



**Auditor of State  
Betty Montgomery**

**CITY OF LORAIN  
PHASE 2  
PERFORMANCE AUDIT**

JUNE 22, 2004



## Auditor of State Betty Montgomery

To the Citizens of the City of Lorain:

At the request of the Mayor of the City of Lorain, the Auditor of State (AOS) initiated the second phase of a performance audit in October 2003. On October 17, 2002, AOS placed the City of Lorain in fiscal watch, as provided by Ohio Revised Code (ORC) § 118.021. To assist entities in improving their financial conditions and removing them from fiscal watch status, ORC § 118.023 permits AOS to conduct performance audits of those municipalities. In accordance with this authority, and based on discussions with City officials, a performance audit was released on January 15, 2004 which included an assessment of the majority of General Fund departments.

The second phase of the performance audit focuses primarily on Enterprise Fund departments. These departments included the following: Utility Billing, Water Purification and Distribution, Water Pollution Control, and Water Engineering. The second phase also includes an analysis of the Building Department which is funded through the City's General Fund, although it generates revenue through permits and fees.

The performance audit contains recommendations which provide cost savings, revenue enhancements and efficiency improvements. The performance audit also provides an independent assessment of the financial situation of the City's Enterprise Funds and a framework for the its financial recovery plan. While the recommendations contained within the performance audit are resources intended to assist the City in developing and refining its financial recovery plan, the City is also encouraged to assess overall operations and develop other recommendations independent of the performance audit.

An executive summary has been prepared which includes the project history, the audit objectives and scope, the methodology used, financial implications, and issues needing further study. This report has been provided to the City and its contents discussed with the appropriate officials and District management. The City has been encouraged to use the results of the performance audit as a resource in improving its overall operations, service delivery, and financial stability.

Additional copies of this report can be requested by calling the Clerk of the Bureau's office at (614) 466-2310 or toll free at (800) 282-0370. In addition, this performance audit can be accessed online through the Auditor of State's website at <http://www.auditor.state.oh.us> by choosing the "On-Line Audit Search" option.

Sincerely,

A handwritten signature in black ink that reads "Betty Montgomery".

BETTY MONTGOMERY  
AUDITOR OF STATE

June 22, 2004

# **Executive Summary**

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## **Project History**

On October 17, 2002, the Auditor of State's Office (AOS) placed the City of Lorain in fiscal watch, as provided by Ohio Revised Code (ORC) § 118.021. To assist entities in improving their financial condition and removing them from fiscal watch status, ORC § 118.023 permits AOS to conduct performance audits of those municipalities. In accordance with this authority, and based on discussions with City officials, a performance audit was released on January 15, 2004 which included the following sections:

- Financial Forecast,
- Income Tax Department,
- Compensation and Overall Staffing Levels,
- Benefits and Contracts,
- Police Department,
- Fire Department,
- Municipal Court,
- Streets Department and Garage Division,
- Purchasing Operations,
- Community Development Department, and
- Health Department.

In October 2003, AOS began a second phase performance audit of the City of Lorain that focuses primarily on Enterprise Fund departments. These departments include the following:

- Utility Billing (LUB),
- Water Purification and Distribution (LWD),
- Water Pollution Control (WPC), and
- Water Engineering (LWED).

The second phase also includes an analysis of the Building Department (LBD) which is funded through the City's General Fund, although it generates revenue through permits and fees.

## **Objectives**

A performance audit is defined as a systematic and objective assessment of the performance of an organization, program, function or activity to develop findings, recommendations and

conclusions. The overall objective of the performance audit is to assist the City in identifying strategies to eliminate the conditions that brought about the fiscal watch declaration. The following assessments were conducted in this performance audit for each of the departments and divisions evaluated:

- **Financial Management and Planning**
- **Organizational Structure and Staffing**
- **Salaries, Overtime and Leave Usage**
- **Operational Effectiveness and Workload Assessment**
- **Fee/Rate Structure**
- **Technology**

The performance audit was designed to develop recommendations that provide cost savings, revenue enhancements, and/or efficiency improvements. The recommendations comprise options that the City can consider in its continuing efforts to stabilize its financial condition.

## **Scope and Methodology**

The performance audit was conducted in accordance with Generally Accepted Government Auditing Standards. Audit work was conducted between October 2003 and April 2004, and data was drawn from fiscal years (FY) 2001, 2002 and 2003.

To complete this report, the auditors gathered a significant amount of data pertaining to the City, conducted interviews with numerous individuals associated internally and externally with the various departments, and reviewed and assessed available information. Furthermore, periodic status meetings were held throughout the engagement to inform the City of key issues impacting selected areas, and share proposed recommendations to improve or enhance operations. Finally, the City provided written comments in response to various recommendations, which were taken into consideration during the reporting process.

In addition, several cities were selected to provide benchmark comparisons for the areas assessed in the performance audit. The cities of Hamilton, Springfield, Mansfield, Euclid and Avon Lake were used in the applicable sections of the performance audit. These cities were selected based upon demographic and operational data. Furthermore, external organizations and sources were used to provide comparative information and benchmarks, such as the following:

- Government Finance Officers Association (GFOA),
- Society for Human Resource Management (SHRM),
- *Municipal Benchmarks: Assessing Local Performance and Establishing Community Standards (Municipal Benchmarks)*,
- Minnesota Office of the Legislative Auditor (MNLA),

- United States General Accounting Office (GAO),
- *The Changing Water Utility: Creative Approaches to Effectiveness and Efficiency*,
- American Water Works Association (AWWA),
- Ohio’s Public Utility Commission (PUCO), and
- Ohio Environmental Protection Agency (OEPA).

The Auditor of State and staff express appreciation to the City of Lorain and the peer cities for their cooperation and assistance throughout this audit.

## **Overview of the City of Lorain**

The City of Lorain is located in Lorain County in northeastern Ohio, and has a population of 68,652. The City’s economic climate is marked by a relatively high unemployment rate. The City’s unemployment rate was 10.2 percent for 2002, as reported by the U.S. Department of Labor Bureau of Labor Statistics. According to the 2000 Census, Lorain’s median income was \$33,917, which is 17 percent less than the State average of \$40,956. The City’s industrial base consists primarily of manufacturing and trade enterprises.

Lorain operates as a statutory city under the laws and regulations set forth under the Ohio Constitution. Legislative authority is vested in a twelve-member City Council and a Council President elected by the voters of the City. The Council establishes compensation levels for City officials and employees, and enacts ordinances and resolutions. The City’s chief administrative officer, elected by the voters, is the Mayor. The Mayor is responsible for basic city services, such as police, fire, streets, parks, and community development. The Mayor appoints a director of public safety/service, department heads, and members of boards and commissions. The elected City Auditor and Treasurer are responsible for fiscal control of the City’s financial resources. In addition, the law director, the clerk of courts, and two municipal court judges are elected and manage those areas of City operations.

The City of Lorain operates a water purification and distribution system that charges users for the amount of water used each month. The City also operates two sewage treatment plants and a sewer system. The utility billing division collects the usage information and bills users for consumption. The water and water pollution control departments are Enterprise Fund operations, in that the revenues collected support the operations.

## **Audit Conclusions**

Audit evaluations indicated minor areas of potential improvement. In most cases, these were focused on planning and formalization of processes, although human resource management appeared to be an area with opportunities for improvement for some departments. Throughout the process, City officials and department heads have been responsive and engaged in efforts to

identify areas of inefficiency, as well as engineer and implement solutions to improve performance. A summary of key findings and recommendations is provided below. More thorough analyses are contained in the respective sections of the audit report. All interested parties are encouraged to read the entire report.

### *Cross-Departmental Issues*

- The City of Lorain does not formally and consistently create forecasts for its Enterprise Fund departments. As stated in *City of Lorain – Phase 1 Performance Audit*'s **financial forecast** section, the City could supplement its Operations Guide by developing a formal and consistent financial planning process that incorporates financial forecasting. Furthermore, the forecasts that are developed, along with their underlying assumptions and methodology, are not included in a final budget document.

In AOS-developed forecasts, it was noted that both LWD and WPC either have been, or will be, operating at a deficit as of 2004. The City will need to increase revenues or decrease expenditures, or both, to alleviate the deficit situation. The City of Lorain should establish a formal and consistent financial planning process which includes a methodology to forecast finances for all departments, especially LWD and WPC. By formalizing and linking its forecast methodology to the annual budgeting process, the departments can better understand their current financial condition while anticipating future budgetary needs.

During the course of the audit, the City contracted with consultants to study water and sewer rates, which resulted in recommendations for rate increases. On April 26, 2004, Lorain City Council passed water pollution control rate increases of 15 percent beginning in 2004, 15 percent in 2005, 12 percent in 2006 and 10 percent in 2007.

- Lorain does not have an effective strategic planning process. The departments and divisions within the City do not develop their own strategic plans that establish goals and objectives that align with an overall City vision, mission, goals and objectives. As noted in the *City of Lorain – Phase 1 Performance Audit*, the City could supplement its Operations Guide by identifying actions to achieve goals, and incorporating a formal and consistent financial planning process based predominately on financial forecasting.

The City of Lorain should require that each department and division develop its own action-oriented mission and strategic plan, which is updated annually and incorporated into the City's plan. This document would be the foundation of the City's financial plan and annual budgets, as discussed in the **financial forecast** section of *Phase 1 Performance Audit*.

- Sick leave usage was higher for the four departments examined in this report than the peer averages. Lorain does not offer an attendance incentive, nor is sick leave use an integral part of performance evaluations. Lorain’s union contract has language that gives the City power to monitor excessive sick leave usage and administer discipline if necessary.

The City of Lorain should adopt sick leave policies and procedures to ensure proper usage of sick leave, both the amount and type of sick leave used. The creation of sick leave policies will increase employee accountability for sick leave use, and should reduce the amount of sick leave taken by employees. A reduction of excessive sick leave use will also lead to a reduction in the amount of overtime worked by those who are covering for absent employees, and should increase efficiency and productivity.

### *Building Department (LBD)*

- The Lorain Building Department does not have employees dedicated to proactive inspections building exteriors within the City, and LBD does not complete the full range of housing inspections permitted by State regulations and City ordinances.

The Chief Building Official (CBO) should restructure LBD to include a Housing Division. The legal liaison should continue to oversee complaints and housing inspector assignments, and the CBO should add 2.0 FTE housing inspectors. The cost of implementing this recommendation can be recovered through the additional revenue generated by conducting rental and point-of-sale inspections, and updating the fee schedule. By creating a Housing Division, LBD will be able to proactively address code enforcement issues by conducting street sweeps for code violations. Likewise, it will be able to respond to complaints in a more timely manner. These practices will allow the City to better preserve its housing stock.

### *Utility Billing Division (LUB)*

- Meter readers in Lorain read fewer meters per month than the peer average. Due to the efficiencies created by the new meters being installed, the meter readers now work an average of 5.5 hours per day to complete their 300 reads, but are still paid for a full eight hours of work.

During the next round of contract negotiations, the City should remove the meter reader incentive or increase the number of reads required to earn the incentive. In doing so, LUB meter readers should perform at a level consistent with peer and municipal benchmarks. By doing so, the expenses charged to the water and water pollution control departments for meter reading will be reduced. These expenses are recouped in the rates charged to customers by the two utilities.

- Lorain’s current meter replacement project has contributed to the City having more meter installers than the peers. Lorain currently has five meter installers, which is 2 FTEs higher than the peer average. The water distribution superintendent stated that 3 FTEs have historically been adequate to complete repairs and installations, which is consistent with the peer average.

Upon completion of the current meter replacement project, Lorain should consider reducing the number meter installers by 2 FTEs. The reduction would align Lorain staffing with the peer level for maintaining and replacing malfunctioning meters.

### *Water Purification and Distribution (LWD)*

- LWD employs a total of 53.3 FTEs in the purification and distribution functions. This includes a large number of laborers, reportedly needed to help maintain the City’s aging distribution system. In contrast, the peers employ an average of 39 FTEs. The largest variance between LWD and the cities of Hamilton and Springfield occurs in distribution where LWD employs twice the peer average.

LWD should gradually reduce its Distribution workforce to a level comparable to the peer cities as operational efficiencies are implemented. This would entail a reduction of at least 50 percent of the line mechanics, or 8 FTEs.

- LWD does not effectively use its Supervisory Control and Data Acquisition (SCADA) system. The SCADA system electronically collects and stores information centrally from readings throughout the plant and equipment outside the plant. Efficient use of SCADA eliminates the need for manually operating equipment. LWD uses SCADA mostly for data acquisition to monitor and control its pumps, but only at approximately 50 percent of its capability since the plant has not had a backup power source. Further, 100 percent implementation cannot currently be achieved as the chemical feeders are older and incompatible with the SCADA technology. While LWD uses SCADA at approximately 50 percent of its capacity as a monitoring program, two of its peers use SCADA at almost 100 percent of its capabilities. Therefore, LWD requires more operators to monitor its entire system, since technological updates require a dependable power source for greater capacity, and improved infrastructure for full capabilities.

LWD should expand the implementation of the SCADA system to improve capacity upon the planned installation of a backup generator, and then it should work to upgrade its infrastructure for full implementation of SCADA’s capabilities. As SCADA’s use increases, LWD should exercise management control to gradually reduce approximately three operator FTEs based on the efficiencies created.

### *Water Pollution Control (WPC)*

- The current state of technology at WPC has been the determining factor in establishing its staffing levels. While WPC maintains a SCADA system at the Phillip Q. Maioriana Plant (PQMP), it uses manual operation at the Black River Plant (BRP). Although BRP does not currently have an automated system, Lorain’s use of SCADA has enabled the PQMP to electronically control the treatment process from one centralized location, thereby limiting the number of operators required for plant operation. WPC’s long-term plan includes demolishing BRP at the mouth of the Black River and building a new plant further inland that would include a SCADA system

If WPC determines that it is not feasible to build a new BRP, it should still incorporate SCADA into BRP’s long-term capital improvement plan for the existing plant. By doing so, WPC would be able to reduce the number of operators at BRP by at least 4 FTEs.

### *Water Engineering Division (LWED)*

- LWED currently performs various functions pertaining to the City’s water system including maintaining the water line atlas; designing, drafting, and inspecting water line projects; updating and revising the hydrant and valve records; and providing information to assistance to the water consuming public. The City's Engineering Department conducts similar functions, but it concentrates on the sewer system, streets and other City infrastructure. The City is considering combining the two departments to streamline operations. Peer water and sewer engineering functions are encompassed within a Public Works Department. The benefits of combining departments include streamlining staffing for water and sewer projects, reduced departmental operational costs, and the ability to share Geographic Information Systems (GIS) software. Having separate departments that complete similar functions may lead to duplication of duties, excess staffing, increased costs, and lack of City-wide coordination.

LWED should merge with the City Engineering Department. The City should develop a written plan to combine the departments which outlines duties and responsibilities, reporting structures, and benefits. Initial planning stages should include both LWED and City engineers, Water Distribution management, the utilities director, and other appropriate City officials.

## Summary of Financial Implications

The following tables summarize the performance audit recommendations that contain financial implications. These recommendations provide a series of ideas or suggestions the City should consider. Detailed information concerning the financial implications, including assumptions, is contained within the individual sections of the performance audit.

### Financial Implications

Ref. No.	Recommendation	Implementation Costs	Revenue Enhancements	Cost Avoidances	Annual Cost Savings
<b>Cross-Departmental Issues</b>					
R1.7	Reduce LWD overtime to the peer average level				\$142,000
<b>Building Department</b>					
R2.3	Hire two housing inspections	\$88,500			
R2.6	Complete rental inspections for all rental property every five years.		\$102,500		
R2.6	Complete point-of-sale inspections		\$86,000		
R2.11	Provide refresher training courses to staff.	\$700			
<b>Utility Billing</b>					
R3.1	Reduce meter reader position				\$45,500
R3.3	Reduce two meter installer positions				\$98,800
R3.6	Decrease in unaccounted-for water loss		\$480,500	\$28,700	
<b>Water Purification and Distribution</b>					
R4.1	Reduce eight Line mechanic/troubleshooter/laborers/equipment operators				\$314,500
R4.2	Reduce three operators				\$120,600
<b>Water Engineering</b>					
R5.1	Reduce engineer designer and draftsman positions				\$109,200
<b>Total</b>		<b>\$89,200</b>	<b>\$ 669,000</b>	<b>\$28,700</b>	<b>\$ 688,600</b>

## **Issues Requiring Further Study**

Government Auditing Standards require the disclosure of significant issues identified during an audit that were not reviewed in depth. These issues may not be directly related to the audit objectives or may be issues that the auditors do not have the time or resources to pursue. AOS has identified two such issues.

### ***Length of work day***

Union contracts, such as the United Steel Workers' Association (USWA) Local 6621, state that City of Lorain employees are to work seven hour days. This is less than many of peers which require eight hour workdays. The shorter workday impacts the productivity, effectiveness and efficiency of city workers. However, it was beyond the scope of this audit to evaluate the impact a seven hour workday has on City operations as a whole.

### ***Regional water/sewer district***

The Mayor of Lorain requested that auditors investigate the feasibility of establishing a regional water and/or sewer district within Lorain County. Although outside the scope of the audit, the auditors identified several initial steps that the City should consider when pursuing the formation of regional water or sewer districts.

Currently, Lorain County has seven municipal water systems that purify and distribute water to approximately 70 percent of the County's 290,585 citizens. Seven other communities purchase bulk water from these municipalities that purify and distribute water. For example, the City of Lorain sells water to the Village of Sheffield Lake and the Village of Amherst. On the other hand, Cuyahoga County, directly east of Lorain County, has a population of approximately 1.7 million, and has just two municipal water systems. The largest of the two systems, Cleveland, serves 89 percent of county, and four communities purchase water from Cleveland. It appears that Lorain County communities have opted to develop independent systems rather than pooling resources to create the infrastructure for a regional system that serves the majority of the population.

According to ORC §6119.01, in part, "any area in one or more municipal corporations may be organized as a regional water and sewer district." A regional water and/or sewer district is an independent political subdivision. (See ORC §6119.011(B)). According to Albers and Albers, an Ohio law firm specializing in water and sewer district formation, regional water and sewer districts are established for reasons such as:

- To provide needed central sanitary sewer and/or water services to residents of the district;
- To provide for administration of water and waste water facilities by a single public entity instead of by several public entities or privately owned companies or associations;

- To promote and encourage economic growth, population growth and the overall quality of life in the district; and
- To promote fire protection and decrease insurance rates.

The first step in establishing a district is for the governing body of the political subdivision (township, county, or municipality) desiring to form a district is to obtain professional legal and engineering services to determine the feasibility of establishing a regional district. The City of Lorain should explore interest in creating a regional water and/or sewer district within Lorain County with County officials and neighboring communities, and consider the possibility of forming a coalition of political subdivisions interested in conducting a feasibility study.

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## Cross-Departmental Issues

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This section is comprised of issues that have an impact on several or all of the departments examined for this performance audit: **building (LBD), utilities billing and collection (LUB), water purification and distribution (LWD), water pollution control (WPC), and water engineering (LWED).**

### Findings and Recommendations

#### *Strategic Planning*

F1.1 The City of Lorain does not formally and consistently create forecasts for its enterprise fund departments. As stated in the *City of Lorain – Phase 1 Performance Audit’s financial forecast* section, the City could supplement its Operations Guide by developing a formal and consistent financial planning process that incorporates financial forecasting. Furthermore, the forecasts that are developed, along with their underlying assumptions and methodology, are not included in a final budget document.

