures</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenues</td>
<td>17,098,964</td>
<td>17,571,352</td>
<td>16,068,530</td>
<td>13,958,089</td>
<td>13,974,639</td>
</tr>
<tr>
<td>Margin (%)</td>
<td>15.58%</td>
<td>29.88%</td>
<td>13.20%</td>
<td>-8.12%</td>
<td>-13.47%</td>
</tr>
<tr>
<td>Annual Change</td>
<td>--</td>
<td>91.74%</td>
<td>-55.83%</td>
<td>-161.50%</td>
<td>66.01%</td>
</tr>
<tr>
<td><strong>Sewer System</strong></td>
<td>$13,748,301</td>
<td>$12,177,164</td>
<td>$13,327,113</td>
<td>$14,186,009</td>
<td>$14,859,122</td>
</tr>
<tr>
<td>Expenditures</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenues</td>
<td>14,520,070</td>
<td>16,177,327</td>
<td>15,712,843</td>
<td>15,410,026</td>
<td>15,716,063</td>
</tr>
<tr>
<td>Margin (%)</td>
<td>5.61%</td>
<td>32.85%</td>
<td>17.90%</td>
<td>8.63%</td>
<td>5.77%</td>
</tr>
<tr>
<td>Annual Change</td>
<td>--</td>
<td>485.19%</td>
<td>-45.51%</td>
<td>-51.80%</td>
<td>-33.16%</td>
</tr>
</tbody>
</table>

*Notes:*


Bond Rating
The Utility’s bond rating is an indicator of its ability to secure capital when needed. The bond rating is AA3 as determined by Moody’s. This represents a high grade rating from the rating agency.

Operational Reserves: Operating Margin
This ratio is calculated as Net Operating Income divided by the Charges for Services and serves as a measure of the portion of Utility's revenue remaining after paying operating expenses. A healthy operating margin is required to pay for fixed costs, such as debt service, and capital expenditures. This ratio should be positive and stable or increasing over time. The system’s operating margin has historically been strong; however, it has decreased significantly over the last two fiscal years. The operating margin data can be seen in Table 2-12.
Table 2-12 Operational Reserves: Operating Margin

<table>
<thead>
<tr>
<th>Description</th>
<th>Fiscal Year</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010[1]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total System</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net Operating Income</td>
<td></td>
<td>$7,920,139</td>
<td>$8,457,987</td>
<td>$8,243,603</td>
<td>$5,644,242</td>
<td>$4,060,360</td>
</tr>
<tr>
<td>Charges for Services</td>
<td></td>
<td>27,863,510</td>
<td>28,757,480</td>
<td>27,756,059</td>
<td>25,928,111</td>
<td>25,219,781</td>
</tr>
<tr>
<td>Ratio (%)</td>
<td></td>
<td>28.42%</td>
<td>29.41%</td>
<td>29.70%</td>
<td>21.77%</td>
<td>16.10%</td>
</tr>
<tr>
<td>Annual Change</td>
<td></td>
<td>-15.24%</td>
<td>3.47%</td>
<td>0.98%</td>
<td>-26.70%</td>
<td>-26.04%</td>
</tr>
</tbody>
</table>

Notes:

Operational Reserves: Current Ratio
This ratio is calculated as (Current Assets-Inventories) / Current Liabilities and measures liquidity or solvency. This ratio is used as an indicator of Utility's ability to meet short-term obligations. This financial ratio should be relatively stable over time. As of fiscal year-end 2009, for every $1.00 of current liabilities, the Utility had approximately $6.25 in current assets with which to pay them and, based on available information, the Utility's ratio is within industry standards. The current ratio data can be seen in Table 2-13.

Table 2-13 Operational Reserves: Current Ratio

<table>
<thead>
<tr>
<th>Description</th>
<th>Fiscal Year</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010[1]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total System</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Current Assets less Inv.</td>
<td></td>
<td>$35,581,444</td>
<td>$39,870,116</td>
<td>$45,305,625</td>
<td>$44,208,156</td>
<td>--</td>
</tr>
<tr>
<td>Total Current Liabilities</td>
<td></td>
<td>6,319,458</td>
<td>5,464,643</td>
<td>6,235,213</td>
<td>7,069,088</td>
<td>--</td>
</tr>
<tr>
<td>Ratio (%)</td>
<td></td>
<td>5.63</td>
<td>7.30</td>
<td>7.27</td>
<td>6.25</td>
<td>--</td>
</tr>
<tr>
<td>Annual Change</td>
<td></td>
<td>-8.65%</td>
<td>29.58%</td>
<td>-0.41%</td>
<td>-13.93%</td>
<td>--</td>
</tr>
</tbody>
</table>

Notes:
Liquidity Ratio
This ratio is calculated as (Cash + AR)/Current Liabilities and measures liquidity by indicating the dollars in unrestricted Cash and Accounts Receivable for each dollar in Current Liabilities. This ratio refines the Current Ratio to exclude restricted and other current assets. As with the Current ratio, the Liquidity Ratio should remain relatively stable over time. Based on available information, the Utility’s ratio is within industry standards. The liquidity ratio data can be seen in Table 2-14.

### Table 2-14 Liquidity Ratios

<table>
<thead>
<tr>
<th>Description</th>
<th>Fiscal Year</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010[^1]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total System</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Cash + Net AR</td>
<td></td>
<td>$33,360,666</td>
<td>$37,317,941</td>
<td>$42,681,127</td>
<td>$42,103,717</td>
<td>--</td>
</tr>
<tr>
<td>Total Current Liabilities</td>
<td></td>
<td>6,319,458</td>
<td>5,464,643</td>
<td>6,235,213</td>
<td>7,069,088</td>
<td>--</td>
</tr>
<tr>
<td>Ratio (%)</td>
<td></td>
<td>5.28</td>
<td>6.83</td>
<td>6.85</td>
<td>5.96</td>
<td>--</td>
</tr>
<tr>
<td>Annual Change</td>
<td></td>
<td>-10.03%</td>
<td>29.36%</td>
<td>0.24%</td>
<td>-12.99%</td>
<td>--</td>
</tr>
</tbody>
</table>

Notes:

Comparison of Rate Adjustments to the Consumer Price Index
Over the period 2000 through 2009, the Consumer Price Index (CPI) for water, sewer, and trash service increased from 106.5 to 161.1, an average annual increase of 4.7%. During the same period, the average residential water and sewer bill for the Utility (based on 5,000 gallon usage) increased at an average annual rate of 2.4%, indicating that the Utilities’ rates have increased approximately 50.6% as much as the national average.

Rate Affordability
Current EPA affordability thresholds indicate 4.0% of monthly median household income for a households combined monthly water and sewer Utility bill. In general terms, this affordability threshold represents the upper limit for the cost of providing water and sewer services to a specific demographic region. As shown in the table below, the City’s average monthly water and sewer Utility costs per household are well below the 4.0% affordability threshold, suggesting the Utility's current rates are affordable to its customers. Table 2-15 illustrates the rate affordability data.
Table 2-15 Rate Affordability

<table>
<thead>
<tr>
<th>Description</th>
<th>Fiscal Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2006</td>
</tr>
<tr>
<td>Total System</td>
<td></td>
</tr>
<tr>
<td>Average Monthly Utility Bill</td>
<td>$64.60</td>
</tr>
<tr>
<td>Average Monthly MHI [2]</td>
<td>$5,801</td>
</tr>
<tr>
<td>Ratio (%)</td>
<td>1.11%</td>
</tr>
<tr>
<td>Annual Change</td>
<td>--</td>
</tr>
</tbody>
</table>

Notes:
[2] MHI = Median Household Income; derived from various sources including the Missouri Department of Economic Development and the City’s 2010 planning document titled “Eastern Jackson County by the Numbers”.