The former utilities director had developed a forecast using an overall cash balance projecting total revenues and expenditures for eight years for the Water and Water Pollution Control Departments. However, it did not detail expenditure categories, and it did not adequately consider factors that influence revenue collections, expenditure levels and forecast assumptions.

The Auditor of State’s Office was requested by the City to develop a five-year financial forecast for the two enterprise funds; Water and Water Pollution Control. The forecasts were developed using actual financial data from 2001-2003 to determine trends and to project revenues and expenditures for 2004 through 2008. Further, the impact of the recommendations within this report are included as a line item within each forecast. **Table 1-1** presents the five-year financial forecast for LWD.

**Table 1-1: LWD Five-Year Financial Forecast (in 000's)**

	Actual 2001	Actual 2002	Actual 2003	Projected 2004	Projected 2005	Projected 2006	Projected 2007	Projected 2008
<b>Revenues</b>								
Charges for Services	\$7,079	\$8,175	\$8,035	\$8,072	\$8,147	\$8,259	\$8,409	\$8,596
Interest <sup>1</sup>	\$182	\$97	\$46	\$23	\$12	\$6	\$3	\$2
State Aid	\$913	\$61	\$1,457	\$811	\$811	\$811	\$811	\$811
Special Assessments	\$21	\$12	\$55	\$29	\$30	\$31	\$32	\$33
Misc.	\$19	\$19	\$32	\$24	\$24	\$25	\$26	\$27
Other Financing Sources	\$494	\$264	\$398	\$386	\$397	\$409	\$421	\$434
<b>Total Revenues</b>	<b>\$8,709</b>	<b>\$8,628</b>	<b>\$10,024</b>	<b>\$9,345</b>	<b>\$9,421</b>	<b>\$9,541</b>	<b>\$9,702</b>	<b>\$9,901</b>
<b>Expenditures</b>								
Salaries and Benefits	\$3,328	\$4,081	\$3,976	\$4,167	\$4,371	\$4,589	\$4,822	\$5,071
Contractual Services	\$214	\$100	\$314	\$209	\$216	\$222	\$229	\$236
Materials & Supplies	\$484	\$683	\$572	\$580	\$597	\$615	\$634	\$653
Utilities	\$570	\$505	\$595	\$557	\$573	\$590	\$608	\$626
Capital Outlay	\$2,331	\$1,634	\$2,064	\$2,026	\$900	\$500	\$500	\$500
Other Expenses	\$224	\$283	\$194	\$234	\$241	\$248	\$256	\$263
Principle Payments <sup>2</sup>	\$650	\$1,087	\$1,163	\$1,204	\$1,247	\$1,290	\$1,336	\$1,383
Interest Payments <sup>2</sup>	\$553	\$966	\$902	\$872	\$843	\$815	\$788	\$762
<b>Total Expenditures</b>	<b>\$8,355</b>	<b>\$9,339</b>	<b>\$9,781</b>	<b>\$10,066</b>	<b>\$10,677</b>	<b>\$11,370</b>	<b>\$12,163</b>	<b>\$13,074</b>
<b>Net Transfers In (Out)<sup>3</sup></b>	<b>\$(156)</b>	<b>\$(6)</b>	<b>\$188</b>	<b>\$91</b>	<b>\$91</b>	<b>\$91</b>	<b>\$91</b>	<b>\$91</b>
<b>Beginning Fund Balance</b>	<b>\$202</b>	<b>\$400</b>	<b>\$(317)</b>	<b>\$115</b>	<b>\$(298)</b>	<b>\$226</b>	<b>\$988</b>	<b>\$1,608</b>
<b>Ending Fund Balance</b>	<b>\$400</b>	<b>\$(317)</b>	<b>\$115</b>	<b>\$(298)</b>	<b>\$226</b>	<b>\$988</b>	<b>\$1,608</b>	<b>\$2,107</b>
<b>Report Financial Implications</b>	<b>---</b>	<b>---</b>	<b>---</b>	<b>\$459<sup>4</sup></b>	<b>\$918</b>	<b>\$946</b>	<b>\$974</b>	<b>\$1,003</b>
<b>Revised Beginning Fund Balance</b>	<b>---</b>	<b>---</b>	<b>---</b>	<b>\$115</b>	<b>\$161</b>	<b>\$1,603</b>	<b>\$3,311</b>	<b>\$4,905</b>
<b>Revised Ending Fund Balance</b>	<b>---</b>	<b>---</b>	<b>---</b>	<b>\$161</b>	<b>\$1,603</b>	<b>\$3,311</b>	<b>\$4,905</b>	<b>\$6,407</b>

Source: Utility Department Annual Report and Budget Documents

<sup>1</sup> Includes Water Revenue Bond and Water Bond Reserve Interest

<sup>2</sup> Includes Water Revenue Bond Payments

<sup>3</sup> Includes Water Revenue Bond and OM&R Transfers In and Out

<sup>4</sup> Assumes recommendations would not be implemented until the 2<sup>nd</sup> half of the year.

The following assumptions were used to prepare **Table 1-1**:

#### *Revenues*

- Revenues derived from charges for services increased by 13.5 percent between 2001 and 2003, based on increased water rates (June 2002). Based on moderate residential growth within the City of approximately 150 new housing units per year, water revenue should increase by approximately \$37,400 per year based on the current water rates (see **Table 1-3**). This amount of increase is projected for 2004 to 2008.
- Interest revenue has decreased by approximately 50 percent each year from 2001 to 2003. The 50 percent annual decrease was projected for 2004 to 2008.
- State Aid, Special Assessments, Miscellaneous Revenues and Other Financing Sources have varied year to year. Therefore, a three-year average was calculated from the historical data and projected for 2004 through 2008.

#### *Expenditures*

- Salaries have increased by approximately 7 percent per year based on trend data from 2001 and 2003, and benefits have increased by nearly 23 percent each year. Data for 2002 was impacted by the inclusion of the “super crew”, a large pool of laborers temporarily assigned to LWD. Salaries are projected to increase by 3 percent each year beginning in 2004 based on 2003 total salaries, and benefits are projected to increase by 10 percent assuming the City implements cost control measures for benefits as recommended in the *City of Lorain – Phase 1 Performance Audit*.
- Contractual Services, Materials & Supplies, Utilities, and Other Expenses have varied from year to year during 2001 through 2003. Therefore, a three-year average was determined for 2004, and increased by 3 percent each year thereafter to account for inflation. Capital Outlay estimates were derived from the City’s Strategic Operations Guide & Long Range Plan 2003’s Capital Plan.
- Principle and interest were calculated from loan schedules prepared by the City Finance Department and projected financing requirements calculated by AOS from the capital improvement plan. Principle payments are projected to increase by nearly 4 percent annually, and interest payments are projected to decrease by more than 3 percent each year.

- Net transfers in and out include the Operating Fund, Water Revenue Bond Fund, and OM&R Fund revenues and expenditures. The net totals varied considerably each year. Therefore, a two-year average was determined for 2002-2003, and projected for 2004 through 2008.

*Financial Implications*

- Report financial implications include half of the recommended salary reductions since LWD provides half of the Utility Billing Department’s revenues (**R3.1** and **R3.3**). The implications also include \$28,700 in water treatment savings and water revenue through the remediation of unaccounted water loss identified in **R3.6**. Further, the financial implications include an estimated \$435,100 in cost savings related to reductions in LWD staffing (**R4.1** and **R4.2**), and \$142,000 in cost savings if overtime was reduced (**R1.7**). It is also estimated that the financial implications will increase by 3 percent each year to account for inflation.

**Table 1-2** presents the five-year financial forecast for Lorain Water Pollution Control.

**Table 1-2: WPC Five-Year Financial Forecast (in 000's)**

	Actual 2001	Actual 2002	Actual 2003	Projected 2004	Projected 2005	Projected 2006	Projected 2007	Projected 2008
<b>Revenues</b>								
Charges for Services	\$8,115	\$7,812	\$7,431	\$7,468	\$7,542	\$7,654	\$7,803	\$7,989
Interest <sup>1</sup>	\$294	\$102	\$48	\$20	\$8	\$3	\$1	\$1
State Aid	\$2,049	\$471	\$10	\$843	\$843	\$843	\$843	\$843
Special Assessments	\$72	\$85	\$130	\$96	\$99	\$102	\$105	\$108
Misc.	\$36	\$27	\$19	\$27	\$28	\$29	\$30	\$31
Other Financing Sources	\$540	\$3	\$12	\$185	\$191	\$196	\$202	\$208
<b>Total Revenues</b>	<b>\$11,107</b>	<b>\$8,499</b>	<b>\$7,650</b>	<b>\$8,639</b>	<b>\$8,711</b>	<b>\$8,827</b>	<b>\$8,984</b>	<b>\$9,179</b>
<b>Expenditures</b>								
Salaries and Benefits	\$3,619	\$4,116	\$5,166	\$5,397	\$5,642	\$5,903	\$6,181	\$6,478
Contractual Services	\$1,520	\$1,457	\$1,230	\$1,402	\$1,444	\$1,488	\$1,532	\$1,578
Materials & Supplies	\$338	\$359	\$302	\$333	\$343	\$353	\$364	\$375
Utilities	\$680	\$618	\$662	\$653	\$673	\$693	\$714	\$735
Capital Outlay	\$3,761	\$2,021	\$5,600	\$2,962	\$2,228	\$2,000	\$2,000	\$2,000
Other Expenses	\$236	\$299	\$231	\$255	\$263	\$271	\$279	\$287
Principle Payments <sup>2</sup>	\$1,062	\$1,307	\$1,340	\$1,358	\$1,375	\$1,392	\$1,410	\$1,428
Interest Payments <sup>2</sup>	\$828	\$959	\$896	\$867	\$838	\$811	\$784	\$759
<b>Total Expenditures</b>	<b>\$12,045</b>	<b>\$11,135</b>	<b>\$15,427</b>	<b>\$13,227</b>	<b>\$12,806</b>	<b>\$12,911</b>	<b>\$13,264</b>	<b>\$13,640</b>
<b>Net Transfers In (Out)<sup>3</sup></b>	<b>\$(1,677)</b>	<b>\$369</b>	<b>\$80</b>	<b>\$225</b>	<b>\$225</b>	<b>\$225</b>	<b>\$225</b>	<b>\$225</b>
<b>Beginning Fund Balance</b>	<b>\$11,608</b>	<b>\$8,992</b>	<b>\$6,725</b>	<b>\$(971)</b>	<b>\$(5,334)</b>	<b>\$(9,205)</b>	<b>\$(13,064)</b>	<b>\$(17,120)</b>
<b>Ending Fund Balance</b>	<b>\$8,992</b>	<b>\$6,725</b>	<b>\$(971)</b>	<b>\$(5,334)</b>	<b>\$(9,205)</b>	<b>\$(13,064)</b>	<b>\$(17,120)</b>	<b>\$(21,356)</b>
<b>Report Financial Implications</b>	<b>---</b>	<b>---</b>	<b>---</b>	<b>\$221<sup>4</sup></b>	<b>\$442</b>	<b>\$456</b>	<b>\$469</b>	<b>\$478</b>
<b>Amended Beginning Fund Balance</b>	<b>---</b>	<b>---</b>	<b>---</b>	<b>\$(971)</b>	<b>\$(5,113)</b>	<b>\$(8,541)</b>	<b>\$(11,945)</b>	<b>\$(15,531)</b>
<b>Amended Ending Fund Balance</b>	<b>---</b>	<b>---</b>	<b>---</b>	<b>\$(5,113)</b>	<b>\$(8,541)</b>	<b>\$(11,945)</b>	<b>\$(15,531)</b>	<b>\$(19,283)</b>

Source: Utility Department Annual Report and Budget Documents

<sup>1</sup> Includes Sewer Revenue Bond and Sewer Bond Reserve Interest

<sup>2</sup> Includes Sewer Revenue Bond Payments

<sup>3</sup> Includes Sewer Revenue Bond, Sewer Bond Reserve and OM&R Transfers In and Out

<sup>4</sup> Assumes recommendations would not be implemented until the 2<sup>nd</sup> half of the year.

Recommendations within this report, along with the following assumptions, were used to prepare **Table 1-2**:

*Revenues*

- Revenues derived from charges for services decreased by 4 percent between 2001 and 2003 based on decreased sewer rates (June 2002). Based on moderate residential growth within the City of approximately 150 new housing units per year, sewer revenue should increase by approximately \$37,200 per year based on the current sewer rates (see **Table 1-4**). This amount of increase is projected for 2004 to 2008.
- Interest revenue has decreased by approximately 60 percent each year from 2001 to 2003. The 60 percent annual decrease was projected for 2004 to 2008.
- State Aid, Special Assessments, Miscellaneous Revenues and Other Financing Sources have varied year to year. Therefore, a three-year average was calculated from the historical data and projected for 2004 through 2008.

*Expenditures*

- Salaries and benefits have increased by approximately 20 percent per year based on trend data from 2001 and 2003. Data for 2003 was impacted by the inclusion of the “labor pool”, a large body of laborers assigned to WPC but used throughout the City. Salaries are projected to increase by 3 percent each year beginning in 2004 based on 2003 total salaries, and benefits are projected to increase by 10 percent assuming the City implements cost control measures for benefits as recommended in the *City of Lorain – Phase 1 Performance Audit*.
- Contractual Services, Materials & Supplies, Utilities, and Other Expenses have varied from year to year during 2001 through 2003. Therefore, a three-year average was determined for 2004, and increased by 3 percent each year thereafter to account for inflation. Capital Outlay estimates were derived from the City’s Strategic Operations Guide & Long Range Plan 2003’s Capital Plan.
- Principle and interest were calculated from loan schedules prepared by the City Finance Department and projected loan schedules calculated by AOS from loan projections in the capital improvement plan. Principle payments are projected to increase by nearly 1 percent annually, and interest payments are projected to decrease by more than 3 percent each year.

- Net transfers in and out include the Operating Fund, Sewer Revenue Bond Fund, Sewer Bond Reserve, and OM&R Fund revenues and expenditures. The net totals varied considerably each year. Therefore, a two-year average was determined for 2002-2003, and projected for 2004 through 2008.

### *Financial Implications*

- Report financial implications include half of the recommended salary reductions since WPC provides half of the Utility Billing Department's revenues (**R3.1** and **R3.3**). The implications also include half of the estimated water revenue through the remediation of unaccounted water loss identified in **R3.6**. Further, the financial implications include the estimated cost savings associated with the implementation of the sludge press (**C5.1**). It is also estimated that the financial implications will increase by 3 percent each year to account for inflation.

The abovementioned forecasts (**Table 1-1** and **Table 1-2**) indicate that LWD operated at a deficit in 2002 and WPC operated at a deficit in 2003. It is projected that LWD will no longer be operating in a deficit beginning in 2005, but WPC will continue to be running a significant deficit after 2004. The City will need to increase revenues or decrease expenditures, or both, to alleviate the deficit situation. In June 2002, the City raised water rates, but lowered sewer rates (**F1.5**). This has increased LWD's revenues for that year, but has had a significant impact on WPC by decreasing its revenues 8.4 percent from 2001 to 2003. WPC and LWD have each received State and federal aid in the past, which has helped offset capital expenditures.

The City is in the process of completing a water meter replacement project, which will increase the accuracy and efficiency of the collection of water consumption data. However, the City has not developed a plan to remediate unaccounted for, or lost, water, which impacts the amount of revenue collected (see the **utility billing** section). The City of Lorain also provides wastewater treatment services to other cities and townships in the area, such as Sheffield Lake, Sheffield Township, and a portion of Amherst. However, the City does not have plans to increase its wastewater or water customers to include other areas in order to enhance its revenues.

Both LWD and WPC have demonstrated the need for significant capital improvement expenditures. LWD has more breaks and leaks within its water main system than its peers (see the **water purification and distribution** section). This has resulted in water loss and increased workloads to repair the leaks. WPC has had to improve its infrastructure due to findings and orders received from the Ohio Environmental Protection Agency (EPA). Therefore, the City must budget for capital improvement expenditures to meet these critical infrastructure needs.

As shown in the **utility billing, water purification and distribution, and water pollution control** sections, the City has higher staffing levels than the peers in a number of areas. Reductions in these areas are reflected in **Table 1-1** and **Table 1-2** as “Report Financial Implications.” Salary and benefit costs comprise an average of 37 percent of all expenditures for both LWD and WPC. A five-year forecast would enable the City to monitor these expenses, and conduct variance analyses.

The Government Finance Officers Association (GFOA) recommends combining the forecasting of revenues and expenditures into a single financial forecast to enable long-term financial assessment of the implications of current and proposed policies, programs and assumptions. Using a forecast also aids in developing strategies to achieve goals and identify potential problems and opportunities. In addition, revenue and expenditure forecasting does the following:

- Provides an understanding of available funding;
- Evaluates financial risk;
- Assesses the likelihood that services can be sustained;
- Assesses the level at which capital investment can be made;
- Identifies future commitments and resource demands; and
- Identifies the key variables that cause change in the level of revenue.

Without forecasts to guide financial planning, departmental officials cannot be sure of the specific effects certain services have on the Departments’ future financial stability. Moreover, the departments are unable to effectively plan for and anticipate revenue shortfalls and major increases in expenditures. In short, poor financial planning may cause the departments to overextend their resources. Further, if the departments’ revenue does not adequately meet expenses, the City may not be able to meet the terms of its bond covenants.

**R1.1** The City of Lorain should establish a formal and consistent financial planning process which includes a methodology to forecast finances for all departments, especially LWD and WPC, similar to those developed in **Table 1-1** and **Table 1-2**. These forecasts should be updated annually, and be included the City’s budget document. By formalizing its forecast methodology and linking it to the annual budgeting process, departments can better understand their current financial condition while anticipating future budgetary needs. Departmental supervisors will also be aware of how certain services specifically impact operating funds.

Both LWD and WPC need to limit expenditures, and implement the recommendations presented in this report in order to reduce their projected deficits. Once the City determines ways to enhance revenues and reduce expenditures, it should transfer surplus

funds above those required for any debt covenants into a capital improvement fund for future improvements and limit the City's dependency on loans (see **F1.4**). Those savings should then be redirected to further improve the assets and therefore reduce maintenance costs. This will lower interest costs and should help improve the City's bond rating.

- F1.2 Lorain does not have an effective strategic planning process. The departments and divisions within the City do not develop their own strategic plans that establish goals and objectives that align with an overall City vision, mission, goals and objectives. As noted in the *City of Lorain – Phase 1 Performance Audit*, the City could supplement its Operations Guide by identifying actions to achieve goals, and incorporating a formal and consistent financial planning process based predominately on financial forecasting.

According to the book, *Creating and Implementing Your Strategic Plan: A Workbook for Public and Nonprofit Organizations* (Jossey-Bass Inc., 1996), a mission statement should be an action-oriented formulation of the organization's reason for existence and define how the organization will accomplish its objectives. Without a clear mission statement and organizational goals, future direction cannot be effectively communicated to staff and other stakeholders.