This table demonstrates that the water bill is not a hardship for most customers that the City serves. Also, from 2009 to 2010, the water bill takes up a smaller portion of the typical customer’s income.

Planned Maintenance Ratio
The Planned Maintenance Ratios are indicators used in the AWWA Benchmarking program. They represent the ratio of investment (on an hour basis and cost basis) in planned versus total maintenance. The Utility’s ratios are 74.2% (hour basis) and 60.0% (cost basis), putting the Utility in the third quartile on an hourly and cost basis. The median values in the Midwest are 76.1% (hour basis) and 71.7% (cost basis). The top quartile values were 89.2% (hour basis) and 88.8% (cost basis). The bottom quartile values were 60.1% (hour basis) and 49.8% (cost basis). While the Utility has a higher percentage of unplanned maintenance than the surveyed communities, it is not an indicator of Utility performance. Instead, the Utility should use this data as an indicator of system condition. As the condition of the system improves, the planned maintenance ratio will increase.

Financial Best Management Practices
Within the utility industry, there are recognized best management practices (BMP) for the integration of water and sewer utility financial and operational planning. These BMPs were used to rate the Utility on Long-Term Financial Planning, Integration of Financial Plan and Rate Policies, and Financial Policies and Controls. The following is a brief discussion of these BMPs and an assessment of the Utility’s application of these practices.

Long Term Financial Forecasting
A Utility should use long-term financial forecasting that considers future growth in demand, expected rate increases, regulations, and infrastructure renovation and renewal needs. The Utility recently completed a multi-year rate and financial forecast which estimates the necessary rate adjustments for
the next five fiscal years. Utility appears to have certain practices in place to consider the anticipated impacts of future growth in demand, expected rate increases, regulations, and infrastructure renovation and renewal needs. However, it is critical these financial planning elements fully integrate with Utility’s capital planning efforts.

Debt Issuance Policies
A Utility should have in place debt issuance policies, including types, terms, and suitability under specific conditions, as well as the total amount of variable-rate debt deemed appropriate. Comprehensive policies regarding the use of agreements and their disclosure should also be developed prior to entering into any such agreements. The Utility does not appear to have formal debt issuance policies as it relates to new Utility’s system debt obligations.

Financial Margin Policies
A Utility should have policies to ensure appropriate financial margins, including debt service coverage and operating liquidity levels. Issuers with variable-rate debt and swap agreements are expected to understand the implications and potential risks of such capital management strategies. In addition, issuers should establish financial reserves to enable them to cope with interest rate fluctuations and possible termination payments.

Rate and financial policies provide a framework for decision making to assure the financial viability of the Utility system and to consider the affordability and equitability of user fees and charges. Such policies help minimize adverse impacts to rate payers and provide for revenue sufficiency and predictability related to the cash reserves necessary to meet the goals and objectives of the strategic business plan.

The Utility currently does not have written and adopted financial and rate policies which provide clear policy guidance to Utility management concerning key targets for financial planning and day-to-day operating practices.

For example, the Utility should consider developing rate guidance policies based on generally accepted rate attributes. Clear goals and definitions can be used to review and evaluate the Utility’s existing rate structure and identify those attributes which are being fully or partially met, and those attributes that are not being met. Such policies also serve to keep Utility management and elected officials “on the same page” when it comes to rate and financial planning.
Also, it is critical that the Utility establish and maintain an adequate reserve to meet the Utility’s varying financial conditions and requirements. It is our understanding that the Utility maintains certain segregated reserves including such accounts as Operating Reserve Fund, Construction Fund, Tap Fee Fund and Equipment Replacement Fund. Prudent Utility management practices indicate the Utility should develop policies which identify the minimum fund level for each type of reserve account. Another policy to consider might be that the cost of goods sold by or services provided to Utility (i.e., the cost of services over which the Utility has no control) would be passed on to the rate payers in a manner consistent with sound fiscal policy. For example, isolating such expenses as purchased water, sewer treatment services or allocated general fund costs and making certain they are directly recovered through user rates stabilizes Utility revenues and mitigates risks associated with fluctuating operating expenses.

Financial Reporting and Monitoring
A Utility should have mechanisms in place to provide regular financial reporting and monitoring systems that allow policy makers access to timely information on fiscal performance relative to budget. The Utility appears to have adequate financial reporting mechanisms in place.

Prioritized Capital Improvement Plan
A Utility should develop and maintain prioritized capital improvement plans that consider growth, capacity, regulatory, and replacement and renewal needs. These plans should encompass a minimum three years of projected needs. The Utility maintains a multi-year capital improvement plan (CIP). This rolling five-year plan is updated annually and is approved by the Planning Commission and City Council. The planning process includes prioritizing the project list and then allocating available funds to those projects deemed most critical. While the Utility staff has confidence in the projects included in this CIP, it was suggested that it needed to be revised for new system growth estimates. The downturn in customer growth and, therefore, system demand presents a need to reconsider the timing of certain projects.

As with many utilities, renewal and replacement activities (R&R) are significantly impacted by budget constraints. The result is deferred R&R activities which can lead to a deterioration of system assets. An asset management policy will provide the Utility with a system to ensure a transparent process and demonstrate to stakeholders that the Utility is well-managed, has realistically addressed the needs of its physical plants for business and service continuity, and has anticipated its capital needs and costs. An asset management policy will assist the Utility in justifying rate increases to the public to fund the backlog of infrastructure renewal and replacement and will assist in obtaining the most favorable bond ratings for its rate payers.

Based on these observations and others, the Utility would also benefit from effectively integrating its CIP and asset management program to its financial planning process. This would help to ensure funds are available for critical system improvements. It is recommended that the Utility develop and maintain a multi-year capital financing analytical tool that identifies the timing and costs associated with system
improvements and then matches projects to specific funding sources. This would allow the Utility to more effectively plan for its capital projects, including R&R, and enhance the financial and operational integrity of the Utility system. Similar recommendations were included in the 2001 Optimization Study.

Objective Reviews
A utility should prepare objective reviews of system performance and needs on a regular basis. The Utility regularly uses professional engineers and consultants to advise and assist in the preparation of system planning documents.

Exposure to Growth Sensitive Revenues
A utility should limit operating exposure to growth-sensitive revenues, such as tap, connection, or impact fees. The Utility collects revenues through its water and sewer tap fee, also referred to as system development charges. The water tap fee is reviewed annually, per ordinance, by a review committee. A similar process has not been adopted for the sewer tap fee. As with other communities, the revenues generated by these fees are used to pay for growth related system improvements and are held in segregated and restricted account to be used only for that purpose. Therefore, general operations are not subsidized by these revenues. A utility should have in place collection policies that regularly track the rate of timely payment receipts and enforce penalties against late payers. Chapter 32, Article II, Division 2, Sec 32-71 of its Code of Ordinances, outlines the terms and payment conditions for the Utility’s customers. The ordinance also establishes the method for collection of rates, fees and charges (including late fees). The financial metrics analyzed as part of this assessment would indicate that the Utility is effectively managing its accounts receivable.

Planning Consultation
A Utility should have regular consultation with regional and local growth planners, community development officials, and demographers to predict and, if possible, limit infrastructure needs related to population and business growth. The Utility’s master plans are considered forward looking. Also, the Utility has indicated that these planning documents are in general agreement with the City’s comprehensive land use plan.