In the report, *Serving the American Public: Best Practices in Customer Driven Strategic Planning* (Federal Benchmarking Consortium, February 1997), strategic planning is defined as a continuous and systematic process by which the guiding members of an organization make decisions about its future, develop the necessary procedures and operations to achieve that future, and determine how success is to be measured. The report identified the following best practices in developing effective, customer-driven strategic plans:

1. **Customer Concerns:** Successful strategic plans are driven by the voice of the customer;
2. **Leadership:** Senior leadership should take ownership of the strategic planning process;
3. **Formal Process:** Effective strategic plans benefit from a consistent and cohesively structured process employed across all levels of the organization; and
4. **Resource Allocation:** Resource allocations should be linked to the organizational goals.

Where appropriate, capital plans should be integrated into the City's strategic plan. Departments within the City of Lorain cannot effectively serve their constituents,

employees or other critical stakeholders without action-oriented mission statements and formal plans which, in turn, form the City’s Strategic Plan.

**R1.2** The City of Lorain should require that each department and division develop its own action-oriented mission and strategic plan, which would be updated annually and incorporated into the City’s plan. This document would be the foundation of the City’s financial plan and annual budgets, as discussed in the **financial forecast** section of *City of Lorain – Phase 1 Performance Audit*. In developing a strategic plan, the City should ensure the needs of residents and other stakeholders are adequately addressed and that the plan provides both sufficient direction and detail to effectively guide the City’s operations.

### *Budgeting and Financial Management*

F1.3 The City of Lorain has not developed a formal, written internal policy regarding interdepartmental charge-backs. In November 2001, due to impending City-wide layoffs, the City formed an agreement with the United Steel Workers’ Association (USWA) Local 6621 to create eight Water Department jobs for various General Fund employees. These eight jobs were known as the “super crew” and were added to the Water Department, which is an enterprise fund department. In January 2003, the agreement was modified, which changed the name “super crew” to “labor pool,” and transferred the employees to Water Pollution Control. Currently, the main function on the labor pool includes the following:

- Cleaning catch-basins,
- Replacing tiles,
- Repairing leaks, and
- Operating the vacuum truck.

While the labor pool’s primary area of responsibility is Water Pollution Control, its employees are available to perform functions for other departments, as deemed appropriate by the Safety Service Director’s Office. Examples of other functions include snow plowing, leaf pick-up, and street sweeping. As labor pool workers complete functions for other departments, they are required to reflect the amount of time worked for each department on their time cards. Further, individual department heads are required to provide a weekly activity sheet documenting labor pool time to the Deputy Safety Service Director and to the USWA Local 6621 representative. Then each department head documents this information on its payroll. Once payroll entries are approved by the Safety Service Director’s Office, the City Auditor’s Office processes the payroll and charges appropriate departments for labor pool employees’ actual work.

However, there have been instances of employees being transferred within departments without informing the City Auditor’s Office. In select instances, the City Auditor’s Office identified these discrepancies and made retroactive charges to the appropriate department. Further, several departmental employees are unsure of the appropriate reporting structure for labor pool employees. By not having formal written policies and procedures for chargeback standards, Lorain may risk falling into non-compliance with Ohio Revised Code (ORC) §5705.10 which states, “Money paid into any fund shall be used only for the purposes for which such fund is established.” In other words, the City risks enterprise funds being used for General Fund activities because it does not have adequate controls. During the course of the audit, the City did develop formal, written Labor Pool Policy and Procedures.

A formal, effective charge-back system establishes internal controls for requesting services from departments funded by separate funds, such as the general or enterprise funds, and should include appropriate, required approvals prior to performing services. Prior approval helps to ensure appropriate services, documentation, and oversight. Furthermore, a formal “request for service” form should be established to document the need for service from the departments. The request for service form should require the following information:

- Project Title;
- Functions of Project;
- Timeline;
- Number of Employees;
- Employee Requirements (e.g., Certifications);
- Cost;
- Authorization; and
- Approval

These functions will ensure that Lorain’s water and sewer user fees are based on actual expenditures and are used to maintain its water and sewer systems.

**R1.3** Although the City developed labor pool policy and procedures, which include a procedure for charge-backs, it should also develop a consistent methodology governing city-wide charge-backs. By developing sound methodologies that include internal controls for charge-backs, the City will ensure costs are directly allocated to appropriate funds. Further, it will avoid allocating revenues from enterprise funds to subsidize General Fund work.

F1.4 LWD and WPC do not regularly contribute to Capital Improvement Funds because all revenues are used for operations. The creation of the labor pool (**F1.3**) has had a

significant, negative impact on overall expenditures within these departments, diverting funds from capital improvements. As shown in **Table 1-1**, the costs associated with the labor pool caused LWD salaries and benefits expenditures to increase by 23 percent in 2002. Meanwhile, LWD's capital outlay expenditures decreased by 30 percent. In order to fund projects required in its capital improvement fund, LWD plans to apply for additional loans. In 2003, WPC intentionally lowered its overall expenditures, specifically by reducing capital costs. However, capital improvements are still needed to comply with the 2001 EPA findings and orders, and to maintain an aging wastewater system.

The City has a sinking fund to comply with ORC §743.05 for bond replacement as well as an Operation, Maintenance, and Replacement Contingency Fund (OMR) for emergency purposes to comply with the City Rules and Regulations §911.306. The Rules and Regulations specify that the OMR Fund must contain 5.5 percent of the actual operation, maintenance and replacement costs of the year immediately preceding. In 2003, approximately \$292,000 remained in the fund. However, 5.5 percent of the 2002 OMR costs equal \$374,000, which suggests under-funding of \$82,000 in the sinking fund.

LWD's capital improvement plan primarily funds projects with additional loans while operating revenues make up a small portion of capital funding. As of October 2003, outstanding Ohio Water Development Authority (OWDA) loan balances totaled over \$9.7 million. LWD's capital budget for 2003 is over \$3.8 million, with \$314,000 funded from water revenue and the remainder from OWDA loans. Funding for improvements through 2005 is similarly structured, increasing the City's debt burden. Peers, on the other hand, maintain capital improvement funds using enterprise fund revenue. The Hamilton Water Department makes contributions to its capital improvement fund several times throughout the year. It has financed all capital improvements without loans for the last 20 years.

**R1.4** When LWD and WPC have remedied their deficit situations, each department should determine a percentage of revenues to allocate to its capital improvement fund, in accordance with capital improvement plans and current needs. Prior to making these allocations, the City should ensure that it has met the reserve requirements necessary to satisfy its debt covenants and the Operation, Maintenance, and Replacement Contingency Fund.

F1.5 Lorain does not consistently and adequately review its rate and fee structures to ensure revenues collected are sufficient to recoup costs and improve its infrastructure. LWD increased water rates in June 2002 after a prolonged stable rate. **Table 1-3** presents the water rates for residential customers between 1999 and 2003 for LWD and the peers.

Annual residential water and sewer rates are based on usage of 7,756 gallons, or 1,037 cubic feet, per month.

**Table 1-3: Water Rate Comparison**

Year	Lorain	Avon Lake	Hamilton	Springfield	Peer Average
2003	\$249	\$99	\$242	\$199	\$180
2002	\$249	\$94	\$242	\$187	\$174
2001	\$166	\$94	\$242	\$175	\$170
2000	\$166	\$94	\$220	\$175	\$163
1999	\$166	\$90	\$220	\$166	\$159

Source: LWD Utility Billing and peers

As presented in **Table 1-3**, LWD charged higher water rates than the peer average in all years except 2001. In 2002, LWD increased rates to absorb rising expenditures; including substantial loans (see **F1.1**). The increase in rates resulted in a 15.5 percent increase in revenues between 2001 and 2002. **Table 1-4** compares annual residential sewer rates to the peers.

**Table 1-4: Sewer Rate Comparison**

Year	Lorain	Euclid	Hamilton	Springfield	Peer Average
2003	\$248	\$389	\$326	\$227	\$314
2002	\$248	\$389	\$326	\$216	\$310
2001	\$299	\$389	\$320	\$216	\$308
2000	\$299	\$253	\$320	\$216	\$263
1999	\$299	\$253	\$320	\$216	\$263

Source: WPC and peer cities

Prior to the rate reduction in 2001, Lorain's rates were higher than, or similar to, the peer average. Now, the rates have been 20 percent lower than the peer average during 2002 and 2003. Even though Springfield has the lowest rates, its ordinances indicate that a rate increase is to occur in 2004 and 2005 to \$249 per year.

According to **Table 1-1** and **Table 1-2**, Lorain Water and WPC generated net losses for FY 2001 and 2002, and WPC is projected to continue to operate with a deficit. This indicates that the full cost of purifying and distributing water, and treating and maintaining the wastewater facilities is not being recovered through current water and sewer rates.

Lorain City Ordinance 913.399 established a committee comprised of the director of utilities, the city auditor, and the director of public service, whose function is to review the sewer charges of the WPC department on a biennial basis in accordance with the Code of Federal Regulations (CFR), 40 CFR Section 35.929-2 (b) of the Federal Register. These reviews are based on a report of expenditures provided to the committee and City Council by the city auditor.

CFR Chapter 40, Section 35.929-2 states that user charge systems must meet the following requirements, which in part, include:

- The basis for operation and maintenance charges;
- A biennial review of operation and maintenance charges;
- An assurance that a proportionate distribution of operation and maintenance costs among users and user classes is maintained;
- Assurance that sufficient revenue is generated to pay the total operation and maintenance costs necessary to the proper operation and maintenance (including replacement) of the treatment works; and
- Annual notification to each user (in conjunction with a regular bill) of the rate and that portion of the user charges or ad valorem taxes which are attributable to waste water treatment services.

Also, the Lorain Building Department (LBD), a General Fund, revenue generating department, had not been able to support its operations through fees until 2003. **Table 1-5** compares LBD's revenues and expenditures for FY 2002 and FY 2003 to its peer building departments in Mansfield, Hamilton, and Springfield.

**Table 1-5: Revenues and Expenditures FY 2002 & FY 2003**

	Lorain	Hamilton	Mansfield	Springfield <sup>1</sup>	Peer Average
<b>FY 2002</b>					
<b>Total Population</b>	67,704	50,747	60,091	64,132	58,323
<b>Total Revenues</b>	\$431,338	\$478,843	\$221,694	\$524,047	\$408,195
<b>Total Revenue Per Capita</b>	\$6.37	\$9.44	\$3.69	\$8.17	\$7.00
<b>Total Expenditures</b>	\$470,723	\$485,959	\$573,679	\$447,561	\$502,400
<b>Total Expenses Per Capita</b>	\$6.95	\$9.58	\$9.55	\$6.98	\$8.61
<b>Net Loss or gain</b>	(\$39,385)	(\$7,116)	(\$351,985)	\$76,486	(\$94,205)
<b>Projected FY 2003</b>					
<b>Total Revenues</b>	\$614,610	\$621,867	\$251,925	\$472,916	\$448,903
<b>Total Revenue Per Capita</b>	\$9.08	\$12.25	\$4.19	\$7.37	\$7.70
<b>Total Expenditures</b>	\$486,389	\$472,544	\$564,184	\$469,715	\$502,148
<b>Total Expenses Per capita</b>	\$7.18	\$9.31	\$9.39	\$6.98	\$8.61
<b>Loss or gain</b>	\$128,221	\$149,323	(\$312,259)	\$3,201	(\$53,245)

Source: LBD and Peers

<sup>1</sup>Springfield numbers are only for inspections since code enforcement is paid out of community development grant funds.

**Table 1-5** illustrates that LBD spent 17 percent in FY 2002 and 19 percent FY 2003 less per capita than the peer average. This is a result of all the peers, except Hamilton, offering additional housing services not offered at LBD. Also, LBD generated 9 percent less revenue per capita in FY 2002, but 18 percent more revenue per capita in FY 2003 than the peer average. These fluctuations results from LBD not establishing a method to assess permit fees based on the cost of rendering service (see **F2.7**). Likewise, the absence of additional housing programs such as point-of-sale and rental inspections (see **F2.6**) reduces LBD's ability to generate revenues to support its operations. In May 2003, the City hired a fulltime chief building official (CBO) to oversee its Building Division. The CBO will be able to place an emphasis on planning, fee schedule assessments, and the development of additional housing programs.

By failing to emphasize the review of rate and fee schedules, the City does not have an effective mechanism to make informed choices about the provision of services and capital assets, which can result in an over reliance on general fund dollars.

**R1.5** The City should periodically conduct rate and fee studies to determine if it needs to increase rates to accommodate the necessary expenditures and capital improvements. The City should have a comprehensive water and sewer rate study performed every two years to meet 40 CFR 35-929-2(b). The comprehensive rate study should include research on the ability of the City to increase its customer area, thereby increasing revenues. Further, the CBO and City administration should review the Building Division rate and fee schedule to determine if any increases are warranted (**R2.7**). The CBO should also focus on the implementation of point-of-sale and rental inspections to increase revenues (**R2.6**).

During the course of the audit, the City contracted with consultants to study water and sewer rates, which resulted in recommendations for rate increases. On April 26, 2004, Lorain City Council passed water pollution control rate increases of 15 percent beginning in 2004, 15 percent in 2005, 12 percent in 2006 and 10 percent in 2007.

### *Sick Leave Usage*

F1.6 Sick leave usage was higher for the four departments examined in this report than the peer averages. **Table 1-6** illustrates the sick leave usage of the Building Department, Utility Billing Department, Water Purification and Distribution Department and Water Pollution Control Department compared to the peers.

**Table 1-6: Departments’ Average Sick Leave Usage FY 2002 and FY 2003**

Category	Lorain		Hamilton		Mansfield <sup>1</sup>		Springfield		Peer Average	
	2002	2003	2002	2003	2002	2003	2002	2003	2002	2003
<b>Building Department Average Hours</b>	88.7	87.1	N/A <sup>2</sup>	6.7	73.5	44.2	45.3	38.6	56.8	30.7
<b>Building Department Average Days Used</b>	11.1	10.9	N/A <sup>2</sup>	0.8	9.2	5.5	5.7	4.8	7.1	3.9
<b>Utility Billing Average Hours</b>	69.7	51.8	60.5	41.7	N/A <sup>2</sup>	64.7	73.2	20.5	64.5	44.3
<b>Utility Billing Average Days Used</b>	8.7	6.5	7.6	5.2	N/A <sup>2</sup>	8.1	9.2	2.6	8.1	5.5
					<b>Avon Lake<sup>1</sup></b>					
<b>Water Department Average Hours</b>	152.0	133.0	N/A <sup>2</sup>	N/A <sup>2</sup>	83.0	54.0	58.0	39.0	70.5	46.5
<b>Water Department Average Days Used</b>	22.0 <sup>2</sup>	19.0 <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>	10.0	7.0	7.0	5.0	8.5	6.0
					<b>Euclid<sup>1</sup></b>					
<b>Wastewater Department Average Hours Used</b>	103.9	103.8	33.4	N/A <sup>2</sup>	88.0	132.0	90.1	72.6	70.5	102.3
<b>Wastewater Department Average Days Used</b>	13.0	14.8	4.2	N/A <sup>2</sup>	11.0	16.5	11.3	9.0	8.8	12.7
<b>Total Average Hours Used</b>	<b>103.6</b>	<b>93.9</b>	<b>47.0</b>	<b>24.2</b>	<b>81.5</b>	<b>73.7</b>	<b>66.7</b>	<b>42.7</b>	<b>65.1</b>	<b>56.0</b>
<b>Total Average Days Used</b>	<b>13.7</b>	<b>12.8</b>	<b>5.9</b>	<b>3.0</b>	<b>10.1</b>	<b>9.3</b>	<b>8.3</b>	<b>5.4</b>	<b>8.1</b>	<b>7.0</b>

Source: Lorain and Peer departments.

<sup>1</sup> Each section chose the third peer based on similarities between demographics and types of systems and programs.

<sup>2</sup> Data not provided

<sup>3</sup> LWD staff work 7 hour days while Avon Lake and Springfield work 8 hour days. Hamilton works 7.5 hour days

As shown in **Table 1-6**, City of Lorain departments use substantially more sick hours and days than the peer cities. Some notable examples are shown below:

- LBD used 36.0 percent more sick days in FY 2002 and 64.6 percent more in FY 2003 than the peer averages.
- LUB sick leave usage is 7.5 percent above the peer average in 2002 and 17 percent above the peer average in 2003.
- LWD uses more than twice the sick leave compared to the peers. Sick leave contributes to overtime in Purification, but rarely in Distribution.

- WPC has 47.6 percent higher sick leave usage per FTE than the peers, and 83 percent higher usage than the State average of more than seven sick days per FTE.
- Lorain is 45.2 percent higher than the State average for all bargaining units in 2002 (56.82 hours).

Lorain does not offer an attendance incentive, nor is sick leave an integral part of performance evaluations. Lorain’s union contract has language that gives the City power to monitor excessive sick usage and impose disciplinary actions, if necessary. The United Steelworkers of American (USWA) contract, Article 21, under Sick Leave, gives supervisors the power to monitor excessive leave use:

- The employer reserves the right, at its discretion, to have a nurse from the Health Department verify the use of sick leave, when an employee calls off sick, by checking their place of residence.
- A certificate stating the nature of the illness from a licensed physician is required if the employee is absent for more than three consecutive days.
- All employees are required to furnish a signed sick leave form to the department head within 48 hours of their return to work to justify the use of sick leave. If the form is not returned, the bargaining unit employee is not to be paid for the use of sick leave on the next scheduled pay-day and disciplinary action may be implemented.

The Society for Human Resource Management (SHRM) publication, *Absenteeism: Enforce the Rules without Legal Hassles* (SHRM, 2000), states that “to counter absenteeism, your best defense lies in a well-crafted policy, consistent past practices and progressive discipline.” Additionally, it states that the following requirements are necessary for managers to enforce attendance rules:

- Know the details of the company policy;
- Determine whether absences are measured in days or incidents;
- Know if the policy requires medical notes or documentation of time off; and
- Apply the policy consistently.

The SHRM publication also states that specific problems must be documented. Documentation should include the following:

- Restatement of the policy;

- Dates and days of the week of absences;
- Any negative impact of the absence;
- Any patterns in absenteeism; and
- Statement of the organization’s expectations.

A review of the sick leave policy in Lorain shows that it has specific requirements for sick leave usage, including details on the following:

- Sick leave accrual rate;
- Employer’s right to verify use of sick leave with the City’s Health Department nurse;
- Permitted usage of sick leave;
- Required employee signed sick leave verification for illness;
- Required physician’s certification for illness three or more consecutive days; and
- Notification by employee for sick leave use.

Although the City has implemented these policies regarding sick leave usage, it has not been able to reduce the amount of sick time used throughout these four departments (**Table 1-6**). In addition to reducing productivity, high sick leave use could increase overtime costs or delay the completion of projects.

**R1.6** The City of Lorain should work with its collective bargaining units to adopt additional sick leave policies and procedures to ensure proper usage of sick leave, both the amount and type of sick leave used. Policies that positively impact sick leave use include the following:

- Implementing a rolling year occurrence policy where employees are held accountable for the number of times taken off rather than the length of each time taken off;
- Requiring sick leave use to be a component of the employee’s evaluation; and
- Analyzing sick leave use trends to identify potential abuse and disciplining employees abusing sick leave, either formally or informally, by discussing apparent abuse with the employee or assigning days off without pay.