Affordability Considerations
A utility should consider rate affordability guidelines and consider absolute levels of rates and their affordability relative to income levels within their service area. As stated elsewhere herein, prudent utility management indicates that established rate policies, including setting affordability limits, is desirable. Also stated herein, the Utility does not currently have rate policies that serve as a guideline and framework for establishing user fees. Based on EPA affordability thresholds, the Utility’s rates are
currently affordable to its customer base. However, affordability tests provide an important measure of a utility’s ability to finance and fund capital infrastructure.

A utility should be limited in its exposure to the financial operations of the general government, so that utility system revenues can be relied on for use to operate and improve the utility. There is currently no formal policy governing the transfer of funds from the Utility to the City’s general fund. It is our understanding that the City has developed a model for determining the cost of providing services to the Utility which is expected to be utilized, but has not been formally adopted and implemented. The intent of this BMP is to place limits on the amount that can be withdrawn from the Utility in any given fiscal year, thereby mitigating liquidity risks. Such a policy also serves to allow the Utility to retain earnings to be used for reinvestment in its physical assets. With current budget constraints and the backlog of R&R activities, the migration of critical resources from the Utility to the general fund can have a lasting impact. Where transfers to the general fund are used, the Utility should have in place policies that specifically limit scope and growth of such transfers.

Regulatory Mandates
A utility should have strategies to track and anticipate future regulatory mandates, including active membership in state, regional, and national trade associations by some utility officials. The Utility’s master planning documents serve as an important tool in anticipating and planning for future regulatory requirements. The Utility also relies on its relationships with its engineers and consultants to provide critical input regarding federal and state mandates that may impact its utility operations and finances. The Utility should continue active involvement with the LBVSD and Cities of Kansas City and Independence, the wholesale providers of Wastewater Treatment and Water. This will allow the Utility to be informed of the financial impacts associated with upcoming regulatory changes.

Accepted Accounting Practices
A utility should comply with industry accounting practices and establishment of appropriate internal controls. The Utility complies with generally accepted accounting practices.
Financial Viability Summary
Based on the assessments against these best management practices, the Utility is rated as follows:

• Long-Term Financial Planning 3
• Integration of Financial Plan and Rate Policies 3
• Financial Policies and Controls 2

The Utility has been financially successful through 2010. Examples of success are reportable in terms of the bond rating and rate affordability. The Moody’s bond rating is AA3 which is a high grade rating that generates significant benefit in lower interest rates. The USEPA establishes affordability for water and sewer services at 4% of median household income. Current water and sewer charges are 1% of median household incomes. Other metrics indicate declining trends in financial viability. The CAG recommended further exploration of the rate requirements to meet obligations for wholesale water and sewer treatment rate increases; increased capital costs to reduce the backlog of water system rehabilitation projects and reduce the number of water main breaks; consideration to improve water service levels; and, more effective funding of the annual depreciation. Formal rate setting policies are not in place to respond and ensure the orderly adjustment of rates to support the overall infrastructure sustainability. The Utility is given an overall rating of 3-. Recommended improvements include:

• Implement a rate management policy to ensure systematic rate adjustments;
• Develop and implement debt management policies that maintain bond ratings;
• Establish a fund reserve policy;
• Identify appropriate levels for base and volume charges for water and sewer to stabilize revenues;
• Adopt a General & Administrative cost allocation policy;
• Revise the sewer connection fee to fund development related system enhancements;
• Consider a pass-thru rate policy for operational cost increases.
Infrastructure Stability

The infrastructure quality and integrity supports the bond rating and the overall financial viability of any water utility. Infrastructure stability relates to the overall management and maintenance of critical infrastructure to consistently and reliably meet customer, community and regulator supported service levels. The measurement items under Infrastructure Stability and the ratings are indicated in Figure 2-8.

![Figure 2-8 Infrastructure Stability](image)

**Optimized Asset Management**

The optimized asset management measure is a self assessed item that measures the management team’s view of how efficiently they are managing assets. The Utility was rated a 3 based on the implementation of programs to begin the process of asset management; a strong focus on preventative maintenance and tracking to provide detailed reporting of system costs; and the develop of replacement planning and funding of critical equipment for system reliability. The AWWA survey indicates a median self rating of 3, a lower quartile of 2 and an upper quartile of 3.

**Infrastructure Record Keeping**

The Utility department manages and maintains the following infrastructure related documents:

- As constructed drawings;
- Geographical information systems (GIS);
- Video tapes of critical sewers over time;
- Computerized work orders and maintenance tracking;
- Water and sewer hydraulic computer models;
- System control and operating data.
Utility related documents are stored among several City departments. For example, infrastructure drawings are stored in the Public Works Department. Extensive maintenance records are readily available upon request as raw, geographically coded and infrastructure coded information. The information is readily available through well qualified and trained technicians. These resources are consistent with industry best management practices. The Utility has achieved a very high level in this area and is rated at 5.

Asset Inventory
This measure relates to maintaining a comprehensive data base of critical assets like pipelines, pumps, buildings, water storage tanks and rolling equipment and then using this information to make assessments. Data to maintain includes:

- Age, location, size and capacity;
- Original and replacement cost;
- Installation date and expected service life;
- Maintenance and performance history.

The Utility maintains all the above information and conduct these routine assessments:

- Video inspections of sanitary sewers (approximately 7% of the sewer system was video inspected in 2009 and 11% is scheduled for inspection in 2010);
- Manual inspections of sewer manholes, fire hydrants, pump stations and storage facilities;
- Some specialized assessments are routinely conducted to measure pump vibration, pump bearing temperatures, hydrant capacities, soil corrosivity and cathode decay;
- Trunk sewer lines are inspected annually by walking the sewer alignment to identify surface-visible defects including broken or missing manhole covers, creek migration, etc;
- In 2009, 300 private building inspections were conducted to assess inflow and infiltration into the sewer system;
- Master plans and facility evaluations.

The Utility maintains this information in a variety of data systems throughout the department and other City departments. Best management practices include ready access to this information for short term decision making and the compilation and review of these data every 5 to 10 years for long term decision making. The Utility is maintaining this information and documenting assessments through routine maintenance and consultant assessments (master plans and facility needs evaluations). There is however, no single comprehensive critical asset inventory and summary assessment. The Utility is rated a 4.
Asset Renewal Ratio – Water and Sewer
The Asset Renewal Ratio is an AWWA benchmark that quantifies the rate when assets are repaired or replaced. For the purposes of the calculation, both actual expenditures and payments to a reserve account for funding future renewal projects are included. The attribute represents annual renewal dollars as a percentage of the total present worth of infrastructure renewal and replacement needs. The Utility’s Water Asset Renewal Ratio is 2.2%. The median Water Asset Renewal Ratio is 2.7%, the top quartile value is 7.3%, and the bottom quartile value is 1.2%. The Utility’s Sewer Asset Renewal Ratio is 2.6%. The median among AWWA respondents is 2.6%. The top quartile value is 7.9%, and the bottom quartile is 1.0%. The Utility is rated a 3.

Water Distribution System Integrity
The water distribution system integrity can be measured as a ratio of the leaks and breaks in a year divided by 100 miles of pipeline. The Utility has a water distribution system integrity rate of 25 breaks per year per hundred miles of pipeline. The AWWA benchmark survey indicates a median value of 31.7, upper quartile of 19.4 and a lower quartile of 43.4 breaks per year per 100 miles. The Utility compares well above the industry, but the industry as a whole does not necessarily represent a good standard and these numbers can change quickly as a result of extremely dry summers or extremely cold winters that cause underground soil movement and piping failures. The soils are corrosive to unprotected metallic piping systems. The Utility recently replaced several sections of 30 to 50 year old ductile iron water lines. Lines less than 15 years old have been known to fail from corrosion. Properly installed ductile iron lines can last over 100 years. Earlier discussion on the backlog of rehabilitation projects indicated a backlog of about $25 million. Although the Utility compares closely to the median survey value, the industry as a whole is not performing well and the Utility has a significant backlog in rehabilitation projects. The overall rating given is a 3.

Collection System Integrity
The wastewater collection system integrity can be measured as a ratio of the collection system failures in a year divided by the miles of pipeline. Collection system failures include work orders for line repair, force main repair and main (public) backups. The Utility has a rate of 7.2 failures per year per mile. The AWWA benchmark survey indicates a median value of 4.7, an upper quartile of 1.3 and a lower quartile of 15.2 failures per year per mile. The Utility should emphasize its improvement efforts on the areas identified within its Wastewater Master Plan. This includes recommendations for system renewal and the I&I removal program. These programs are largely centered on the rehabilitation of the 128 miles of clay tile pipe within the City. The Utility was rated a 3.
Sewer Jetting Program
Sewer jetting is performed with specialized equipment to flush grease and debris from sanitary sewers. The Utility has a formal jetting program with the goal to jet the entire system every four years. In 2009, approximately 17% of the system was cleaned. At that rate, entire collection system will be cleaned in approximately 5.7 years. In 2010, the Utility achieved 122% of the Division goal for video-taping sewers and 99% of goal for jetting sewers. Although there are no AWWA benchmarks, other local utilities report jetting programs with goals to flush 5% to 14% of their systems, annually. While the Utility’s formal jetting program is more extensive than other communities, it is not excessive. It is the Utility’s experience that this level of effort is required to minimize basement backups and sewer overflows. The Utility is rated a 5.

Water Appurtenance Preventative Maintenance Programs
Water appurtenances include hydrants, valves and meters. Hydrants are needed for fighting fires and there are 5,020 hydrants in the Utility system. Valves are needed to isolate sections of the distribution system during emergency repairs. The Utility maintains 6,000 valves.

The Utility maintains industry standard goals for maintaining and replacing each of these appurtenances. They are tracking labor and material costs and appropriately managing resources to meet these internal goals. In 2009, the Utility completed 40% of its goal for valve maintenance, 70% of the goal for hydrant maintenance. In 2010, the results are more positive. The Utility completed 100% of its goal for valve and hydrant maintenance. The Utility is doing well to monitor information and elevate the level of maintenance. The rating given is a 3 to recognize significant improvements in 2010. It will be important to maintain these levels of maintenance over many years to establish high levels of sustainability.

Meters are the cash register for the Utility. The Utility is responsible for over 34,000 meters. As meters age, they tend to read lower which reduces revenues. Maintaining and replacing them is crucial to the financial health of the Utility. The Utility currently replaces broken or damaged meters as identified. There has been greater focus on the larger meters (those 2” and larger) due to the impacts from the volume of water measured through these meters. Meter replacement for residential meters has been deferred as the Utility evaluated the feasibility of automated meter reading systems (AMR); however, the Utility has considered AMR as currently not cost effective. With that decision, there is a long term need to develop a more effective meter management program to catch up with the deferred replacements especially in light of the significant number of meters that will need to be replaced related to the growth that the City experienced since in the 1990s.

Infrastructure Stability Summary
Table 2-16 includes a summary of the measurement items, information sources, AWWA benchmarks (where applicable), the Utility’s numeric value (where applicable) and the Utility’s rating on a scale of 1 (lowest) to 5 (highest).
### Table 2-16 Infrastructure Stability Ratings

<table>
<thead>
<tr>
<th>Measurement Item</th>
<th>Information Sources</th>
<th>AWWA Median</th>
<th>Utility Value</th>
<th>Utility Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optimized Asset Management</td>
<td>Self rated</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Infrastructure Record Keeping</td>
<td>Utility Management Team</td>
<td>--</td>
<td>--</td>
<td>5</td>
</tr>
<tr>
<td>Asset Inventory</td>
<td>Utility Management Team</td>
<td>--</td>
<td>--</td>
<td>4</td>
</tr>
<tr>
<td>Asset Renewal Ratio – Water</td>
<td>Utility Management Team</td>
<td>2.7%</td>
<td>2.2%</td>
<td>3</td>
</tr>
<tr>
<td>Asset Renewal Ratio – Sewer Main</td>
<td>Utility Management Team</td>
<td>2.6%</td>
<td>2.6%</td>
<td>3</td>
</tr>
<tr>
<td>Water System Integrity</td>
<td>Operations</td>
<td>31.7 breaks per mile per year</td>
<td>19.7 breaks per mile per year</td>
<td>3</td>
</tr>
<tr>
<td>Collection System Integrity</td>
<td>Operations</td>
<td>4.2 failures per mile per year</td>
<td>7.2 failures per mile per year</td>
<td>3</td>
</tr>
<tr>
<td>Sewer Jetting Program</td>
<td>Operations</td>
<td>--</td>
<td>17% per year</td>
<td>5</td>
</tr>
<tr>
<td>Water Appurtenance Preventative</td>
<td>Operations</td>
<td>--</td>
<td>40%, 70% and __% of goal</td>
<td>3</td>
</tr>
<tr>
<td>Maintenance Programs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The highest ratings are in the record keeping, water system integrity and sewer jetting program. A comprehensive asset inventory and condition assessment should be prepared to address the longer term issues. Although the Utility’s asset renewal ratios are comparable to the median industry ratios, the CAG recommendations included greater emphasis on rehabilitation with the overall goal to reduce pipeline failures. The overall rating given is a 3+. Specific recommendations include:

- Increase investment in water line replacements and sewer line rehabilitation to build on recent programs to replace water lines prone to failure and collection system preventative successes;
- Assess the risk for ongoing water system failures related to corrosion and develop strategies to reduce the long term risks;
- Establish a renewal and replacement policy;
- Analyze the recent private inflow and infiltrations programs and determine actions necessary for city-wide implementation;
- Construct an Operations Facility to improve Utility effectiveness;
- Evaluate opportunities to reduce of risks to customers from sanitary sewer backups and lateral repair costs;
- Adopt a formal meter management and replacement program to assure accurate revenues.
- Complete a comprehensive asset inventory and condition assessment for critical infrastructure (for example, the Maybrook sewer line and other major sewer lines under lakes);
- Review processes in order to improve access to records and documents.
Operational Resiliency

Operational resiliency includes the collaboration among all Utility employees to anticipate and avoid problems by assessing business risks and taking appropriate actions. For example, operational resiliency includes having emergency plans anticipating the impact of natural and man-made disasters. Power outages can shut down pump stations, so emergency power generators must be available and operational. Fires and high water demands can stress the water system and require additional resources to monitor facilities around the clock. The measurement items under Operational Resiliency and the ratings are indicated in Figure 2-9.

Risk Management Planning
The AWWA benchmark survey used a self rating for this measure. The Utility management team rated the Utility as meeting a 3.0 based on the criteria established. The management team reviewed numerous reports and documents such as vulnerability assessments, insurance evaluations, current safety training programs and emergency planning procedures that have been established within the Utility as the basis of the rating. The AWWA median for this measurement item was a 3 with the lower quartile at 3 and the higher quartile at 4.