The creation of additional sick leave policies will increase employee accountability for sick leave use, and should reduce the amount of sick leave taken. A reduction in sick leave use will also lead to a reduction in the amount of overtime worked by those who are covering for absent employees and should increase efficiency and productivity.

*Overtime*

F1.7 Lorain’s high sick leave use can lead to increased overtime costs, especially within LWD and WPC. Overtime in Distribution increased 59 percent from 2000 to 2002. Overtime consisted of 7.6 percent of LWD salaries in 2001, 8.4 percent in 2002 and 9.2 percent as of September 30, 2003. **Table 1-7** compares LWD and WPC 2002 wages, overtime wages and overtime as percent of wages to those of the peers.

**Table 1-7: Distribution and Pollution Control Overtime Statistics**

LWD	Lorain	Avon Lake	Hamilton	Springfield	Peer Average
<b>2002 Wages</b>	\$2,292,447	\$ 860,359	\$2,586,839	\$1,304,827	\$1,584,008
<b>2002 Overtime Wages</b>	\$ 251,251	\$ 71,581	\$ 99,537	\$ 42,951	\$ 71,356
<b>Overtime percent of Wages</b>	11.0%	8.3%	3.8%	3.3%	5.2%
<b>WPC</b>		<b>Euclid</b>			
<b>Total Salaries and Wages</b>	\$1,572,165	\$1,827,102	\$1,696,409	\$1,211,352	\$1,578,287
<b>Total Overtime Usage</b>	\$121,802	\$259,311	\$149,686	\$24,139 <sup>1</sup>	\$144,378
<b>Overtime as a Percentage of Salaries and Wages</b>	7.7%	14.2%	8.8%	2.0%	9.1%

**Source:** Lorain, Avon Lake, Hamilton, Springfield, and Euclid Water and Sewer Departments

<sup>1</sup> Hamilton did not provide overtime costs, but this amount was calculated based on the number of hours worked multiplied hourly salary and a half.

As illustrated in **Table 1-7**, LWD’s overtime as a percent of wages is more than double the peer average. The LWD Distribution and Purification superintendents attribute this to Lorain’s older water system, and the number of breaks and leaks the system encounters as compared to the peers (see **F4.1**). LWD’s high sick leave usage (see **F1.6**) contributes to overtime costs, particularly for Purification. The table also shows that Lorain’s WPC overtime is 15.6 percent lower than the peer average in wastewater treatment for FY 2002. However, the WPC superintendent stated that excessive sick use leave is leading to the majority of the overtime use. Because wastewater treatment is a 24 hour, seven-day-a-week operation, if one operator is sick, another has to be called in to work overtime.

**R1.7** Lorain should strive to reduce overtime usage. As described in **R1.6**, sick leave usage could impact overtime accrual and should be monitored for potential abuse. Overtime usage should require pre-approval by the department head and should be tracked to

identify potential areas of misuse. WPC experiences less overtime use than the peers, but it should monitor sick and overtime use of its employees for indications of any change to current trends. However, LWD should strive to reduce its sick leave use in order to reduce the amount of overtime accrued by its employees.

*Financial Implication:* If LWD were to reduce the amount of overtime accrued to the level of the peer average of 5.2 percent, it could experience an annual savings of approximately \$142,000.

## Financial Implications Summary

The following chart presents a summary of the annual cost savings discussed in this section. For purposes of this table, only recommendations with quantifiable financial impacts are included.

### Summary of Financial Implications for Cross-Departmental Issues

Recommendations	Cost Savings
R1.7 Reduce overtime usage.	\$142,000
<b>Total</b>	<b>\$142,000</b>

## **Building Department**

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The City of Lorain Building Department (LBD) is organized under the Safety/Public Service Division, and encompasses building, traffic, and two-way communications functions. Traffic and two-way communication functions are supervised by the chief electrician in the Building Department. However, this analysis only focuses on building-related functions.

LBD is governed by standards for construction and maintenance of dwellings and commercial buildings as outlined in the Ohio Administrative Code Chapter 4101:2-1: Ohio Basic Building Code (OBBC) and the Lorain Codified Ordinance. LBD's 10.5 full-time equivalent (FTE) employees are responsible for permit issuance and inspection of commercial, industrial, and residential property. It is also responsible for the enforcement of the building code, which includes the following types of activities:

- Issuing electrical, plumbing, and heating, ventilation and air conditioning (HVAC) permits for new or remodeling work;
- Issuing licenses for building, electrical, plumbing and HVAC contractors to work in the City;
- Examining all new and remodeling construction plans;
- Inspecting commercial and residential construction;
- Issuing certificates of occupancy;
- Performing building, electrical, plumbing and HVAC inspections;
- Inspecting all new construction and major rehabilitation;
- Investigating complaints regarding property maintenance for existing properties; and
- Monitoring and enforcing nuisance abatement for properties and buildings in disrepair.

The City requires a permit for all new residential and commercial construction in the City. LBD issues eight different kinds of permits: building (structural), electrical, plumbing, HVAC, zoning, sanitary sewer, storm sewer, and demolition. To issue permits more efficiently, LBD has a centralized permitting system, or a “one-stop” system. LBD receives all permit requests and ensures that proper inspections, signatures and fee calculations are obtained from all necessary divisions including the Water and Engineering divisions. Upon completion of the required forms and inspections, LBD then collects all applicable fees.

LBD requires inspections for all permits and for all complaints. Residential and commercial inspections are performed based on complaints by residents, or when a permit is issued for new construction or remodeling of the structure. For the purposes of illustrating various operational issues, comparisons are made throughout the report with the peer cities of Hamilton, Mansfield and Springfield.

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*Assessments Not Yielding Recommendations*

The following lists Building Department assessments conducted by AOS that did not yield recommendations:

- **Contractor usage:** Prior to May 2003, LBD incurred significant charges (\$40,000) for contracting out plan review. However, in May 2003 a new chief building official (CBO) was hired. The new CBO possesses the required qualifications to complete plan reviews in-house and LBD can now certify plans as required under OAC Chapter 4101:2-1-22(a). By completing plan reviews in-house, contracted services expenditures have decreased 42 percent as of September 2003.
- **Certification of staff:** All LBD employees hold the required specialized certification to complete inspections. In addition, all but two of the inspectors have certification in multiple areas. The two inspectors without dual-certification can complete both building and complaint inspections. Having inspectors who are certified in multiple areas, allows LBD to send one inspector to complete several inspections, thereby increasing productivity and customer satisfaction. Each inspector maintains their certification through continuing education training and seminars offered by a local inspection association.
- **Overtime usage:** LBD does not allow employees to receive overtime.
- **Inspection scheduling timeliness:** LBD has implemented response time targets for scheduling inspections. Most inspections are performed within 24 hours of the initial request. On the day of the inspection, the secretary informs the client that the inspections will occur during the A.M. (9-12) or P.M. (1-3). The 24-hour turnaround and use of scheduling time frames is a best practice in inspection scheduling and customer service.
- **Permit issuance:** LBD issued 39 percent more permits than the peer average for FY 2002, and 192 percent more permits as of September 30, 2003. This efficiency is a result of LBD operating an effective one-stop permit system, which streamlines the process, and reduces the paperwork for contractors.
- **Enforcing fines and violations process:** LBD had a three-year average compliance rate of 90.5 percent, which is 6 percent higher than industry standards. The high compliance rate is indicative of an effective enforcement process.
- **Tax information transmittal:** LBD maintains exceptional records of all its contractors, construction costs, and permit issuance. This information is transmitted to the Tax

Department on a monthly basis. This allows the City to more effectively collect taxes from its contractors.

However, as noted in the *City of Lorain – Phase 1 Performance Audit’s income tax department* section, the City does not require mandatory registration of all subcontractors, and contractors and subcontractors are not required to establish an income tax account prior to being issued a permit. As recommended, the Income Tax Department and LBD should work together to establish mandatory registration for all subcontractors, and contractors should be required to obtain an income tax account prior to being issued a permit.

- **Fee transmittal and annual report transmittal to the Ohio Board of Building Standards (OBBS):** LBD completes its annual report and submits the 3 percent fee required under OAC 4101:2-1-50.

AOS also examined the following areas within the Building Department section, which has been incorporated into the **cross-departmental issues** section:

- Strategic Planning,
- Fees and Rates, and
- Sick Leave Usage.

## Findings and Recommendations

### Staffing and Workload Analysis

F2.1 The Lorain Building Department (LBD) does not have employees dedicated to the proactive inspections of the exterior of buildings within the City. **Table 2-1** compares LBD's staffing levels to the peers, two of which, Mansfield and Springfield, have housing divisions.

**Table 2-1: Current Staffing Levels<sup>1</sup>**

Positions	Lorain	Hamilton	Mansfield	Springfield	Peer Average
Building Commissioner	1.00	0.75 <sup>2</sup>	1.00	1.00	0.92
Supervisor or Zoning Officer	1.00	1.25	1.00	1.00	1.08
Plan Reviewer <sup>3</sup>	0.00	0.00	0.00	0.00	0.00
<b>Total Administrative/Supervisory</b>	<b>2.00</b>	<b>2.00</b>	<b>2.00</b>	<b>2.00</b>	<b>2.00</b>
Administrative Assistant	2.00	2.00	2.00	1.50	1.83
<b>Total Support Staff</b>	<b>2.00</b>	<b>2.00</b>	<b>2.00</b>	<b>1.50</b>	<b>1.83</b>
Building Inspector	0.75 <sup>4</sup>	1.00	1.00 <sup>6</sup>	1.00	1.00
Plumbing/Building Inspector	2.00	1.00	0.00	0.00 <sup>7</sup>	0.33
HVAC Inspector	0.75 <sup>4</sup>	1.00	0.00	1.00	0.67
Electrical Inspector	1.50 <sup>5</sup>	1.00	0.00	1.00	0.67
Other Inspector	0.00	1.00	0.00	2.00	1.00
<b>Total Building Inspectors</b>	<b>5.00</b>	<b>5.00</b>	<b>1.00</b>	<b>5.00</b>	<b>3.67</b>
Housing Inspectors	0.50 <sup>4</sup>	0.00 <sup>8</sup>	4.00	4.00	2.67
<b>Total Inspectors</b>	<b>5.50</b>	<b>5.00</b>	<b>5.00</b>	<b>9.00</b>	<b>6.33</b>
<b>Total Other Staff</b>	<b>1.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Total Staffing</b>	<b>10.50</b>	<b>9.00</b>	<b>9.00</b>	<b>12.50</b>	<b>10.17</b>
<b>Total Population<sup>9</sup></b>	<b>67,704</b>	<b>60,091</b>	<b>50,747</b>	<b>64,132</b>	<b>58,323</b>
<b>Total Staff per 10,000 Residents</b>	<b>1.55</b>	<b>1.50</b>	<b>1.77</b>	<b>1.95</b>	<b>1.74</b>

Source: LBD and peer organizational charts and interviews

<sup>1</sup> Staffing data is as of October 15, 2003.

<sup>2</sup> The CBO spends 75 percent of his time overseeing building, and 25 percent overseeing zoning.

<sup>3</sup> Plan reviewer is completed in-house by CBO except for Mansfield who contracts it out.

<sup>4</sup> Two building inspectors spend 25 percent of their time completing property maintenance inspections and 75 percent of their time building inspections.

<sup>5</sup> The FTE consists of a chief electrical inspector that oversees both building and electrical operations for the City, and is counted as a .5 FTE for LBD.

<sup>6</sup> This inspector complete all types of inspections for the City, additional contracted services from Richland County are used to provide backup.

<sup>7</sup> Plumbing inspections are done by the health department.

<sup>8</sup> Housing inspections are completed by the health department.

<sup>9</sup> Population numbers are taken from the census bureau July 2002 update.

As presented in **Table 2-1**, LBD’s overall staffing levels and FTE staffing levels per 10,000 residents are 10 percent lower than the peer averages. The following explains the differences between LBD and the peers for each category:

- LBD has 9 percent more secretaries than the peer average. However, if Springfield staffing levels were excluded (a secretary position was reduced in FY 2002 due to budgetary reasons), LBD secretary staffing levels are comparable to the peers.
- LBD has 36 percent more building inspectors than the peer average, yet they complete a comparable number of inspections per day to the peer average of approximately four inspections. However, LBD completes fewer inspections per day compared to the minimum best practice standard of six inspections per day as indicated in *Municipal Benchmarks: Assessing Local Performance and Establishing Community Standards - Second Edition (Sage Publications, 2001) (Municipal Benchmarks)*. (See workload ratios found in **F2.2**).
- LBD has 81 percent fewer housing inspectors than the peer average, since it does not have a housing division. As a result, LBD completes significantly fewer inspections than the peers (see **F2.3**), and is not able to aggressively enforce its housing codes.
- LBD has a legal liaison position not found in peer building departments. The legal liaison oversees the property maintenance and nuisance abatement area in the absence of housing inspectors (**F2.3**).

**R2.1** Based on the staffing comparison and the building and housing inspection workloads found in **F2.2** and **F2.3**, the CBO should restructure the LBD to include a Housing Division. The legal liaison should continue to oversee complaints and housing inspector assignments, and the CBO should add 2.0 FTE housing inspectors. The cost of implementing this recommendation can be recovered through the additional revenue generated by conducting rental and point-of-sale inspections (**R2.5**), and updating the fee schedule (**R2.7**). By creating a Housing Division, LBD will be able to proactively address code enforcement issues by conducting street sweeps for code violations. Likewise, it will be able to respond to complaints in a more timely manner. These practices will allow the City to better preserve its housing stock. In the future, LBD should use its the Integrated Code Enforcement System (ICES) computer software to closely monitor workload ratios as presented in **F2.2** and **F2.3** to determine if additional staff changes will be needed.

*Financial implication:* Based the average of salaries paid by Springfield and Mansfield for FY 2003 (\$34,067), and an assumption that benefits are about 30 percent of the salary

(\$10,220), the cost to hire 2.0 FTE housing inspectors would be approximately \$88,500. See also **R2.5** for information on the estimated revenue potential for housing inspections.

F2.2 LBD has not established a minimum number of inspections that should be completed by each inspector per day. **Table 2-2** presents the number of building inspections completed by Lorain and the peers during FY 2002 and FY 2003.

**Table 2-2: Building Inspection Ratios for FY 2002 – FY 2003**

Category	Lorain		Hamilton		Mansfield		Springfield		Peer Average	
	2002	2003	2002	2003	2002	2003	2002	2003	2002	2003
<b>Total Annual Inspections</b>	5,818	5,247	6,579	5,390	3,526	3,462	6,018	3,606	5,374	4,153
<b>Total Inspections per 10,000 Residents<sup>1</sup></b>	859	775	1,095	897	695	682	938	562	921	712
<b>Total Building Inspector FTEs</b>	5.0	5.0	5.0	5.0	1.0	1.0	5.0	5.0	3.7	3.7
<b>Total Inspections Per Inspector FTE</b>	1,164	1,049	1,316	1,078	3,526	3,462	1,204	721	1,464	1,133
<b>Total Inspections Per Inspector FTE Per Day<sup>2</sup></b>	4.5	4.0	5.1	4.0	13.6	13.0	5.0	3.0	5.6	4.4

Source: Lorain and peer building departments

<sup>1</sup>Per 10,000 resident calculations are done using the following factors for Lorain (6.77), Hamilton (6.01), Mansfield (5.07) and Springfield (6.41) Peer average (5.83)

<sup>2</sup>Amounts are calculated using 260 working days a year.

While Lorain completes more inspections than the peers, as illustrated in **Table 2-2**, LBD performs only about four to five inspections per building inspector each day. According to the average workload figures reported in *Municipal Benchmarks* building inspectors should complete 6 to 19 inspections each day. Lorain's daily inspection totals are significantly lower than this standard.

These workload figures are influenced by the time it takes to complete various inspections and the time spent completing paperwork. Use of an inspection checklist for building, HVAC, plumbing, and electrical inspections can reduce the length of time it takes to complete inspections. Inspection checklists indicate the items that each inspector should assess in completing an inspection based on state and city codes to ensure consistency.

Inspections are also impacted by the length of time inspectors have to complete inspections. Currently, building inspectors complete inspections between 9:30 a. m. and 3:00 p.m., although they start work at 7:30 a.m. Based on the workload indicator of inspections per day, an inspector completes about one inspection per hour. However,

peer cities begin completing inspections at 9:00 a.m., and complete slightly more inspections per day than LBD.

A final factor in the number of inspections per inspector FTE per day is the level of monitoring. The ICES computer system provides LBD with an ability to print reports indicating the number of inspections completed per inspector during specific periods, and allows for review of daily inspections. However, daily inspection standards have not been established, and inspections completed per inspector FTE per day are not reviewed on a consistent basis. Therefore, LBD cannot determine if productivity could be increased or if staffing levels need to be adjusted.

**R2.2** The CBO should work to increase productivity in completing building inspections. To accomplish this, the CBO should do the following:

- Implement the use of inspection checklists that highlight items to be evaluated. This will standardize inspections and ensure that extra time is not being spent on additional, unnecessary items.
- Adjust the inspection workday from 9:30 a.m. to 8:30 or 9:00 a.m. depending on the number of inspections scheduled. This will allow up to an additional hour to complete inspections. The CBO may also wish to examine the concept of flexible scheduling that would permit inspectors to complete occasional evening inspections.
- Establish a minimum number of inspections to be completed per inspector per day that is within best practice standards. Reports should also be generated on a monthly basis so the productivity of each inspector can be reviewed on a monthly, quarterly and yearly basis.

By implementing these measures LBD can work toward increasing the number of inspections completed daily by inspectors.

F2.3 LBD does not complete the full range of housing inspections as compared to peers and industry standards. **Table 2-3** compares the housing inspection workload ratios for LBD to the peers.

**Table 2-3: Housing Inspection Ratios FY 2002-2003**

Category	Lorain		Hamilton <sup>1</sup>		Mansfield		Springfield		Peer Average	
	2002	2003	2002	2003	2002	2003	2002	2003	2002	2003
<b>FY 2002 Total Inspections</b>	943	2,247	N/A	N/A	4,718	3,781	18,864	16,591	11,791	10,186
<b>Inspections per Day<sup>2</sup></b>	4.0	9.0	N/A	N/A	18.0	15.0	73.0	64.0	45.0	39.0
<b>Housing Inspector FTEs</b>	.5	.5	N/A	N/A	4.0	4.0	4.0	4.0	4.0	4.0

Source: LBD and the peers

<sup>1</sup>Housing inspections are completed by the Health Department.

<sup>2</sup>Housing inspections per day are calculated taking in account 260 working days a year.

As illustrated in **Table 2-3**, LBD completed four housing inspections per day in FY 2002 and nine inspections per day in FY 2003, as compared to the peer average of approximately 45 per day. The peers also complete more housing inspections per inspector.

According to the average inspector workload figures reported in *Municipal Benchmarks*, a workload of 4.5 to 19 code enforcement inspections should be completed daily. This standard is currently met by Mansfield and Springfield, who have each devoted staff to housing inspections and are able to complete street sweeps, complaint inspections, nuisance abatements, and routine inspections.

However, LBD does not meet this workload standard. This is, in part, attributable to the absence of a Housing Division. (**F2.1**). By regularly completing fewer inspections than the national standards, LBD is unable to ensure the preservation of its housing stock, which can effect future relocation decisions by investors or potential residents, and increases the City's cost to perform routine inspections.