Emergency Response Planning and Training
Emergencies include everything from short term events like sewer backups that impact individual properties to longer term events like tornados that can devastate entire neighborhoods (for example, the Raintree Lake Microburst in 1997). The Utility works closely with other City Departments like Fire, Police and Public Works to share resources to the benefit of the entire community. The Utility has completed an overall system vulnerability assessment. The Fire Department is the designated lead agency in the event of major community wide disasters. Emergency coordination with Fire Department occurs annually for managers. The Utility and the Public Works Department maintain a procedural manual and scheduled assignment for after hour emergency calls. Operations and maintenance staff are called upon for emergency duties by well established procedures. Some emergencies are very unique to the Utility and deserve more attention. For example, large sewers lines run under the Raintree and Lakewood lakes. A single failure could disrupt service to thousands and negatively impact the recreational character of these communities. The Utility is rated a 3.
Emergency Power Generation

All the Utility’s major water pump stations and all but two of the wastewater pump stations have on-site, auto-start generators to provide emergency backup power. The two facilities which do not have backup power are Arbores Lift Station and Rice Road Lift Station, each of which has detention storage capacity. The Arbores Lift Station is scheduled to be taken out of service in the next 2-3 years. All sites are monitored by a Supervisory Control and Data Acquisition (SCADA) system which allows for remote operation and monitoring of facilities. Backup power of critical wastewater facilities appears to be sufficient. However, the Utility had problems in the past resulting in overflows when controls systems failed to properly report power outages. The Utility has corrected these problems. The Utility is given a rating of 5.

Inventory Management

The Utility uses a work order management system to track inventory levels and compare them with pre-determined reorder levels. The reorder levels are determined based on procurement cycles and average usage. There is no benchmark available for this indicator; however, other local utilities report using similar programs. The Utility is given a rating of 4 for this attribute.
Operational Resiliency Summary
Table 2-17 includes a summary of the measurement items, information sources, AWWA benchmarks (where applicable), the Utility’s numeric value (where applicable) and the Utility’s rating on a scale of 1 (lowest) to 5 (highest).

**Table 2-17 Operational Resiliency Ratings**

<table>
<thead>
<tr>
<th>Measurement Item</th>
<th>Information Sources</th>
<th>AWWA Median</th>
<th>Utility Value</th>
<th>Utility Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk Management Planning</td>
<td>Self-rated</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Emergency Response Planning</td>
<td>Utility Management Team</td>
<td>--</td>
<td>--</td>
<td>3</td>
</tr>
<tr>
<td>and Training</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emergency Power Generation</td>
<td>Utility Management Team</td>
<td>--</td>
<td>--</td>
<td>5</td>
</tr>
<tr>
<td>Inventory Management</td>
<td>Utility Management Team</td>
<td>--</td>
<td>--</td>
<td>4</td>
</tr>
</tbody>
</table>

The lowest ratings are for risk management and emergency response planning. The Utility is managing the routine emergencies very well but needs to elevate planning for the less frequent and more contingent risks. The overall rating for the operational resiliency attribute is a 3+. Specific recommendations include:

- Identify business and operational risks (for example: potential failure of the sewer lines under the Raintree and Lakewood lakes, overflows into Prairie Lee Lake, increased regulation of SSO’s, changes in the NPDES permitting responsibilities);
- Develop management and response plans for each business risk;
- Implement additional risk management plans;
- Formally train the emergency response plans;
- Pursue American Water Works Association certification to instill protocols throughout the Utility.
Community Sustainability

Community sustainability includes being mindful of decisions that impact the long term welfare of the environment. Examples include programs to promote water and energy conservation. This attribute also examines the ability of the community to support the water and wastewater infrastructure. The measurement items in community sustainability can be seen in Figure 2-10.

Figure 2-10 Community Sustainability

<table>
<thead>
<tr>
<th>Community Sustainability</th>
<th>Energy Practices</th>
<th>Water Conservation</th>
<th>Residential Water and Sewer Bill</th>
<th>Low Income Assistance</th>
</tr>
</thead>
</table>

Energy Practices

Energy costs for pumping typically represent a significant percentage of overall operating costs for most water utilities. Conserving energy can pay big dividends. Best management practices include energy conscientious design, skilled pump maintenance and energy conscientious operations. The Utility has employed all three best management practices to some extent. New expectations for green energy (wind and solar), fewer vehicle miles (radio reads on meters), alternative fuels to reduce greenhouse emissions and Leadership in Energy and Environmental Design (LEED) certified building practices are developing to further enhance these best management practices. The Utility is given a rating of 3.

Water Conservation Practices

Water conservation practices are highly variable among different regions of the country and depend heavily on community values and customer expectations. The Utility is charged with understanding and implementing customer expectations on this issue. In the 1980s and 1990s, water demands often threatened to exceed the supply capacity and water rationing was implemented and enforced in the driest summers. Conservation was encouraged with the implementation of inverted block rates in the mid 1990s. This meant that as a customer used more water, the charge per 1,000 gallons increased. The community survey indicates a moderate interest to incorporate more conservation into future rate designs. The Utility has no policy or direction on this subject beyond the rate considerations implemented in the mid 1990’s. The Utility is rated a 3.
Residential Water and Sewer Bill
The annual residential water and sewer bill using 5,000 gallons per month in Lee’s Summit is $600. Figure 2-11 indicates the combined water and sewer bills for 25 communities in the Kansas City Metropolitan area, on the same volume basis. The average among these communities is about $700 annually. Rates can be evaluated from two perspectives: one is customer acceptance and the other is fiduciary responsibility. This section addresses customer acceptance. The community survey indicates that 51% of customers are satisfied with water rates and 49% are satisfied with sewer rates. In a recovering economic climate, these are positive ratings. The Utility is rated a 3.

![Figure 2-11 Metropolitan Area Rates](image)

Low Income Assistance
The Utility has no formal policy that authorizes the waiving or reducing of charges for low income services but does consider payment arrangements upon request. The overall analysis in the financial viability attribute indicated that Water Utility rates in Lee’s Summit are affordable as compared to median household incomes. One measure of performance is the percentage of eligible customers receiving assistance. The Lee’s Summit Social Services reported providing water related financial assistance to 139 families in 2010. The community survey indicated a moderate interest to provide some form of assistance. The Lee’s Summit Social Services has requested more consideration from the Utility to assist their constituents. The Utility is rated a 3.
Community Sustainability Summary

Table 2-18 includes a summary of the measurement items, information sources and the Utility’s rating on a scale of 1 (lowest) to 5 (highest).

**Table 2-18 Community Sustainability Ratings**

<table>
<thead>
<tr>
<th>Measurement Item</th>
<th>Information Sources</th>
<th>Utility Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy Practices</td>
<td>Utility Management Team</td>
<td>3</td>
</tr>
<tr>
<td>Water Conservation</td>
<td>Utility Management Team, Community Survey</td>
<td>3</td>
</tr>
<tr>
<td>Residential Water and Sewer Bill</td>
<td>Utility Management Team, Community Survey</td>
<td>3</td>
</tr>
<tr>
<td>Low Income Assistance</td>
<td>Utility Management Team, Community Survey, Social Services</td>
<td>3</td>
</tr>
</tbody>
</table>

In discussions with the CAG, suggestions were offered to explore additional conservation measures by increasing the use of local impoundment for irrigation. The overall rating for this attribute is a 3.

Specific recommendations include:

- Develop a water conservation policy to support consumer awareness;
- Evaluate the community needs for low income assistance and develop a program;
- Incorporate LEED standards for all new buildings when cost effective;
- Investigate the use of solar and wind energy for small power applications;
- Investigate the use of alternative fuels for vehicles with the goal to reduce carbon emissions;
- Investigate automated meter reading for the benefits of reduced carbon emissions;
- Support conservation programs that promote the use of local ponds and impoundments for lawn irrigation, etc;
- Coordinate sustainable consideration with the community sustainability plan under development by the Administration Department.
Water Resource Adequacy

Water resource adequacy is the ability to assess the sustainability and longevity of a water source and wastewater treatment plan. A water utility is always re-assessing their water sources and wastewater treatment methods. Currently, the Utility purchases water from the City of Independence, Missouri and the City of Kansas City, Missouri. The Utility also pays for sewage treatment by the LBVSD and MBCSSD. The measurement items and ratings under Water Resource Adequacy are seen in Figure 2-12.

Figure 2-12 Water Resource Adequacy

Water Supply Adequacy

Treated water is purchased from the cities of Independence and Kansas City because these are high quality and reliable sources. Other options near the Atherton Bend of the Missouri River have been and continue to be considered in the overall best interest of providing value and maintaining adequacy. Adequate supplies are not available from the local groundwater and surface water resources.

The current water purchase agreement with the City of Independence was executed on January 4, 2001. The agreement is valid for 20 years and is renewable. The current water purchase agreement with Kansas City was executed on May 6, 2002 The Kansas City agreement is valid for 33 years and is renewable. The agreements allow the Utility to purchase up to 7.5 million gallons per day (MGD) from Independence and 14 MGD from Kansas City. An additional 6 MGD will be available from Kansas City upon completion of the 3rd phase of the Jackson Cass Transmission System. Future improvements to the system allow for an additional 7 MGD. The planned supply from Kansas City is 27 MGD. Considering both sources, the planned total supply is 34.5 MGD.

The historical maximum day demand was 25 MGD in 2006. Prior planning to include additional storage allowed the Utility to meet a demand that exceeded the supply. The 2008 to 2009 recession has since stifled growth. The recession along with milder temperatures and wetter summers has resulted in much lower maximum day demands. For example, the highest maximum day demand since 2006 was 20.44 MGD in August of 2010.

The planned supply is adequate to meet the historical maximum day demand. The Utility is rated a 4 for meeting the customer demands of the last several years and having a plan to meet future demands. It is important to follow through on these plans and to recast the water demand projections to reflect current trends.
Wastewater Treatment Adequacy
The Utility conveys wastewater to the LBVSD for wholesale conveyance and treatment. The LBVSD is beginning a capital improvement project to meet compliance requirements for disinfection, meet capacity requirements in the conveyance system, and replace aging bio-solids infrastructure. It is likely that additional improvements will be needed at the plant in the next 10-15 years to meet additional compliance requirements for nutrients. The member communities have authorized the LBVSD for a $120 Million bond issue to construct a regional wastewater treatment facility to reduce the amount of wastewater pumped to the LBVSD. The Utility is represented on the LBVSD Board of Trustees, the Middle Big Creek Advisory Board, the Mayors’ Advisory Board and the Technical Advisory Committee to ensure that the needs of the Utility are being addressed. The Utility is rated a 5.

Water Resource Adequacy Summary
Table 2-19 includes a summary of the measurement items, information sources and the Utility’s rating on a scale of 1 (lowest) to 5 (highest).

<table>
<thead>
<tr>
<th>Measurement Item</th>
<th>Information Sources</th>
<th>Utility Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Supply Adequacy</td>
<td>Utility Management Team</td>
<td>4</td>
</tr>
<tr>
<td>Wastewater Treatment</td>
<td>Utility Management Team</td>
<td>5</td>
</tr>
</tbody>
</table>

Long term contracts are in place with all the entities listed above for treated water and wastewater treatment services. The recent economic downturn has significantly changed the outlook for water supply and wastewater treatment needs. Demand and flow projections should be revised to reassess the long term impacts. The overall rating is a 4+. Specific recommendations include:

- Recast water demand and wastewater flow projections to reflect recent development trends;
- Assess potential business opportunities by re-evaluating regional water supply and demands;
- Complete the Jackson Cass Transmission improvements planned with Kansas City in the 1990s as appropriate;
- Maintain communications with Tri-County Water Authority for the potential to be a future supply alternative;
- Explore negotiations for additional water rights in the Jackson Cass Transmission System;
- Maintain participation in the Little Blue Valley Sewer District boards.
Stakeholder Understanding and Support

Stakeholder Understanding and Support is how the Utility engages the media and interacts with their customers. Customer understanding is critical for any utility. From the survey conducted by ETC Institute, it is clear that there is a lack of understanding of how the Utility is funded and what services the Utility provides. There is a definite need to further educate customers about rates, infrastructure and Utility procedures. The measurement items in Stakeholder Understanding and Support can be seen in Figure 2-13.

**Figure 2-13 Stakeholder Understanding and Support**

Customer and Stakeholder Engagement

Best management practices include regular communications through bill stuffers, web sites, open houses, sponsorships at community events and organizations, establishing a permanent community advisory board, participation in AWWA’s Drinking Water Week and speaking to local civic and business groups. The Utility communicates through bill stuffers and maintains a robust web site. The Utility participates in the open house activities associated with Public Works Week and supported one presentation to a civic group in 2010. A community advisory group has recently been formed to provide input to this assessment report and the Utility’s strategic plan. A customer satisfaction survey was recommended in the 2001 Optimization Study and was completed in 2010. The Tap Fee Committee is a standing citizens’ group that meets annually on the tap fee. The Utility is rated a 4 for recent actions to effectively engage customers and community agencies.

Media Engagement

Best management practices include maintaining current media contact information, media training for key employees and standard policies for engaging the media through press releases and interviews. The Utility can do more to develop these relationships and is rated a 2.
Stakeholder Understanding and Support Summary
Table 2-20 includes a summary of the measurement items, information sources and the Utility’s rating on a scale of 1 (lowest) to 5 (highest).

<table>
<thead>
<tr>
<th>Measurement Item</th>
<th>Information Sources</th>
<th>Utility Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer and Stakeholder Engagement</td>
<td>Utility Management Team</td>
<td>4</td>
</tr>
<tr>
<td>Media Engagement</td>
<td>Utility Management Team</td>
<td>2</td>
</tr>
</tbody>
</table>

The Utility has taken steps in 2010 to significantly elevate stakeholder engagement by completing a community survey and forming a community advisory group as part of this assessment report and the overall development of a strategic plan. The overall rating is a 3. Specific recommendations to continue improving include:

- Consider a permanent community advisory group;
- Develop public awareness and education programs to increase stakeholder understanding;
- Conduct customer satisfaction surveys every 5 to 10 years;
- Engage local media and solicit opportunities to contribute informational articles about the Utility;
- Issue informative press releases upon significant successes;
- Sponsor and support a community outreach initiative;
- Maintain the website with fresh and informative content;
- Provide informative content for broadcast on the City’s cable access channel.
Assessment Summary

The Lee’s Summit Water Utilities Department (Utility) has moved forward on many of the recommendations from the 2001 Optimization Study. Overall, the Utility provides an excellent quality product and very good customer service. Employee and leadership development deserves more attention especially in terms of advancing supervisors from the labor force. Operational optimization has come a long way in the last 5 to 10 years in terms of setting and achieving goals. Financial viability has been strong in past years but is now declining and must be addressed. Infrastructure stability will depend heavily on increased investment above historical levels as the infrastructure continues to age. Operational resiliency and Water Resource Adequacy are strong attributes. Community Sustainability and Stakeholder Understanding and Support deserve more attention. Table 2-21 summarizes the ratings and prioritizes the overall importance of each attributes. The highest priority attributes were identified in collaboration with the CAG.