**R2.9** Once a Housing Division is established as expressed in **R2.1**, the CBO will be able to place greater emphasis on completing street sweeps and routine exterior inspections, which will allow it to proactively identify and address code violations in the City. This can be achieved by instituting the method used by Mansfield, which divides the city into zones and assigns each inspector one street per day.

This will increase the total number of inspections being completed which will immediately increase productivity and may impact staffing in the future. The CBO should use the capabilities of the ICES system to its fullest (see **F2.8**) to monitor workload measures, such as the number of inspections completed per day, per inspector, and the number of responded to complaints. This will allow the CBO to determine whether inspection benchmark levels are achieved, and whether inspectors' time is being maximized.

F2.4 LBD does not have an up-to-date policy and procedures manual. In FY 2001, LBD developed a departmental policy and procedures manual that outlines general office procedures, permit and inspection procedures, complaint procedures, right of entry, and the issuance of certificates of occupancy. However, this policy and procedure manual has not been adopted by the new CBO, nor has a new one been developed. Recent transitions in the CBO position, and changes in departmental focus, may lead to priorities not being effectively communicated to staff. The absence of an updated policy and procedures manual could result in inconsistent procedures or misunderstandings between staff and management.

In the report, *Preserving Housing: A Best Practice Review* (Office of the Legislative Auditor, State of Minnesota (MNLA), April 2003), consistent code enforcement is achieved through the use of written policies and procedures. These policies and procedures should include the standards to which building components should be inspected, strategies to achieve effective enforcement, and when to escalate enforcement action, while still allowing inspectors opportunities to deviate when needed. Springfield has developed a policy manual for its planning, development and inspection divisions that explains inspection and plan review procedures and certification requirements to staff. The absence of a policy manual can result in inconsistencies in the decision making process for staff and leadership.

**R2.4** The CBO should develop a policy and procedures manual or update the 2001 manual to be consistent with his expectations and goals. The new or updated manual should include an explanation of general personnel policies, inspection processes, permit issuance processes, violation levels, and record keeping processes. Once developed, the CBO should ensure that the policy and procedures manual is distributed to all employees, reviewed on an annual basis, and updated as needed. By implementing an up-to-date manual, LBD will be able to ensure that it consistently enforces OBBC and City codes.

### *Operational Effectiveness*

F2.5 LBD has not instituted code enforcement programs to preserve its housing consistent with its peers and industry standards. While the focus of LBD's mission is to "preserve and strengthen its neighborhoods through ambitious code enforcement," it has not established a code enforcement unit to pursue code violations. Instead, code enforcement is a reactive process initiated by complaints. According to peer CBOs, proactive measures often identify violations in early stages or prevent them from happening. However, reactive systems only identify problems that have reached a threshold of disrepair and can affect a city's ability to preserve its housing stock. Preservation is an increasingly important issue in Lorain since over 95 percent of its housing stock was built before 1979. An aging housing stock requires aggressive code enforcement by the city and reinvestment by residents to keep it usable and marketable.

In the *Preserving Housing* report, MNLA surveyed local governments throughout the State, and recommended that municipalities implement the following initiatives to preserve its housing:

- **Enforcing property maintenance codes.** Property maintenance codes are used to sustain or improve the physical integrity of the housing stock. While the majority of Minnesota cities surveyed in the report enforce property maintenance through complaints, some cities are beginning to inspect 100 percent of their houses through routine exterior inspections. LBD has developed property maintenance codes and enforces them when violations are identified through complaint inspections, but does not conduct routine exterior inspections of structures.
- **Completing rental inspections.** Rental inspection programs require owners of rental properties to register or license their properties with the city. This process usually requires periodic inspections of rental property in order for the owners to continue renting them. The majority of the cities surveyed by MNLA require inspections of all rental property. The Lorain City Council passed an ordinance in 1997 (Ordinance # 126-97) that required LBD to complete inspections of 10,250 rental properties and issue certificates of occupancy to the owners at a cost of \$50 prior to rental. However, LBD has not established a way to track all rental properties within the City. Therefore, rental inspections are only performed on a voluntary basis. The CBO has indicated that he would like to complete rental inspections of all rental properties every five years.
- **Completing point-of-sale inspections.** Point-of-sale programs require inspections of properties prior to listing them for sale or transferring ownership. The seller is charged a fee for the inspection. In the cities surveyed, the seller is responsible for making any required repairs or the home buyer may elect to buy the property “as is” and agree to make the repairs. LBD does not complete point-of-sale inspections. Furthermore, LBD is not able to determine if a home has been brought up to code before being sold. For example, the City of East Cleveland charges \$100 for point-of-sale inspections, and the City of Shaker heights charges \$50 for an inspection.
- **Publicizing building and property maintenance requirements.** The most common method used to inform the public of building and property maintenance requirements are written pamphlets, brochures, websites or newsletters. The information typically provides a list the major codes, and common building and code enforcement violations. Springfield has developed a pamphlet to explain what its Code Enforcement Department does, common violations, primary

ordinances and codes, potential fines, and how to make complaints. Mansfield has a similar document that it posts on its web page.

By not administering its code enforcement, property maintenance, and building programs, it is difficult for the City to preserve its housing stock. This can have a negative effect on the neighborhood stability and economic vitality of the City, which can lead to erosion in the tax base. Finally, LBD misses opportunities to raise additional revenue and offset its General Fund expenditures (see **R1.5**)

**R2.5** The CBO should improve the effectiveness of its property maintenance and building inspections by doing the following:

- **Update City ordinances.** The updated ordinances should require all rental property owners to obtain certificate of occupancy and receive inspections every five years. This will allow LBD to develop a database that contains the address and owner of every rental property in the City. The City should also begin to complete fee-based point-of-sale inspections to ensure that structures are up to code prior to sale.
- **Develop informational letters.** These informational letters should be provided to residents and contractors when renewing licenses or making inquiries, and should be included in any mass mailings done by the City. These pamphlets should highlight common violations, and provide contacts for additional information.

*Financial Implication:* If the Department were to inspect all rental properties on a five-year basis, it could realize \$102,500 in additional annual revenue. Additional revenue enhancements could be realized by completing fee-based point-of-sale inspections. Based on an eight-year average population turnover of 5.1 percent annually,<sup>2-1</sup> a housing stock of 16,980 units<sup>2-2</sup>, and using a fee rate of \$100 per inspection, LBD could generate about \$86,000 in additional revenue through point-of-sale inspections.

F2.6 LBD has not established a complaint hotline for its residents. Although LBD has established a web page for residents to submit complaints directly to the CBO via e-mail, many citizens still telephone in complaints. Residents with complaints must call LBD's direct line and be transferred to the legal liaison between 7:30 a.m. and 4:00 p.m., Monday through Friday. However, after business hours only one phone in LBD is equipped with voicemail, and it is often not the line the residents call. Therefore, complaints may not be addressed immediately since residents cannot leave a message.

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<sup>2-1</sup> Based on Ohio Department of Development (ODOD) data

<sup>2-2</sup> Determined using City population as a percentage of County population and the number of owner occupied, single family homes within the County (ODOD data).

Mansfield’s Building Department has the ability to receive complaints via e-mail, mail or phone. The complaint line at Mansfield is staffed during the hours of 7:30 a.m. to 4:00 p.m., and is equipped with voicemail functions after office hours. After office hours complaints can be left in the voicemail at the Building Department for non-emergencies or called in to police dispatch via 911 for emergencies. Staff members retrieve each complaint at the beginning of business day and schedule inspections accordingly.

The absence of a dedicated telephone line that residents can access 24 hours a day slows the complaint investigation time. As a result, residents often make repeated complaints before a response is made, which negatively impacts customer service, or public perception, and the overall effectiveness of the inspection and code enforcement system.

- R2.6** The City should establish a specific 24-hour line for complaints that is staffed during business hours and converted into a voicemail system during non-business hours. Complaints should then be prioritized and scheduled for inspection as determined by the legal liaison. The implementation of a 24-hour complaint line has the potential to increase customer service by giving LBD greater accessibility to citizens, increase residents’ safety, and lead to improvements in the City’s housing stock.

### *Fees Structure and Billing*

- F2.7 LBD does not charge the same level of fees for all standard permits when compared to the peers. Instead, the rates for permits are varied and are based on the cost or square footage of construction. **Table 2-4** reviews the cost of permits for LBD and the peers.

**Table 2-4: Permit Fee Schedules**

Categories	Lorain	Hamilton	Mansfield	Springfield
<b>Building Residential (New Construction)</b>	\$115.00 +8.00 per 100 Sq. Ft.	\$100 + \$.15 per Sq. Ft.	\$60 + \$2.00 per 100 Sq. Ft.	\$30+ Additional
<b>Building Commercial (New Construction)</b>	\$50 + 1/2 of 1% of Construction cost	Varies	\$125+\$3.75 per 100 Sq Ft.	\$135+\$30 or \$30 + Additional
<b>Electrical Residential (New Construction)</b>	\$60 + Additional	\$130	\$30+ \$1.00 per 100 Sq Ft.	\$30+\$135+ Additional
<b>Electrical Commercial (New Construction)</b>	\$60 + \$.25 per Outlet and Fixture and \$10 per Additional	\$200	\$125 +\$1.25 per 100 Sq. Ft.	\$30+\$135+ Additional
<b>Plumbing Residential (New Construction)</b>	\$40 + \$5 per Fixture and \$20 for Additional	\$200 Interior + \$15 Exterior	N/A	\$200 +15 for Additional
<b>Plumbing Commercial (New Construction)</b>	\$40 + \$5 per Fixture and \$20 for Additional	\$100 +\$15 per Fixture	N/A	N/A
<b>Re-inspection Fees</b>	\$25	\$30	\$25-\$35	\$45

Source: LBD and the peers

As presented in **Table 2-4**, LBD’s building permit fees are higher or comparable to the peers. However, the electrical, plumbing, and re-inspection fees are lower than the peers. LBD’s fees may be lower than the peers since it has not updated its fee schedule since FY 2001. The Government Finance Officers Association notes that the most efficient use of resources is achieved when the price for a good or service is set at a level that is related to the cost of producing the good or service. Once charges and fees have been established, they should be reviewed and updated periodically based on the impact of inflation, other cost increases, the adequacy of the coverage of costs and current competitive rates.

During the course of the audit, the City submitted an ordinance to City Council recommending that the Building Department adopt the standardized permit fees as recommended by the International Code Council, which is estimated to increase revenues by \$55,000 annually. When fee schedules are not updated on a consistent basis, cities may not be recovering the appropriate amounts, which can result in an increased need for General Fund support.

**R2.7** LBD should periodically update its fee schedule to capture all inspection-related costs. LBD should also develop and implement a process for ensuring that fees accurately reflect the costs incurred for certain inspection functions. The City should include code

enforcement fees in its permit fee schedule and should continually review the permit fee structure to ensure it is appropriately charging City residents.

### *Technology Utilization*

F2.8 LBD has not provided consistent training to staff on the use of the Integrated Code Enforcement System (ICES), which it purchased in FY 2000. ICES is designed for tracking, managing and reporting property activities, including permits, inspections, violations, contractors, plan examination and licenses. Although LBD effectively uses ICES to generate inspection data, it does not use all available functions within the system. According to LBD staff, they were not provided sufficient training to allow them to effectively use all the features of the system. The insufficient formal training for staff on the use of ICES has resulted in the following performance issues:

1. **LBD does is not use the system to schedule inspections.** Since LBD does not schedule inspections through the system, secretaries must write the inspection information on the inspection form and then put it in the schedule book. Later, the inspection is typed into the system with an assigned number. Once the inspection is completed, the results are entered into the system. This method results in secretaries having to perform repetitive functions, since the information is not initially entered into the system upon receipt. This problem was indicated in interviews with staff as an incompatibility of ICES with the City server, which results in schedules being lost in the system. However, the vendor indicated that the system is able to generate schedules by entering the inspection data at the same time a permit is purchased.
2. **LBD does not print consistent performance reports.** According to the ICES vendor, the system allows the user to print over 400 individualized reports and has a report generator function that will allow the user to develop custom reports. However, LBD staff has, at times, provided inconsistent reports because they have a limited knowledge of the types of reports the system can generate and how to develop these various reports. The inconsistent data reported in these reports can negatively impact performance assessment and management decision making.

According to the ICES vendor, additional training can be provided to staff that is tailored to LBD's specific needs at a cost of \$95 per hour. The vendor indicated that approximately 5 to 10 hours of training would allow staff to better understand how to use the system's reporting and scheduling functions.

ICES provides several benefits to LBD, including increased accuracy, easier exchange of information between various offices, and easier accounting of State fees for transmittal

purposes. By not fully utilizing the system, LBD cannot benefit from all of its usefulness to improve efficiency and productivity.

**R2.8** LBD should begin using ICES to its fullest potential. To do this, the CBO should schedule an ICES refresher training course with the vendor to assist staff with understanding the system’s functions and to show staff how to develop consistent reports. By training staff on all the scheduling and reporting functions of the system, LBD will be able to eliminate repetitive tasks and increase its efficiency of its schedule and reporting processes.

*Financial Implication:* The refresher course will cost LBD \$95 per hour. Based on the requirements of LBD and the recommendation of the vendor, approximately 5 to 10 hours of training will be needed at a total cost of approximately \$700.

F2.9 LBD has not established effective internal controls over data nor has it used ICES to establish internal controls over its processes. According to the United States General Accounting Office (GAO), implementing internal controls is a key factor in helping governments achieve outcomes and minimize operational controls. The internal control weaknesses found at LBD, which can negatively impact operations, include the following:

- **Unlimited computer access.** Access to resources and records should be limited to authorized individuals, and accountability for their custody and use should be assigned and maintained. Currently, all staff at LBD has access to all modules within the system. By not limiting access to the system, LBD increases its risk of errors, fraud, misuse, or unauthorized alteration.
- **No performance measures or indicators.** Activities need to be established to monitor performance measures and indicators. While ICES does have the ability to provide data on the number inspections completed per inspector and other workload outputs, they are not monitored against established standards at LBD.
- **No segregation of duties.** Key duties and responsibilities need to be divided or segregated among different people, and no one individual should control all key aspects of a transaction or event. However, one secretary at LBD is responsible for the entire collection process, despite each secretary having access to the computer system. By not establishing a check and balance system for collections, the risk of errors and fraud is increased.

Internal control weaknesses found at LBD are a result of changes in processes and reduced oversight of operations, stemming from turnover in the CBO position. Without

effective internal controls, LBD increases its risk of fraud, waste, abuse and mismanagement of financial resources.

**R2.9** The CBO should establish internal controls for record keeping and fee collections. The CBO should determine the portions of ICES to which each employee needs access and make changes in access to those areas accordingly. This can be done by establishing read-only access to areas not needed by all staff or limiting access to these areas altogether.

The CBO should also immediately establish checks and balances for LBD’s collections. This can be achieved by having one secretary collect funds and the other reconcile the funds to the daily printout at the end of each day. Lastly, the CBO should use ICES to monitor workloads and establish performance measures to help assess staff performance and staffing levels. The establishment of stronger internal controls will reduce LBD’s risk of errors, fraud, and unauthorized alterations to its information systems.

## Financial Implications Summary

The following chart presents a summary of the annual implementation costs and annual potential revenue enhancements discussed in this section. For purposes of this table, only recommendations with quantifiable financial impacts are included.

### Summary of Financial Implications for LBD

Recommendations	Implementation Costs	Annual Revenue Enhancements
<b>R2.3 Hire 2.0 FTE housing inspections</b>	\$88,500	
<b>R2.6 Complete rental inspections for all rental property every five years.</b>		\$102,500
<b>R2.6 Complete point-of-sale inspections</b>		\$86,000
<b>R2.11 Provide refresher training courses to staff.</b>	\$700	
<b>Total</b>	<b>\$89,200</b>	<b>\$188,500</b>

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# Utility Billing and Collections

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## Background

The City of Lorain Utility Billing Department (LUB) falls under the umbrella of the director of public safety/service and reports to the utilities director. The Utility Billing Department is responsible for billing and collecting water, sewer and storm water fees. In addition, the office takes all customer calls for service and general questions. LUB is budgeted for 18 full-time equivalent employees (FTE), consisting of the office manager, financial bookkeeper, credit counselor, chief billing clerk, and financial receipts clerk, as well as four data entry operators, two clerk cashiers, five meter readers, a meter clerk, and a delinquent account representative.

The Utility Billing Department also generates work for the five meter installers and the water service representative. These positions fall under the supervision of the Water Works Division, but are expensed to LUB. The work typically involves connection and disconnection of water service in addition to any meter maintenance and fieldwork initiated through customer inquiry or through variances noted in monthly billing audits.

Each of the selected peers manage their utility billing, meter reading and meter maintenance differently. The City of Mansfield bills for water and sewer, and has an operation similar to Lorain. The City of Hamilton bills for water, sewer, gas and electric, thus giving it a much greater workload. Hamilton also has a separate department for meter reading, while meter maintenance is part of the City's garage. The City of Springfield bills for water and sewer, but has separate departments within the City for utility billing and revenue collection. The Revenue Collections Department collects taxes, fines, and utility fees from customers.

### *Assessments Not Yielding Recommendations*

Assessments of the following areas were conducted, but did not warrant any changes or yield any recommendations:

- **Expenditures:** LUB's expenditures are charged back equally between the Water and Water Pollution Control Departments. Overall expenditures appear to be fairly consistent for the past three years. However, several areas did experience fluctuations. Salaries fluctuated due to the addition of meter installers (F3.3); capital outlay increased in 2002 due to an increase in meter installations in conjunction with the ongoing meter replacement project; the refund category varied due to corrections of a large error in industrial billings in 2002; and fringe benefit costs rose consistent with the findings in

the *City of Lorain – Phase 1 Performance Audit’s* contracts and health benefits section.

- **Capital Planning:** LUB’s needs for capital improvements are addressed by the Water Department in its overall capital plan, which includes long-range planning for the replacement of meters using water revenue funds. Additionally, LUB is scheduled to begin discussions on upgrading its software in 2004 (**R3.7**), and appears to plan for future needs as the budget allows. See the **cross-departmental issues** section of this report for further discussion on planning.
- **Salaries:** Although the cashier, meter reader, and meter installer salaries are above the peer average, job duties and longevity accounted for the discrepancies, and this analysis did not yield a recommendation. LUB’s average length of service is 13.2 years compared to the peer average of 6.5 years.
- **Billing and Collection Controls:** The GAO *Standards for Internal Controls*<sup>3-1</sup> established the following criteria:
  - Segregation of duties;
  - Proper execution of transactions and events;
  - Accurate and timely recording of transactions and events;
  - Restricting access to resources and records;
  - Accountability for resources and records; and
  - Appropriate documentation of transactions and internal controls are necessary to maintain a strong control environment.

LUB has divided its key duties and responsibilities among different people in order to reduce the risk of error or fraud. Based on the criteria set forth by GAO, it appears that Lorain has adequate internal controls to reduce the risk of error or fraud in the Utility Billing Department, although the procedure for billing adjustments should be amended (see **F3.5**).

- **Billing:** LUB has an effective billing system that processes bills using bar coded postcards with account information and zip codes. The bar coding eliminates manual posting of receipts and decreases mailing costs. Additionally, Lorain’s system does not require labor to fold and stuff envelopes. Lorain also receives a United States Postal Service postcard rate that is 10 cents lower than the standard envelope costs of peer cities, for a total cost per piece of 17.8 cents. This results in Lorain’s mailing cost being 35.4 to 58.0 percent lower than the peers.

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<sup>3-1</sup> United States General Accounting Office, Standard for Internal Controls in Federal Government- November 1999; GAO/AIMD-00-21.3.1

- **Collections:** Lorain has sufficient ordinances and procedures in place to regulate the collection of utility payments. This is evidenced by the highest percentage of receivables being collected in the current cycle and prior to 60-day past due cycle. The City's ordinances place the responsibility for payment of utilities on the property owner. The past due amounts of accounts that are shut off due to delinquency are certified by the County Auditor's Office as tax liens against the property. Additionally, any property with a past due amount is denied service until the account is brought current.
- **Meters:** The City began a meter upgrade project in 1994 and should complete the final phase during the spring of 2004. The meter upgrades allow meter readers to collect meter reads with hand-held data collectors and radio remote devices which download data directly to the billing software. This is more efficient than manually handwriting reads because it eliminates extensive data entry. As a result of the increased efficiency of collecting and transferring data, the City now reads all meters in a one-month cycle. The increased efficiency has also reduced the time it takes meter readers to collect all reads, which reduces the number of meter readers (see **R3.1**) needed to complete each cycle.

The Utility Billing section also examined sick leave usage within the Division. This information has been incorporated into the **cross-departmental issues** section.

## Findings and Recommendations

### Staffing

F3.1 Meter readers in Lorain read 8.0 percent fewer meters per month than the peer average. LUB consists of 18.0 budgeted FTEs under the direct supervision of the utility billing office manager. **Table 3-1** compares Lorain’s staffing and workloads to the peers.

**Table 3-1: Staffing Level Comparison FY 2003**

Position	Lorain	Hamilton <sup>1</sup>	Mansfield	Springfield	Peer Average	Percent Deviation <sup>2</sup>
Office/Billing Manager	1.0	2.0	1.0	1.3	1.4	(28.5%)
Supervisor	1.0	6.0	1.0	1.0	2.7	(62.9%)
Cashiers	3.0	3.0	3.0	1.8	2.6	15.4%
Account Clerks	7.0	14.0	6.0	4.0	8.0	(12.5%)
Meter Readers	5.0	6.0	4.0	4.0	4.7	6.4%
Meter Clerk	1.0	N/A	1.0	2.0	1.5	(33%)
<b>Total FTEs</b>	<b>18.0</b>	<b>31.0</b>	<b>16.0</b>	<b>14.1</b>	<b>20.4</b>	<b>(11.8%)</b>
Total Water and Sewer Accounts	47,501	47,167	39,877	40,238	42,427	12.0%
Total Bills per Month	24,213	32,518	19,757	20,119	24,131	0.3%
Total Meters Read per Month	25,064	38,886	19,757	23,063	27,235	(8.0%)
<b>Accounts per Total FTE</b>	<b>2,639</b>	<b>1,521</b>	<b>2,492</b>	<b>2,864</b>	<b>2,080</b>	<b>26.9%</b>
<b>Bills per Account Clerk FTE</b>	<b>3,459</b>	<b>2,323</b>	<b>3,293</b>	<b>5,030</b>	<b>3,016</b>	<b>14.7%</b>
<b>Meters read per Meter Reader FTE per Month</b>	<b>5,013</b>	<b>6,481</b>	<b>4,939</b>	<b>5,766</b>	<b>5,795</b>	<b>(13.5%)</b>

Source: Lorain and peer documents and interviews

<sup>1</sup> Hamilton’s utility billing department also bills for 52,299 electric and gas accounts.

<sup>2</sup> Percent difference calculation equals Lorain totals minus peer average divided by peer average.

As shown in **Table 3-1**, Lorain is 26.9 percent higher than the peer average for accounts per total FTE and 14.7 percent higher for bills processed per account clerk FTE. The accounts per total FTE are somewhat skewed by Hamilton which also handles an additional 52,000 electric and gas accounts. Although Lorain’s productivity in the billing department is higher than peer averages, LUB reads 13.5 percent fewer meters per meter reader each month than the peers.

The City implemented a meter reading incentive within the 1994 collective bargaining unit contract to double the number of meters read. This enabled LUB to begin reading the entire city in a 30-day cycle. The incentive allowed meter readers to complete their work day once a maximum of 300 meters are read, and be paid for a full eight-hour day regardless of actual hours worked. The incentive was implemented at a time when the

meter reads were handwritten in books. However, due to the efficiencies created by the new meters, the meter readers now work an average of 5.5 hours per day to complete their 300 reads, but are still paid for eight hours worked. If meter readers were fully utilized for an eight hour day under the current contract, only 3.8 FTEs should be required to complete all readings for the billing cycle. To further illustrate, the current meter readers could read 33,000 meters per month if fully utilized.

The book, *Municipal Benchmarks: Assessing Local Performance and Establishing Community Standards, Second Edition (Sage Publications, 2001)*, states that efficient meter reading helps keep operating costs down. Accurate meter reading enhances customer relations, promotes provider revenue flows, and alerts the utility to system or service abnormalities detectable through individual account records. A report cited in the book notes that an average for meter reader production was 350 meter reads per day.

LUB's bargaining union contract incentive results in underutilization of the meter readers and unnecessary employee costs charged to the water and water pollution control departments.

- R3.1** During the next round of contract negotiations, the City should seek to remove the meter reader incentive or increase the number of reads required to earn the incentive. In doing so, LUB meter readers should perform at a level consistent with peer and municipal benchmarks. Additionally, the expenses charged to the water and water pollution control departments for meter reading will be reduced. These expenses are recouped in the rates charged to customers by the two utilities. If either of these items are negotiated, LUB should be able reduce the meter reader positions by 1.0 FTE. If meter readers reached the 350 meter per day benchmark, LUB would only need 3.3 FTE to read a billing cycle.

*Financial Implication:* The reduction of 1.0 FTE meter reader would save the City approximately \$45,500 in salary and benefits.

- F3.2 LUB has not identified meter replacements where high elapsed read times indicate reduced meter reader productivity and an opportunity for increased efficiency. The City presently uses radio remote technology to collect meter reads in areas of the City that are difficult to access or have significant distances between meters. There are still several books, or assigned areas of specific meters, where elapsed times are high that could be more efficiently collected using the radio remote technology.

LUB has the ability to generate reports that provide data such as actual elapsed times between reads, total time for the book, and the average time between meter reads. For example, book number 78 had an average elapsed time of approximately 29 minutes between eight meter reads on January 6, 2003, with a total elapsed time of 3.8 hours. Meanwhile, book number 211 had an average of 17 seconds between 337 reads on

October 23, 2003 for a total elapsed time of 1.6 hours. Based on the \$45,500 salary and benefits cost of a meter reader, the hourly rate is approximately \$22 per hour. The total cost to read book 78 was approximately \$83, or \$10 per read, and book 211 was approximately \$35, or 10 cents per read. Book 78 indicates an area that would be better served by radio remote meters, in which a vehicle-mounted receiver would collect the reads rather than a meter reader on foot.

By increasing the number of radio remote meters where high elapsed times exist, LUB will decrease the number of meters read by hand and reduce the average elapsed time between reads which, in time, could result in additional meter reader staff reductions. The City of Cleveland Heights uses the radio remote technology exclusively and is able to collect the entire city's 16,000 meter reads in a three-day period using one employee and a vehicle mounted collector. By not analyzing current walk productivity reports to aid in the installation of replacement water meters, the City is not ensuring the most efficient and productive use of its water meter readers' time.

**R3.2** Lorain should use remote meter reading technology to replace meters that currently are being collected using hand-held devices but have high elapsed times between reads. LUB should conduct an analysis similar to the comparison shown above for all books to target routes with high elapsed meter read times. These books, or routes, should then be equipped with radio remote meters which would allow the collection of reads by use of a vehicle mounted receiver similar to other difficult routes in the City. The further reduction of read times for books with high average elapsed times could allow Lorain to increase its productivity and potentially, further reduce meter reader FTEs. Lorain should also analyze work procedures, develop performance measures, and upgrade technology as warranted, consistent with quality management initiatives referred to in **F3.4** to manage the replacement of these meters and potentially reduce meter reader positions.

**F3.3** Lorain's current meter replacement project has contributed to Lorain having more meter installers than the peers. Lorain currently has five meter installers, which is 2 FTEs higher than the peer average. The water distribution superintendent stated that 3 FTEs have historically been adequate to complete repairs and installations, which is consistent with the peer average. Peer meter installers replace and perform maintenance on malfunctioning meters as needed, but are not involved in a citywide meter replacement program similar to Lorain's. Based on the timeline of the meter replacement project and the historical staffing levels for this position, the current number of meter installers may not be necessary upon the project's completion.

In 2002, the City transferred 2 FTEs from the General Fund to meter installation positions in support of the ongoing meter replacement project. These transfers allowed the City to install 65 percent more meters in 2002 and 11 percent more in 2003 than the 2001 installation rate. As a result of the increase in meter replacements, LUB estimates

completing the replacement project by mid-2004, at which time meter installer job duties may be more consistent with the peers.

**R3.3** Upon completion of the current meter installation project, Lorain should consider reducing the number of meter installers by 2 FTEs. The reduction would align Lorain staffing with the peer level for maintaining and replacing malfunctioning meters. Lorain should take this opportunity to assess this position within the organization using quality management methods identified in **F3.4** to ensure that reductions are consistent with departmental goals.

*Financial Implication:* If Lorain reduced 2 FTE meter installers, the City would realize a cost savings of approximately \$98,800, using 2003 base salaries and benefits.

### *Organizational Structure and Reporting Relationships*

F3.4 Lorain does not have an effective quality improvement processes, and communication issues between LUB and the Water Department have resulted in a breakdown of work performance. Utility billing data clerks are responsible for auditing meter reads to identify meters which may be malfunctioning. Meter installers follow up on meter maintenance from work orders generated by the data clerks and install new meters scheduled by the meter clerk. The meter clerk also updates the meter inventory data using the work order system. Meter installers fall under the supervision of the Water Department, while the data clerks and meter clerk fall under the supervision of Utility Billing.

In February 2003, meter readers requested management to move all meter sensors outside of fences as a safety measure because of dog attacks. A spreadsheet was developed to identify the sensors which needed to be moved and was updated periodically when meter sensors had been replaced. However, the work orders to move the sensors were never entered into the work order system. This has resulted in slow replacement of the sensors. Also, in some cases, meters remained unread for as long as five months because the meters were inside the fence lines and had not been moved.

Also, meter installers are used to perform emergency meter reads because the meter readers do not work full days (see **F3.1**). In order to complete the billing cycle each month, Utility Billing often requires emergency reads to complete the billing cycle. These meters may have been misread or not read at all. Since meter readers complete their work days once they have reached their daily target levels, they are often unavailable to collect the emergency reads. Therefore, meter installers are pulled from completing their work orders to collect the information. This has caused delays in the meter installation project and hampered efforts to move meter sensors outside fences. The absence of coordination and communication between these two departments has decreased

productivity. Additional concerns identified by management included instances where coordinating work schedules might increase work efficiency and a need for better synchronization in work flow scheduling. In the absence of a quality improvement team to address work flow issues and implement process improvement strategies, LUB will continue to experience tension between departments created by poor communication.

*The Changing Water Utility: Creative Approaches to Effectiveness and Efficiency (American Water Works Association, 1998)* has a chapter dedicated to quality management. It states that best management practices in any organization are those that keep the people, processes, and larger systems focused on the vision of the organization and the short- and long-term needs of customers and stakeholders. Part of improving work processes starts with understanding those processes by diagramming what actually happens, including all activities and decision points. This allows managers to perform a work process analysis by:

- Identifying redundancies in work performed such as multiple inspections or reviews;
- Identifying bottlenecks or constraints, which includes communication breakdowns by analyzing workflow;
- Determining the complexity of work by identifying decision points and control features which can be standardized to streamline processes;
- Evaluating whether existing technology is being fully exploited (work order software) and whether or not additional technology is worth the investment; and
- Aligning results with the organization's mission and needs.

A process redesign is then used to correct weaknesses and problems identified in the work process analysis. Success should be measured against the system's guiding principles and against the standards set by the reward and measurement system that is established. These measures might include cost measures, increased communication, resource utilization, service or timeliness measures, quality of work life, etc.

With a quality improvement team in place, Lorain could better identify the areas for improving operations by developing strategies that focus the people, processes and systems. This will effectively meet the goals developed by the team and improve communication and cooperation. Without a team in place, the departments have not effectively managed workload scheduling and communication.

**R3.4** Lorain should develop a quality improvement team that includes representation from Utility Billing and the Water Department. The team should work to understand all work processes that are dependent on each other and develop strategies to increase efficiency, communication and employee satisfaction. LUB should investigate greater use of the work order system capabilities to improve the management of staff workloads and the collection of data which can later be used to improve work processes.

### *Billing*

F3.5 LUB's process for billing adjustments creates inaccuracies in the tracking of water sold in the City of Lorain. There are large fluctuations in billing and consumption adjustments because consumption is not initially entered into the computer system and must be manually documented and tabulated by the financial bookkeeper. Only major consumption adjustments are documented while smaller consumption adjustments are not captured. Additionally, all billing adjustments are applied to the water accounts when customers are billed for both water and sewer. Monetary adjustments are entered in the computer for either water or sewer, but water consumption adjustments are not made at that time. Therefore, accurate billing and consumption data is not available to the City.

The American Water Works Association (AWWA) Leak Detection and Accountability Committee report, *Committee Report: Water Accountability (Journal of the AWWA, 1996)*, states that as the total cost of operations rise, so does the total cost of unaccounted-for water. After distribution has determined the amount of water produced, it is up to billing to determine the total amount of water sales for the same period. In addition, AWWA states that meter work is technically unrelated to other field operations and is extremely interdependent with billing and auditing work. The success of any meter improvement program depends on the ability to identify meters that have become inaccurate. Meters that fail often result in low readings which, in turn, results in lost revenue for the City.

If accurate consumption data is not maintained by LUB, the ability of the Water Department to identify lost revenue resulting from unaccounted-for water is hindered. Likewise, the ability of the Utility Billing Department to identify lost revenue due to malfunctioning meters is compromised (see **F3.6**).

**R3.5** LUB should immediately start entering corresponding consumption data with water billing adjustments. Additionally, adjustments should be applied to the accounts that were used to generate the billing (i.e. sewer adjustments to sewer billings and water adjustments to water billings). The financial bookkeeper should be responsible for auditing adjustments for accuracy to ensure that reports are accurate for use in auditing the water delivery and billing systems. Management should reconcile the adjustments with the billing registers on a regular basis to identify variances early and correct them in

a timely manner. This will reduce time spent researching and identifying discrepancies and provide a more accurate reporting system. Additionally reported variances will be a more effective tool in identifying lost revenue and system inaccuracies.

### *Metering Effectiveness*

- F3.6 Lorain’s water loss (unaccounted for water) statistics indicate that the City needs to better manage its tracking of water used after purification. Lorain reports a water loss percentage of 20.3 percent in 2002 and 28.0 percent as of November 2003. Water loss is the difference between the amount of treated water entering the distribution system and the amount metered for use by individual customers or other authorized users. Steady leakage and intermittent main breaks are the major causes of lost water, but water loss may also result from inaccurate meters, theft, and non-metered water used for fire fighting, hydrant flushing, street cleaning, and other legitimate municipal purposes. Hamilton reported an 11.3 percent water loss in 2002 and industry best practices recommend 15 percent as a benchmark for water loss.

The Public Utility Commission of Ohio (PUCO) regulates investor-owned water and wastewater companies throughout the state, but does not have jurisdiction over municipalities (ORC § 4905.02.(C)). Nevertheless, PUCO was included in AWWA’s survey of water loss reporting practices. The entities that are regulated by PUCO must comply with OAC § 4901:1-15-20(C)(5), which requires each waterworks company to annually report unaccounted-for water, and also to propose remedial actions if unaccounted-for water exceeds 15 percent.

To reach a water loss level of 15 percent, Lorain would have had to account for, or bill approximately five percent more water in 2002 and 13 percent more water in 2003. In 2002, this equates to an additional 197.8 million gallons of water and in 2003 an additional 521.2 million gallons. According to Lorain’s utility director, it costs \$0.16 per 1,000 gallons to treat Lorain’s water excluding fixed costs and labor. Lorain could have avoided costs of approximately \$15,825 in 2002 and \$41,650 in 2003 for treating approximately half of the estimated water loss needed to reach the 15 percent benchmark<sup>3-2</sup>. Lorain would have billed 132,208 billing units in 2002 and 348,340 billing units in 2003 if respective unaccounted for gallons were billed in each respective year. Based on the 2002-2003 rate of \$2 per 100 cubic feet<sup>3-3</sup>, this would have result in additional revenue of approximately \$264,400 in 2002 and \$696,700 in 2003.

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<sup>3-2</sup> Calculation for treated water loss cost: 2002 – (197.8 million gallons/2) times \$0.16 per 1000 gallons treated = \$15,825

<sup>3-3</sup> 748 gallons equals 100 cubic feet

AWWA states that accurate costs for lost water due to leaks and costs of unbilled water should be determined. This includes analyzing the costs associated with upgrading infrastructure, fixing leaks, and increasing meter accuracy. With the acknowledgement of inaccuracies in the billing data already noted in this report (see **R3.5**), Lorain does maintain a water loss statistic. It is calculated by determining water produced minus water sold to obtain a loss percentage, and this figure is included in each year's annual report. AWWA recommends that an entity identify and quantify all other categories of water use in the system, and accurately estimate water use when metering is not possible, to determine the amount of water loss. Various categories of non-metered water use stated in the report included:

- Bulk water sales;
- Known leakage;
- Storage tank drainage;
- Storage tank overflows;
- Line flushing;
- Fire protection;
- Winter bleeding or blow-off for odor and taste episodes;
- Municipal uses including sewer cleaning, street cleaning, parks, recreation facilities, and hydrant flow tests; and
- All other non-revenue uses.

AWWA's, *A Survey of State Agency Water Loss Reporting Practices (Final Report to the AWWA, January 2002)* states that, "management of water as a resource has greater value today than ever before. Extraction, treatment, storage, and pumping all add value to the water resource. Given growing constraints on water resources and mounting infrastructure costs, it is more imperative than ever that water managers endeavor to account for the water that travels from the source to end users." Also, "reducing leakage and loss can help systems capture a supply resource and avoid costly supply-side operating and capital costs."

Additionally AWWA states, "Total water loss in a system does not result from one cause, but from several. Generally a system can split the difference between financial loss from leakage and from metering. The loss of water from leakage is less costly than loss of water due to meter under-registration or theft." Once an entity has accurately identified the cost of unaccounted-for water, it can make informed decisions on repairs of leaks and meter upgrades in a more informed, cost efficient manner.