Table 2-21 Attribute Rating and Ranking

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Rating</th>
<th>Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Quality</td>
<td>5-</td>
<td>7</td>
</tr>
<tr>
<td>Customer Satisfaction</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Employee &amp; Leadership Development</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>Operational Optimization</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Financial Viability</td>
<td>3-</td>
<td>1</td>
</tr>
<tr>
<td>Infrastructure Stability</td>
<td>3+</td>
<td>1</td>
</tr>
<tr>
<td>Operational Resiliency</td>
<td>4-</td>
<td>8</td>
</tr>
<tr>
<td>Community Sustainability</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>Water Resource Adequacy</td>
<td>4+</td>
<td>3</td>
</tr>
<tr>
<td>Stakeholder Understanding and Support</td>
<td>3</td>
<td>5</td>
</tr>
</tbody>
</table>
CHAPTER 3 – INFORMATION SOURCES

This assessment uses research and standards from the water utility industry, information from the Lee’s Summit Water Utilities Department (Utility) and information unique to the local community. The local community information comes from a wide variety of formal and informal sources. The formal sources include documents, reports and operating data from the utility and well as survey responses from customers and employees. The informal sources include interviews and communications with employees, council members, the Water Utilities Department Management Team (UMT) and the Community Advisory Group (CAG).

Two key industry documents were used in preparing this assessment. The first is Benchmarking Performance Indicators for Water and Wastewater Utilities: 2007 Annual Survey Data and Analyses Report, prepared by the American Water Works Association and the second is Effective Utility Management A Primer for Water and Wastewater Utilities (EUM) published in 2008 by a consortium of industry groups. The first document summarizes performance data from 180 water and wastewater utilities in the United States and Canada. The EUM is widely regarded as the industry standard for developing an effective utility and was developed in collaboration by these national organizations:

American Water Works Association
Water Environment Federation
American Public Works Association
National Association of Water Companies
National Association of Clean Water Agencies
U.S. Environmental Protection Agency
Association of Metropolitan Water Agencies.

The EUM describes ten key attributes for an effective utility. Table 3-1 provides a brief description for each attribute. These attributes are used in this report to organize the overall assessment of the Utility.
### Table 3-1 Effective Utility Management Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product Quality</strong></td>
<td>Produce potable water, treated effluent, and process residuals in full compliance with regulatory and reliability requirements and consistent with customer, public health, and ecological needs.</td>
</tr>
<tr>
<td><strong>Customer Satisfaction</strong></td>
<td>Provides reliable, responsive, and affordable services in line with explicit, customer-accepted service levels. Receives timely customer feedback to maintain responsiveness to customer needs and emergencies.</td>
</tr>
<tr>
<td><strong>Employee and Leadership Development</strong></td>
<td>Recruits and retains a workforce that is competent, motivated, adaptive, and safe-working. Establishes a participatory, collaborative organization dedicated to continual learning and improvement. Ensures employee institutional knowledge is retained and improved upon over time. Provides a focus on and emphasizes opportunities for professional and leadership development and strives to create an integrated and well-coordinated senior leadership team.</td>
</tr>
<tr>
<td><strong>Operational Optimization</strong></td>
<td>Ensures ongoing, timely, cost-effective, reliable, and sustainable performance improvements in all facets of its operations. Minimizes resource use, loss, and impacts from day-to-day operations. Maintains awareness of information and operational technology developments to anticipate and support timely adoption of improvements.</td>
</tr>
<tr>
<td><strong>Financial Viability</strong></td>
<td>Understands the full life-cycle cost of the utility and establishes and maintains an effective balance between long-term debt, asset values, operations and maintenance expenditures, and operating revenues. Establishes predictable rates – consistent with community expectations and acceptability – adequate to recover costs, provide for reserves, maintain support from bond rating agencies, and plan and invest for future needs.</td>
</tr>
<tr>
<td><strong>Infrastructure Stability</strong></td>
<td>Understands the condition of and costs associated with critical infrastructure assets. Maintains and enhances the condition of all assets over the long-term at the lowest possible life-cycle cost and acceptable risk consistent with customer, community, and regulator-supported service levels, and consistent with anticipated growth and system reliability goals. Assures asset repair, rehabilitation, and replacement efforts are coordinated within the community to minimize disruptions and other negative consequences.</td>
</tr>
</tbody>
</table>
### Table 3-1 Effective Utility Management Attributes (continued)

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operational Resiliency</strong></td>
<td>Ensures utility leadership and staff work together to anticipate and avoid problems. Proactively identifies, assesses, establishes tolerance levels for, and effectively manages a full range of business risks (including legal, regulatory, financial, environmental, safety, security, and natural disaster-related) in a proactive way consistent with industry trends and system reliability goals.</td>
</tr>
<tr>
<td><strong>Community Sustainability</strong></td>
<td>Is explicitly cognizant of and attentive to the impacts its decisions have on current and long-term future community and watershed health and welfare. Manages operations, infrastructure, and investments to protect, restore, and enhance the natural environment; efficiently uses water and energy resources; promotes economic vitality; and engenders overall community improvement. Explicitly considers a variety of pollution prevention, watershed, and source water protection approaches as part of an overall strategy to maintain and enhance ecological and community sustainability.</td>
</tr>
<tr>
<td><strong>Water Resource Adequacy</strong></td>
<td>Ensures water availability consistent with current and future customer needs through long-term resource supply and demand analysis, conservation, and public education. Explicitly considers its role in water availability and manages operations to provide for long-term aquifer and surface water sustainability and replenishment.</td>
</tr>
<tr>
<td><strong>Stakeholder Understanding and Support</strong></td>
<td>Engenders understanding and support from oversight bodies, community and watershed interests, and regulatory bodies for service levels, rate structures, operating budgets, capital improvement programs, and risk management decisions. Actively involves stakeholders in the decisions that will affect them.</td>
</tr>
</tbody>
</table>

Source: Effective Utility Management, June 2008
The formal sources of local community information include documents, reports and operating data from the Utility and survey responses from customers and employees. The employee and customer survey summaries are included in the Appendix. Table 3-2 is a complete listing of resources compiled by the Utility.

**Table 3-2 Information Provided by the WUDMT**

<table>
<thead>
<tr>
<th>Year</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>Optimization Study – evaluation of Water Utilities operations and management practices.</td>
</tr>
<tr>
<td>2002</td>
<td>Water Purchase Agreement – with the City of Independence, Missouri to supply a maximum 7.5 million gallons per day (MGD).</td>
</tr>
<tr>
<td>2002</td>
<td>Water Purchase Agreement – with the City of Kansas City, Missouri to supply a maximum 28.0 MGD upon completion of several projects.</td>
</tr>
<tr>
<td>2004</td>
<td>Employee Surveys – conducted by ETC Institute for all City departments.</td>
</tr>
<tr>
<td>2006</td>
<td>Water Master Plan - provides an evaluation of the existing water infrastructure for Lee’s Summit and makes recommendations for water supply and distribution system improvements required to meet existing service needs and future service needs for the next ten years.</td>
</tr>
<tr>
<td>2006</td>
<td>Wastewater Master Plan - provides the City of Lee’s Summit with a comprehensive plan for the development of its wastewater infrastructure to meet both the short-term and long-term growth of the City.</td>
</tr>
<tr>
<td>2007</td>
<td>Sewer tap fee report – provides an analysis of sewer tap fees and recommendations for changes to the methodology and fees.</td>
</tr>
<tr>
<td>2007</td>
<td>Cost of Service &amp; Rate Study Report – provides a cost of service analysis for both the water &amp; sanitary sewer utilities and recommendations for rate adjustments.</td>
</tr>
<tr>
<td>2007</td>
<td>AMR (Automated Meter Reading) assessment plan – feasibility analysis of how the City could benefit from an AMR system through a reduction of personnel resources and increased customer service.</td>
</tr>
<tr>
<td>2008</td>
<td>I &amp; I (Inflow &amp; Infiltration) Assessment and Reduction Plan – an inflow and infiltration assessment that allows the City to determine what steps to take to prevent water from storm events entering the wastewater system.</td>
</tr>
</tbody>
</table>
### Table 3-2 Information Provided by the WUDMT (continued)