**R3.6** Lorain should make the necessary changes to produce accurate water loss statistics. Water distribution should develop systems to identify and quantify non-revenue uses of water and estimate known leakages. Utility billing should immediately address the accuracy of the number of gallons billed (**R3.5**) as the first step in the process. With

accurately identified water use, Lorain should develop a remediation plan to reduce unaccounted-for water to 15 percent or lower, consistent with PUCO recommendations for public utilities. Developing additional measures of water used or lost through accurate estimates of non-metered water is the next step. Policies should be implemented to ensure that consistent measures and benchmarks are set to maintain accurate data in the future.

*Financial Implication:* In the absence of accurate water loss data the financial implication will split the water loss above 15 percent 50/50 to determine costs associated with leaks or loss of revenue from billing. Conservatively, an average of 2002 and 2003 shows \$28,738 per year in cost avoidance due to water treated and lost to leaks, and an average of \$480,548 per year can be attributed to lost revenue.

### *Technology*

F3.7 LUB does not have a technology strategic plan. Lorain's utility billing software is becoming outdated and will no longer be supported by the manufacturer without an upgrade after December 31, 2004. The Department has hired a consultant to create several patches and modifications to the current software for LUB to run more efficiently on an as needed basis. This has caused some problems with the City's server and utility billing software. The billing software is not used effectively to enter billing adjustments accurately due to procedures currently used by LUB (F3.5). It is unclear whether LUB would benefit more from a new utility billing software or if the upgrade to the current software will meet its needs.

According to *The Changing Water Utility*, information technology (IT) strategies, as used by high performance organizations, should be:

- Carefully planned from design and selection through implementation and post-implementation.
- Accepted and supported by users in order to achieve intended improvements. Fear of increase accountability and/or distrust of the technology itself can result in ineffective system use.
- Based on product life cycles, especially for computer hardware and software, which experience accelerating change. In this environment flexible and adaptable systems are important.
- Designed to achieve the business purposes (utility goals), including reliability and efficiency.

A strategic IT plan will improve outcomes by identifying performance measures to determine if LUB is meeting its service goals. Some performance measures to consider are cited by *The Changing Water Utility* and include:

- Reducing the average number for disputed bills per month;
- Increasing surveyed customer satisfaction ratings;
- Reducing time to resolve customer inquiries;
- Reducing nonpayment to receivables; and
- Reducing billing labor requirements.

Lorain has taken steps to improve meter reading and utility billing operations in the past by installing new technology and making programming changes to its systems. However, there is not a strategic plan in place to define desired technology outcomes and help in the process of assessing the new software.

**R3.7** LUB should create a strategic plan for technology use in the department to assist in determining if new billing software or an upgrade will allow it to operate more efficiently. Identifying performance criteria and measurements tied to meter reading, bill processing, accuracy and customer satisfaction will increase the department's ability to manage technology and identify areas for improvement. Also, reducing reliance on software patches where possible should also reduce system downtime.

## Financial Implications Summary

The following table presents a summary of annual cost savings, cost avoidance and additional revenue resulting from recommendations within this section. For the purpose of this table, only recommendations with quantifiable impacts are listed.

### Summary of Financial Implications for LUB

Recommendation	Cost Savings	Cost Avoidance	Additional Revenue
<b>R3.1</b> Reduce Meter Reader Positions	\$45,500		
<b>R3.3</b> Reduce Meter Installer Positions	\$98,800		
<b>R3.6</b> Decrease in Unaccounted-For Water Loss		\$28,700	\$480,500
<b>Total</b>	<b>\$144,300</b>	<b>\$28,700</b>	<b>\$480,500</b>

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# Division of Water Purification and Distribution

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## Background

The City of Lorain Water Department (LWD) is comprised of two functional divisions: Water Purification (Purification) and Water Distribution (Distribution). The Purification Division manages the purification and filtration process that results in potable water. LWD operates a single water treatment plant with capacity to treat approximately 18 million gallons per day. The Distribution Division is responsible for the pumping of water and monitoring water flow to LWD's customers. LWD's 53 employees operate, repair, and maintain the City's plant, towers, pumps, waterlines, hydrants, and meters.

LWD is organized within the City as an enterprise operation. LWD is intended to function in a manner similar to a private sector business, relying on charges for services to support the costs of operation. The City's Utility Billing Department collects water use charges and subsequently deposits them into the funds that support water operations. Charges for services are based upon a defined rate structure that corresponds to various levels of consumption. For the purpose of illustrating operational issues, comparisons are made throughout this section to the peer water departments of Avon Lake (ALWD), Hamilton (HWD), and Springfield (SWD).

### *Assessments Not Yielding Recommendations*

Assessments of the following areas were conducted but did not warrant any changes or yield any recommendations:

- **Low-interest State loans and grants:** LWD participates in Ohio Water Development Authority (OWDA) loan programs and receives funds at a lower rate to finance capital projects. LWD is also currently researching additional funding sources such as grants.
- **Capital improvement plan:** LWD has a comprehensive capital improvement plan that is contained within the City of Lorain's Strategic Operations Guide & Long Range Plan 2003, which includes a five-year capital budget showing revenue sources, projected costs, and estimated completion schedules. Once projects are completed, LWD compares estimated costs to actual costs and actual completion time to estimated completion time. LWD's capital improvement plan allows the Department to effectively plan long-term budgetary and operational activity with an emphasis on achieving departmental goals.

Further, using measures of cost and project completion time to determine the accuracy of projections is an effective management tool.

- **EPA compliance:** LWD operates within the contaminant limits established by the Ohio Environmental Protection Agency (EPA), and has not received written findings since January 2002 when Ph levels were cited as being noncompliant.
- **Cross-training:** Employees are cross-trained to perform multiple functions in Purification and Distribution. The union contract considers temporary assignments as training.
- **Job descriptions and operator licenses:** LWD job descriptions contain the necessary components to communicate job performance requirements and expectations, including the required licenses. Promotions are dependent on acquiring the necessary license for the job function as outlined in the job description.
- **Certification:** The LWD purification superintendent and assistant superintendent hold EPA Class IV and Class III water system operator certifications, respectively. Promotion and advancement of LWD staff is based on operator certification. However, all full-time operators and other staff that could potentially perform operator functions have obtained some degree of certification.
- **Salaries:** Salaries are consistent with the peer averages. ALWD and HWD pay higher wages, while SWD pays slightly lower wages.

The following areas were also examined within the Water Purification and Distribution section, and have been incorporated into the **cross-departmental issues** section:

- Enterprise Fund Forecasting,
- Strategic Planning,
- Chargeback Policies,
- Capital Improvement Budgeting,
- Water Rates,
- Sick Leave Usage, and
- Overtime.

## Findings and Recommendations

### *Organizational Structure*

- F4.1 LWD employs a total of 53.3 full-time equivalent (FTE) employees in the purification and distribution functions. This includes a large number of laborers, which the City reported were needed to help maintain the City’s aging distribution system. In contrast, the peers employ an average of 39 FTEs. The largest variance between LWD and the peers occurs in distribution where LWD exceed the peer average by almost two to one. **Table 4-1** presents LWD and peer staffing as of October 2003.

**Table 4-1: Water Purification and Distribution Staffing Level Comparison**

Position / Function	LWD	ALWD <sup>1</sup>	HWD <sup>2</sup>	SWD	Peer Average
<b>Total Number of Water Accounts</b>	23,659	6,848	24,193	20,119	22,156 <sup>2</sup>
<b>Utilities Director</b>	0.3	0.7	0.4	0.1	0.3
<b>Water Purification</b>					
<b>Water Plant Superintendent</b>	1.0	1.0	1.0	1.0	1.0
<b>Water Plant Assistant Superintendent</b>	1.0	0.8	1.0	1.0	1.0
<b>Secretary</b>	N/A	N/A	1.0	1.0	1.0
<b>Millwright A/Mechanic/Electrical</b>	4.0	2.0	9.0	6.0	7.5
<b>Cleaner</b>	2.0	1.0	3.0	1.0	2.0
<b>Lab Technicians</b>	2.0	2.0	4.0	2.0	3.0
<b>Operator</b>	10.0	4.0	8.0	7.0	7.5
<b>Total Purification FTEs</b>	<b>20.0</b>	<b>10.8</b>	<b>27.0</b>	<b>19.0</b>	<b>23.0</b>
<b>Water Distribution</b>					
<b>Distribution Superintendent</b>	1.0	0.5 <sup>3</sup>	0.5 <sup>3</sup>	1.0	0.8
<b>Assistant Distribution Superintendent / Supervisor</b>	1.0	N/A	0.5	1.0	0.8
<b>Secretary</b>	1.0	N/A	1.0	N/A	1.0
<b>Crew Leader</b>	4.0	0.5	3.5	5.0	4.3
<b>Line Mechanic / Troubleshooter / Laborers/Equipment Operators</b>	17.0	3.0	8.5	4.0	6.3
<b>Master Mechanic (automotive)<sup>4</sup></b>	1.0	N/A	N/A	N/A	N/A
<b>Mechanics (automotive)<sup>4</sup></b>	2.0	N/A	N/A	N/A	N/A
<b>Water Service Representative / Regulator Technician</b>	1.0	N/A	2.0	N/A	2.0
<b>Meter Installers / Repairers</b>	5.0 <sup>6</sup>	N/A	2.5	2.0	2.3
<b>Total Distribution FTEs</b>	<b>33.0</b>	<b>4.0</b>	<b>18.5</b>	<b>13.0</b>	<b>15.8</b>
<b>Total Water Department FTEs</b>	<b>53.3</b>	<b>15.5</b>	<b>45.9</b>	<b>32.1</b>	<b>39.0</b>

Source: LWD, ALWD, HWD, and SWD

<sup>1</sup> ALWD is not included in the peer average calculation as its water distribution accounts are not comparable to LWD, HWD, or SWD.

<sup>2</sup> Hamilton operates 2 water plants

<sup>3</sup> Avon Lake and Hamilton Distribution Departments perform sewer collection (Avon Lake) or gas (Hamilton) functions 50 percent of their time. These numbers reflect the Water portion only.

<sup>4</sup> Neither Hamilton nor Springfield's Water Departments maintain their vehicles. Avon Lake maintains its vehicles in a combined utility department.

<sup>6</sup> Meter installers are supervised by Distribution, but paid from Utility Billing.

As noted in **Table 4-1**, LWD has 27 percent more employees than HWD and SWD which serve a similar number of accounts. Purification is comparably staffed in relation to the peers, but has 25 percent more operators than HWD and SWD. LWD's higher level of operators can be attributed to the greater amount of manual plant monitoring required within LWD's system. The peer water departments use the Supervisory Control and Data Acquisition (SCADA) system, a technological application used to monitor system performance. The SCADA system reduces the need for additional employees as it allows a smaller number of employees to monitor the system (see **F4.2**).

LWD’s Distribution employs approximately three times as many Line Mechanics/Troubleshooter/Laborer/Equipment Operators as the peer average, and twice as many as the closest peer, HWD. Additionally, Distribution employs three mechanic positions. In the peer water departments, mechanics serve all city vehicles and are not shown as attached to their respective water department (see the *City of Lorain – Phase 1 Performance Audit’s garage division* section). Also, LWD employs more meter installers than the peers. The number of meter installers was increased to facilitate the completion of the meter replacement project (see the **utilities billing** section).

**Table 4-2** presents key operational statistics for LWD and the peers to provide a more detailed measure of workloads.

**Table 4-2: Water Department Staffing and Workload Statistics**

	LWD	ALWD	HWD	SWD	Peer Average
<b>Total Purification Operator FTEs</b>	10.0	4.0	8.0	7.0	7.5
<b>Total Million Gallons Daily (MGD) Treated</b>	11.2	19.2	22.8	12.8	17.8
<b>FTEs Required to Treat 1 MGD</b>	0.9	0.2	0.4	0.5	0.4
<b>Total Distribution FTEs<sup>1</sup></b>	24.0	4.0	14.0	11.0	9.7
<b>Total Miles of Water Mains</b>	297	103	280	317	233
<b>Miles of Water Mains per Distribution FTE<sup>1</sup></b>	10.0	25.8	20.0	28.8	24.0
<b>Number of Breaks and Leaks Repaired</b>	294	58	68	124	83
<b>Breaks and Leaks Repaired per Distribution FTE<sup>1</sup></b>	12.3	14.5	4.9	11.3	8.6
<b>Approximate Age of System in Years<sup>2</sup></b>	120	80	100	120	100
<b>Area Served in Square Miles</b>	26.0	11.5	22.0	34.0	22.5

**Source:** LWD, ALWD, HWD, and SWD

<sup>1</sup> Does not include mechanics, meter staff, or water service technicians (9 FTEs)

<sup>2</sup> Estimate of when first water mains were installed

**Table 4-2** shows that LWD purification operators treat a volume of water (MGD) comparable to HWD and SWD. However, LWD uses 0.9 purification FTEs to treat one MGD, compared to the peer average of 0.4 FTE. This is partially due to LWD’s limited use of the SCADA system (see **F4.2**). However, based on workload measures, it appears LWD is overstaffed in the purification operator classification.

**Table 4-2** also shows that LWD repairs 12.3 breaks and leaks per distribution FTE, compared to the peer average of 8.6 breaks and leaks per FTE. While this may be partially due to LWD’s climate, the age and condition of the City’s water infrastructure contributes to the higher number of breaks and leaks. LWD allocates more of its financial resources to the labor required to repair or maintain waterline breaks and leaks, rather than dedicating these finances to replacing and updating deteriorating waterlines. As the City has neither identified investment in the waterline system within a City-wide

strategic plan (see **F1.1**), nor allocated the capital funds necessary to make the upgrades (see **F1.4**), staffing levels have increased to repair the aging system.

LWD employees also install all new water taps for structures in Lorain contributing to a higher workload. In 2003, a crew of four LWD employees installed 168 new water taps, each requiring approximately 6 hours to complete (approximately 24 total man hours per tap or 4,032 man hours spent installing new taps annually). Other cities require building contractors to use city-approved and licensed tap installers/excavators. Although the city inspects the tap and approves the work, the building contractor is required to pay the licensed installer for the work and pay the city an additional fee for the inspection. When the City of Elyria began requiring the building contractor to arrange tap installation, the city's tap installation workload dropped by 46 percent, allowing that city to focus on other goals. By placing the onus on contractors to install new taps, Lorain could reduce its tap installation workload considerably. If LWD required contractors to arrange tap installation, it would lose the revenue associated with new tap fee charges used to pay the installation crew. However, it would experience a reduction in expenditures related to salary costs for the labor crew while being able to retain the tap inspection fees.

**R4.1** LWD should gradually reduce its Distribution workforce to a level comparable to the peer level as operational efficiencies are implemented and the older, more problematic portions of the system are upgraded. This would entail a reduction of at least 50 percent of the line mechanics, or 8 FTEs. Further, the three vehicle mechanics should be transferred to the central garage as recommended in the **City of Lorain – Phase 1 Performance Audit, R9.10**. Finally, upon the completion of the water meter installation project, LWD can reduce two meter installers (see **utility billing** section, **R3.3**). The funds allocated to these positions should be applied to capital improvements, particularly replacing or updating waterlines. Further, by licensing private contractors to perform tap installation, LWD could reduce a significant portion of its workload spent on tap installation and allocate more time on other departmental functions such as new water line installation. For instance, if LWD achieved standards on new tap installation similar to Elyria, it could save approximately 1,800 labor hours.

*Financial Implication:* By reducing 8 FTE line mechanics, LWD would realize a cost savings of approximately \$314,500 in salaries and benefits which could be applied to capital improvements.

## Technology

**F4.2** LWD does not effectively use its Supervisory Control and Data Acquisition (SCADA) system. The SCADA system electronically collects and stores information centrally from readings throughout the plant and equipment outside the plant. It also enables an operator to control equipment from a central remote location. Efficient use of SCADA eliminates

the need for manually operating equipment. LWD uses SCADA mostly for data acquisition to monitor and control its pumps, but only at approximately 50 percent of its capability since the plant has not had a backup power source. Further, 100 percent implementation cannot currently be achieved since the chemical feeders are older and incompatible with the SCADA technology. While LWD uses SCADA at approximately 50 percent of its capacity as a monitoring program, HWD and ALWD use SCADA at almost 100 percent of its capabilities. Therefore, LWD requires more operators to monitor its entire system, since technological updates require a dependable power source for greater capacity, and improved infrastructure for full capabilities.

LWD employs two purification plant operators per shift to monitor the plant and to perform security functions, while the peers employ only one operator per shift. According to the purification superintendent, past practice has dictated that one foreman and one operator work each shift. HWD reduced three operator positions and SWD reduced seven operator positions with the implementation of SCADA technology. If LWD used SCADA to its fullest potential, it could monitor and control treatment and pumping operations via electronic sensors, which would reduce the need for operators to monitor the same processes. It is likely that LWD would be able to achieve reductions in staff similar to HWD.

- R4.2** Upon installing a backup generator, LWD should expand the implementation of the SCADA system to increase the use of the system’s monitoring capabilities. LWD should examine opportunities for the improvement of the chemical feeders, so that SCADA’s capacity could be fully implemented. Once the use of SCADA monitoring has been increased, LWD management should examine the feasibility of reducing up to 3 FTEs in the operator classification. If LWD reduced 3 FTEs, the ratio of FTEs required to treat one MGD would be similar to HWD and SWD (see **Table 4-2**). However, before reducing these positions, LWD should monitor workload measures under more wide-scale SCADA implementation to ensure the workload is manageable for the reduced number of personnel assigned to the function. Ultimately, by reducing these employees, LWD’s workload measures would increase to a level comparable to both HWD and SWD (see **Table 4-2**).

*Financial Implication:* If LWD updates its equipment, fully implements the SCADA system, and concludes the workload manageable for the assigned personnel, LWD would realize an annual savings of approximately \$120,600 in salaries and benefits by reducing 3 FTEs in the operator classification. These savings could be applied to capital improvements within the system.

- F4.3 LWD does not use inventory or work order software. Purification uses a spreadsheet to generate a list of items for its inventory. The list is submitted to the City auditor at year end. However, the spreadsheet does not capture the quantity of an item that was

purchased, the purchase price, or the dates acquired. Distribution uses a hand written list for its year-end inventory.

Purification and Distribution both use handwritten work orders for maintenance work. The Distribution forms list materials used and costs, but hours spent on the project and employee names are not consistently entered, even though a space is provided for the information. Although Distribution supervisors spend approximately 5 percent of their time completing the work order forms, LWD does not aggregate the information or use it to generate reports for analysis. Utility Billing has work order software in its financial software system that is compatible with the needs of both Purification and Distribution (see **utilities billing**).

Work order software enables management to more efficiently and proactively complete tasks and make decisions. Work order software would better track the time and labor costs to maintain the infrastructure and thereby target line replacement to areas requiring the most costly repairs. A work order system can also assist with scheduling and budgeting for needed repairs. If needed repairs are not tracked, they can eventually turn into emergency repairs costing more than the initial repair.

**R4.3** LWD should improve the spreadsheet used for tracking inventory. The spreadsheet should be used by both purification and distribution and should include the date of purchase, the purchase price, and the amount or number purchased for each inventory item. LWD should work with the City Auditor’s Office to define what constitutes a capital item.

LWD should also begin using the Utility Billing work order software to track Purification and Distribution work orders. LWD should also use reports generated from the information entered to determine how resources are used and how to improve operations and efficiency. At a minimum, work orders should account for: date the request was received, date approved, job tracking number, job status, priority, location, person requesting assistance, staff member assigned, supplies and cost for job, and completion date and time.