<table>
<thead>
<tr>
<th>Year</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>Direction Finder survey – gives perceptions of how residents of the City of Lee’s Summit view the services provided by the City.</td>
</tr>
<tr>
<td>2009</td>
<td>Backup Events Map – indicates sewer backup events.</td>
</tr>
<tr>
<td>2009</td>
<td>Turn over report – a 5 year employee turnover report.</td>
</tr>
<tr>
<td>2009</td>
<td>Water break maps – display of water main breaks within the City.</td>
</tr>
<tr>
<td>2010</td>
<td>Capital Improvement Plan (CIP) – recommendations for water and sewer projects.</td>
</tr>
<tr>
<td>2010</td>
<td>Formal customer survey – survey designed and administered by ETC Institute that was offered to 1500 randomly selected customers. Survey results compiled from 476 responses.</td>
</tr>
<tr>
<td>2010</td>
<td>Informal customer survey – same as the formal customer survey but was offered through the City’s website.</td>
</tr>
<tr>
<td>2010</td>
<td>Transactional Cost Analysis Model – cost analysis of WUD customer service costs.</td>
</tr>
<tr>
<td>2010</td>
<td>Organizational chart</td>
</tr>
<tr>
<td>2010</td>
<td>Employee survey – conducted by Utility as a follow up to the city wide employee surveys conducted in 2004.</td>
</tr>
<tr>
<td>2010</td>
<td>Water Utilities overview presentation</td>
</tr>
<tr>
<td>2010</td>
<td>Water Utilities strategic plan presentation</td>
</tr>
<tr>
<td>2010</td>
<td>Report of exit surveys – provides information relative to employee turnover and retention.</td>
</tr>
<tr>
<td>2010</td>
<td>Rate survey by Black &amp; Veatch – surveyed 50 cities to compare their utility costs for water and wastewater services.</td>
</tr>
<tr>
<td>2010</td>
<td>Preliminary Assessment Report – summary of operational data by Utility</td>
</tr>
<tr>
<td>2010</td>
<td>Consumer Confidence Reports – annual report provided to all customers of Lee’s Summit Water Utilities which includes information relative to water quality.</td>
</tr>
<tr>
<td>Varies</td>
<td>Department Natural Resources documents.</td>
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</tbody>
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Chapter 4 – Community Survey

Overview and Methodology
In September of 2010, ETC Institute administered a customer survey for the Lee’s Summit Water Utilities Department (Utility). The goals in conducting the survey were to:

- Identify customer perceptions about the Utility.
- Learn more about customer satisfaction with current services.
- Gather suggestions on service/policy modifications to better align with customer values and to meet customer expectations.

The survey measured the overall satisfaction with water and sewer services and the importance of several service and pricing options. The survey was mailed to a random selection of 1,500 residents in Lee’s Summit who have both water and sewer service supplied by the Utility. It was administered by mail or phone to 476 residents. The overall result has a precision of at least +/-4.5% at the 95% level of confidence. Charts, geocoded maps and tabular data depicting the results in greater detail are included in the Appendix.

Major Findings
The major findings are summarized in terms of customer opinions about experiences with Utility employees, water services, sewer services and rates.

Contact and Experience with the Utility
Twenty-five percent (25%) of those surveyed had contact with the Utility within the last two years. Of those, 54% had contact with office staff, 10% with field staff, and 35% both. They were then asked to rate their experience on a 5-point scale with 5 being “excellent” and 1 being “poor”. The highest ratings given four questions relating to experience with the staff, based upon the combined percentage of “excellent” and “good” responses from those who had an opinion, were: the courteousness and politeness of staff (90%), staff knowledge (86%), staff responsiveness (85%), and resolution of the issue (77%). The Utility is doing a very good job maintaining a professional and courteous image when interfacing with customers and is expeditiously resolving issues in a constructive manner.
**Level of Agreement with Several Service Topics**

The highest levels of agreement with several service topics based upon the combined percentage of “strongly agree” and “agree” responses from those who had an opinion, were: water service to my home is reliable (98%), sanitary service for home is reliable (89%), and drinking water is safe (90%). Those service topics that rated lowest in agreement from a total of 17 topics were that the amount charged for water service was reasonable (51%), and that the amount charged for sewer service was reasonable (49%).

The rate responses are somewhat in conflict with the results of an additional question showing customers believe they are receiving the highest level of value when compared to other utility services such as gas, electric, phone, and cable. In addition, the cost of water for core customers is well below the regional median and the cost for sewer service is near average. These results indicate a need to elevate customer education.

**Service Disconnects**

Those surveyed were asked their opinion about a fair and reasonable time period, beyond the due date, before the Utility should discontinue water service. The question was asked for the purpose of determining the perception of fairness in current policies. Eleven percent (11%) felt that 14 days should be allowed, 34% felt that 28 days should be allowed, 33% felt that 42 days should be allowed, and 18% felt that 56 days should be allowed. Four (4%) did not feel that service should be disconnected for non-payment. The Utility’s current policy of 21 days is firmly within the median response and no material change to this policy appears to be necessary at this time that would provide a better alignment with customer expectations.

**Importance of Potential Service Options**

Possible service options were presented to those surveyed to prioritize based on importance. Those surveyed, who had an opinion rated as most important (combination of “very important” and “important”), offering assistance to owners impacted by sewer backups (86%), having the City assist collapsed private sewer laterals in right-of-ways, which is currently the responsibility of the home owner (86%), and offering assistance for customers with emergencies (76%). Of least importance was offering electronic bill delivery (46%).

Customers recognize there is significant financial risk associated with the potential failure of underground utilities and desire a method to reduce that risk and/or lessen the impact to individual home owners. The risk of backups can be addressed through existing insurance markets although only a small percentage of customers appear to be aware of the availability of these products. Again, customer education is important. The risk of service lateral failures is a concern and the Utility should look at available products to meet this need either on an individual customer basis or through a Utility coordinated product.
Sewer Back-ups
Most (88%), had never had a sewer back-up; 6% had experienced one, 2% had experienced two, and 4% had experienced three or more. These results indicate collection system performance is consistent with the Utility’s assessment of the system and that the majority of backup incidents are being reported to the Utility.

Insurance Rider for Sanitary Sewer Back-ups
Nineteen percent (19%) of those surveyed did have a rider on their insurance policy for protection against sanitary sewer back-ups; 30% did not have a rider, and 49% did not know. For 2% of those surveyed, the question was not applicable. Nearly 50% of the community is unaware of standard insurance products to address sewer backup risks. This again, is an educational opportunity for a public relations program.

Importance of Rate Design Topics Other than Cost
Those surveyed rated aspects of rate design, other than cost, with the highest mean rating going to the affordability of rates for disadvantaged customers, then rates that are easy to understand, rates that encourage water conservation, incentives as they pertain to water and sanitary sewer to enhance new development, and finally stable and predictable rate increases.

Conclusions
Survey results indicate the Utility is in general doing a very good job of addressing customer needs in a responsive and professional manner. There are two specific items of concern that need further investigation. The first issue relates to incidents of sewer backup events and the ability of the customer to address losses. This may be addressed in part through a well defined public relations program that elevates customer awareness of insurance products and services to address their risks and concerns. Some consideration may also be given to assisting customers with the logistics and costs to mitigate the impact of a backup event. The second item relates to the potentially significant cost associated with making repairs to private water or sewer service laterals. The Utility should consider options to assist customers in finding ways to reduce this risk either through private or sponsored means.