## Financial Implications Summary

The following table presents a summary of annual cost savings resulting from recommendations within this section. For the purpose of this table, only recommendations with quantifiable impacts are listed.

### Summary of Financial Implications for LWD

Recommendation	Annual Cost Savings
<b>R4.1</b> Reduce 8 FTE Line Mechanic/Troubleshooter/ Laborers/Equipment Operator positions	\$314,500
<b>R4.2</b> Reduce 3 FTE Operator positions	\$120,600
<b>Total</b>	<b>\$435,100</b>

As noted in the financial implications, LWD should redeploy these savings to capital improvements to improve the overall condition of the City’s water distribution system.

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# Water Pollution Control

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## Background

The Lorain Water Pollution Control Department (WPC) is responsible for collecting and treating domestic and industrial wastewaters in accordance with Ohio Environmental Protection Agency (EPA) requirements. WPC maintains two treatment facilities: the Black River Plant (BRP) and the Phillip Q. Maioriana Plant (PQMP). BRP is located at the mouth of the Black River, and the PQMP is on the western edge of the City. WPC's post-treatment process includes discharging treated wastewater into the Black River and Lake Erie. Currently, WPC transports wastewater sludge to farming communities for fertilizer, and excess sludge is sent to landfills. There are currently 34.3 full-time equivalent (FTE) employees working in the Treatment Division at WPC.

Lorain Wastewater Collections (LWC) Division maintains the sewer distribution system, which includes storm and sanitary mains; storm inlets and catch basins; and manholes to prevent basement flooding and un-permitted sewage discharges. Some of the maintenance functions performed by LWC include cleaning sanitary and storm sewers with jet or vactor machines, televising sewers to determine problems, cleaning catch basins, installing rain guards around manholes, manhole casting, dye testing, and inspecting for cross-connections. There are currently 19.3 FTEs working within LWC.

WPC and LWC interact closely with the City Engineering Department to develop specifications for major sewer rehabilitation projects, inspect sewer mains, and maintain sewer infrastructure records accurately and efficiently. WPC and LWC also interact closely with the Utility Billing Department, which is responsible for billing and collecting wastewater revenues. Individual wastewater billing is based on potable water usage. WPC's funding sources include user fees for sanitary sewer services, industrial surcharges, and State and federal grants.

Performance comparisons are made between WPC and LWC wastewater treatment and wastewater collections departments in Euclid, Hamilton, and Springfield based on their size and similarity of services provided.

### *Assessments Not Yielding Recommendations*

The following list shows additional assessments conducted during the course of this audit that did not yield recommendations:

- **Organizational Structure:** WPC’s organizational structure is appropriate based on comparisons to the peers and recommended practices. WPC maintains a ratio of supervisor to non-supervisory staff that is similar to the peers.
- **Certification of Staff:** WPC maintains the certification levels required by the EPA and Ohio Administrative Code (OAC) § 3745-7-02 (G) to effectively maintain wastewater treatment operations. The superintendent of water pollution control holds a Class IV wastewater system operator certification, and another superintendent of water pollution control is seeking a Class IV certification. WPC’s operations staff also maintain Class I certifications in wastewater systems. Furthermore, EPA certifications of lab technicians and millwrights allow them to be used as back-up operators, if needed.
- **EPA Compliance:** WPC currently operates within the contaminant limits established by the EPA. Areas of operations that were not in compliance were addressed in the EPA’s findings and orders that were issued in 2000. The City has complied with most of the findings and orders, and is working with EPA representatives to determine if compliance has been achieved with the outstanding orders.
- **Salaries:** Overall, WPC salaries are comparable to peers and data from the Bureau of Labor Statistics for the Lorain area.
- **Operational Efficiency:** The percentage of Total Suspended Solids (TSS) and reduction of Biological Oxygen Demand (BOD) in Lorain is lower than the peer average. However, WPC treats 9 percent more wastewater when compared to the peer average at a cost which is 38 percent lower than the peer average without jeopardizing the EPA’s minimum BOD and TSS removal requirements. WPC also meets the *Municipal Benchmark Standards Manual – 2<sup>nd</sup> Edition (Sage Publications, 2001)* amount for percentage removal of BOD and TSS.

Furthermore, the number of hours workers spend collecting industrial samples for Lorain WPC is 45 minutes, which is lower than the peer average of over an hour. According to *Municipal Benchmark Standards*, it should take two worker hours per industrial user sample. Lorain’s time investment in collecting these samples is less than the peer average and benchmark standards.

- **Technology:** The Utilities Department is currently working with Lorain County Community College on a project to establish a mapping system with digitally enhanced infrastructure assets to be utilized with a geographic information system (GIS). This particular GIS comes with a database management program that would allow WPC to maintain information in a mapping or text format to generate reports. The subject areas of reports could include all maintenance performed on sewer lines, lines replaced, and all complaints to identify problem areas. Some counties and cities that use this form of GIS,

include Cuyahoga and Trumbull Counties, and the cities of Cleveland Heights, Shaker Heights, Solon, and Twinsburg.

The following areas were also examined within the Water Pollution Control section and this information has been incorporated into the **cross-departmental issues** section of the report:

- Enterprise Fund Forecasting,
- Strategic Planning,
- Chargeback Policies,
- Capital Improvement Budgeting,
- Sewer Rates,
- Sick Leave Usage, and
- Overtime.

## Findings, Recommendations and Commendations

### Organizational Structure

F5.1 The current state of technology at WPC has been the determining factor in establishing WPC's wastewater treatment staffing levels. While WPC maintains a Supervisory Control and Data Acquisition (SCADA) system at the PQMP, it uses a manual operation at the BRP. Although BRP does not currently have an automated system, Lorain's use of SCADA has enabled the PQMP to electronically control the treatment process from one centralized location, thereby limiting the number of operators required for plant operation. WPC's long-term plan includes demolishing BRP at the mouth of the Black River and building a new plant further inland that would include a SCADA system.

Table 5-1 illustrates treatment staffing levels at WPC and the peers.

**Table 5-1: Wastewater Treatment Staffing Peer Comparison<sup>1</sup>**

Classifications	Lorain	Euclid	Hamilton	Springfield	Peer Average
Director /Assistant Director/Engineer	0.3	0.2	0.0	0.1	0.2
Superintendent	1.0	1.0	1.0	1.5 <sup>2</sup>	1.2
Assistant Superintendent	1.0	1.0	1.0	1.0	1.0
Supervisors/Managers	1.0	2.0	1.0	N/A	1.5 <sup>5</sup>
<b>Total Administration FTEs</b>	<b>3.3</b>	<b>4.2</b>	<b>3.0</b>	<b>2.6</b>	<b>3.3</b>
Operators	16.0	24.0 <sup>3</sup>	14.0 <sup>3</sup>	8.0	15.3
Lab Technician/Chemist	4.0	4.0	4.0	4.0	4.0
Millwright/Welder/Mechanic	6.0	7.0	N/A	5.0	6.0 <sup>5</sup>
Plumber	N/A	2.0	N/A	N/A	2.0 <sup>5</sup>
Electrician/Instrument Technician	N/A	2.0	2.3 <sup>4</sup>	2.0	2.1
Utility/Maintenance	3.0	1.0	6.0	N/A	3.5 <sup>5</sup>
Secretary/Accounts Receivable	1.0	1.0	1.0	1.0	1.0
Custodian	1.0	N/A	N/A	0.5	0.5 <sup>5</sup>
<b>Total Operation FTEs</b>	<b>31.0</b>	<b>41.0</b>	<b>27.3</b>	<b>20.5</b>	<b>29.6</b>
<b>Total</b>	<b>34.3</b>	<b>45.2</b>	<b>30.3</b>	<b>23.1</b>	<b>32.9</b>
Million Gallons (MG) Treated per Day	15.1	17.0	20.0	15.5	17.5
Number of Treatment Facilities	2	2	1	2	N/A

Source: Lorain organizational chart

<sup>1</sup> As of 12/01/03

<sup>2</sup> This includes operations engineer at 0.5 FTE superintendent of wastewater treatment at 1.00 FTE.

<sup>3</sup> This includes operators working in the biosolids function and wastewater treatment function for two facilities.

<sup>4</sup> The chief electrician is 100 percent focused on wastewater operations. Four electricians are shared equally amongst the water, sewer and electrical divisions.

<sup>5</sup> The peer average only includes those cities which employ individuals in these positions.

As illustrated in **Table 5-1**, Lorain WPC’s wastewater treatment staffing is lower in comparison to Euclid, mostly because of its SCADA system at PQMP. However, Lorain WPC has 4.1 percent more FTEs than the peer average. This is because both of Springfield’s treatment facilities are fully automated, whereas WPC only operates one automated wastewater facility. **Table 5-1** also shows that Lorain WPC relies on millwrights to perform minor maintenance and electrical work while the peers employ maintenance and electrical personnel. However, Lorain’s millwrights are cross-trained and cross-certified to substitute as operators if needed.

Lorain WPC’s automated PQMP functions with six operators (one per shift), similar to Hamilton which also maintains six operators at its automated plant. However, the manually-operated BRP functions with 10 operators, 2 operators less than Euclid, which manually maintains each of its treatment facilities using 12 operators. Therefore, as a manual operation, BRP staffing appears to be appropriate to cover all shifts. Overall, the number of operators (16 FTEs) seems appropriate for performing WPC’s current treatment functions in both facilities. However, BRP could further reduce the number of operators if it became an automated treatment facility using SCADA.

The SCADA system’s network provides for remote operation of a treatment plant via a computer from a centralized location, reducing the need for operators to be at each station to monitor equipment readings (see **F4.2**). Many wastewater and water treatment facilities rely on technological applications to reduce the need for staff to monitor system performance, manage assets, and collect and share information, thereby performing functions more efficiently and effectively. Springfield and Hamilton also operate a SCADA system for both of their treatment facilities, while the Euclid still maintains a manual operation. By utilizing SCADA at BRP, WPC could more effectively control plant operations.

**R5.1** As the City of Lorain may be unable to build a new BRP, it should still incorporate SCADA into BRP’s long-term capital improvement plan for the existing plant. By doing so, WPC would be able to reduce the number of operators at BRP by at least 4.0 FTEs, realizing a cost savings of approximately \$220,000 annually in wastewater treatment salaries and benefits. Any altering of WPC’s staffing plan must be submitted to the Ohio EPA for approval.

F5.2 LWC does not analyze daily workload statistics to determine effective wastewater collections staffing levels, capital improvement planning, or efficient levels of service. LWC maintains a large database with sewer maintenance functions performed for the year, including:

- Customer calls;
- Number of sewers cleaned with jet or vactor;

- Number of sewers televised per year;
- Number of catch basins cleaned;
- Number of rain guards installed;
- Number of manhole castings replaced;
- Number of manholes checked or cleaned;
- Number of dye tests performed; and
- Number of broken sewer lines repaired.

LWC's information is currently used as a reporting mechanism for the Utility Department's annual report and to keep track of work performed. The information is not used to monitor performance of the department, identify capital needs, or determine staffing levels. **Table 5-2** compares LWC's wastewater collections staffing levels to the peers, and their levels of responsibility.

**Table 5-2: Wastewater Collection Division Staffing Comparison**

Classifications	Lorain	Euclid <sup>1</sup>	Springfield	Peer Average
Director / Assistant Director	0.3 <sup>2</sup>	1.0 <sup>3</sup>	0.3 <sup>4</sup>	0.7
Supervisors/Managers	1.0	2.0	1.5	1.8
<b>Total Administration FTEs</b>	<b>1.3</b>	<b>3.0</b>	<b>1.8</b>	<b>2.4</b>
Foreman/Lead person	2.0	5.0	6.0	5.5
Maintenance / Operators	6.0	13.0	2.0	7.5
Utility (laborer)	10.0 <sup>5</sup>	2.0	9.0	5.5
<b>Total Operation FTEs</b>	<b>18.0</b>	<b>20.0</b>	<b>17.0</b>	<b>18.5</b>
<b>Total</b>	<b>19.3</b>	<b>23.0</b>	<b>18.8</b>	<b>21.0</b>
Miles of Sewer (Storm)	280 <sup>6</sup>	150	84	117
Miles of Sewer (Sanitary)	295	150	208	179
<b>Miles of Sewer (sanitary, storm) per FTE</b>	<b>30.3</b>	<b>13.0</b>	<b>15.5</b>	<b>14.3</b>

**Source:** Lorain organizational chart

**Note:** Staffing is as of December 1, 2003

**Note:** Hamilton's staffing for wastewater collections is not included in **Table 5-2** due to the privatization of specific functions such as: catch basin repairs and cleaning, sewer videotaping, and sanitary and storm cleaning.

<sup>1</sup> Sewer maintenance department is a part of the street department

<sup>2</sup> Utility Director is split evenly amongst three divisions.

<sup>3</sup> Two assistant Directors are split evenly between the street and the sewer departments.

<sup>4</sup> The service director is split evenly amongst nine divisions; and the operations superintendent is split evenly amongst five divisions.

<sup>5</sup> Includes "labor pool" 3 FTEs

<sup>6</sup> Includes 40 miles of ditches.

As shown in **Table 5-2**, LWC wastewater collections staffing levels are approximately 8 percent lower than the peer average, and employees are responsible for approximately 50 percent more sewer line miles than the peers. However, LWC does not analyze this

information to determine if it maintains effective staffing levels based on actual workloads. **Table 5-3** presents LWC and peer workload information.

**Table 5-3: Wastewater Collection Performance for FY 2002**

	Lorain	Euclid	Springfield	Peer Average
Miles of Sewer Line Maintained	575	300	292	296
Total Number of FTEs	19.3	23.0	18.8	20.9
Miles of Sewer Line Maintained per FTE	<b>30.3</b>	<b>13.0</b>	<b>15.5</b>	<b>14.3</b>
Number of Customers <sup>1</sup>	23,842	18,590	23,063	20,827
Average Customers per FTE	<b>1,235</b>	<b>808</b>	<b>1,227</b>	<b>997</b>
Number of Sewer Requests	639	2,235	6,885	4,560
Average Requests per FTE	<b>33</b>	<b>97</b>	<b>366</b>	<b>232</b>
Sewer Feet Cleaned	692,960	228,000	440,242	334,121
Sewer Feet Cleaned per FTE	<b>35,905</b>	<b>9,913</b>	<b>23,417</b>	<b>15,987</b>

Source: Lorain WPC and peer cities

<sup>1</sup> Based on wastewater treatment residential and commercial accounts.

As shown in **Table 5-3**, LWC has seven times fewer sewer requests from customer calls per FTE than the peer average. However, LWC is responsible for 48 percent more sewer line miles per FTE than the peer average. This indicates that LWC is performing more preventive maintenance functions and focusing less on emergency repair calls from customers.

A performance analysis, using cities in other states from the *Municipal Benchmark Standards Manual*, provides the following best practice workload measures:

- Greenville, SC – Miles of sewer line cleaned per FTE per month averages (1991) is 3.7, while LWC maintains 2,987 ft or 0.6 miles per FTE per month.
- Dunedin, FL - Feet of sewer line cleaned per labor hour (1992) is 68.9. However, this takes into account all operators and maintenance personnel. Assuming all operators and maintenance personnel are involved with maintenance functions, LWC cleans 19.7 feet of sewer line per labor hour per FTE.
- Upper Arlington, OH - Target for inspecting and cleaning all sanitary sewer lines is every four years. According to the LWC superintendent, the goal is to clean all sewer lines in a two year period. However, LWC does not evaluate its data to determine if goals and objectives are being met.

Hamilton evaluates its workload statistics on an annual basis to determine the cost benefits of privatizing its sewer maintenance services and for development of the department's long-term capital goals. This enables Hamilton to make the most

economical and efficient decisions about the level of service provided to its customers and to determine the most effective staffing levels.

LWC has adequate staffing levels and a higher level of responsibility, as shown in **Table 5-2**. However, the use of performance measures could improve efficiency and service levels. The best practice cities, along with Hamilton, continually evaluate performance indicators to determine efficiency levels and more cost effective ways of providing a higher level of service. WPC has also evaluated its performance indicators for sludge removal and developed a more feasible and cost effective way to process this material (see **F5.3**). Addressing current and potential performance measures provides a better gauge of departmental performance.

- R5.2** LWC should evaluate the information collected on employee performance and costs of providing services for comparison purposes and use the information to determine if service levels are meeting standard operating ratios. LWC's evaluation process should include benchmarking or comparing to similar operations. Evaluating departmental needs using performance indicators and comparing them to peers will ensure that LWC continues to operate efficiently with appropriate staffing.

### *Operational Effectiveness*

- F5.3** WPC has developed cost saving ideas to process and remove sludge after evaluating performance measures in both treatment plants. In 2003, WPC paid \$401,000 to dispose of 11,000 tons sludge from the BRP. This includes the cost to press the sludge to remove the liquid, landfill fees, and transportation costs. Initially, WPC did not have a sludge press of its own due to cost, and instead, relied on the use of a rented sludge press to dewater the sludge that is then transported to farmlands as fertilizer. An outside company charged WPC to operate its sludge press and to dispose of the pressed cake. In 2003, WPC decided to purchase its own press for \$250,000. The new sludge press ensures that sludge is disposed of more efficiently, reducing the cost to WPC when compared to a private company's less dependable process. By dewatering the sludge, WPC is able to remove and dispose of the sludge cake instead of the heavier liquid form, thereby reducing trucking costs. According to the cost benefit analysis performed by WPC, the City could start to see a cost savings in 2005.

- C5.1** WPC's research of cost savings in the area of sludge processing and removal, with the purchase of a sludge press, will lead to an overall cost savings for the City. WPC is anticipating an initial cost savings of \$30,000 in 2004, and an annual cost savings starting in 2005 of \$125,000.

## Financial Implications Summary

The following table presents a summary of annual cost savings resulting from recommendations within this section. For the purpose of this table, only recommendations with quantifiable impacts are listed.

### Summary of Financial Implications for WPC

<b>Recommendation</b>	<b>Annual Cost Savings</b>
<b>R5.1</b> Reduce the number of operators at BRP by at least 4.0 FTEs	\$220,000
<b>Total</b>	<b>\$220,000</b>

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# Water Engineering

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## Background

This section focuses on the City of Lorain’s Water Engineering Division (LWED). LWED is organized under the Water Distribution and Purification Department. The Division currently has four full-time equivalent (FTE) employees including an engineering designer, who oversees the Division’s two draftsmen and an engineering aide. As of January 2, 2004, one draftsman position is vacant. The Division’s duties include the following:

- Revising the water line atlas;
- Designing, drafting, and inspecting water line projects;
- Updating hydrant and valve records;
- Providing and reviewing water service applications; and
- Working on backflow prevention programs.

In addition to supervising LWED employees, the engineering designer performs surveys, drafts water plans, and completes other engineering assignments. The draftsmen prepare maps, plans, and other illustrative materials used to complete general engineering work. The engineering aide provides assistance to both the engineering designer and draftsmen by completing basic drafting, computing, and data collection.

LWED maintains the water atlas, which provides City-wide locations and measurements of water mains, water valves, and fire hydrants. LWED maintains several copies of the full water atlas and supplies copies of a reduced water atlas booklet to six different departments. LWED works with the Water Distribution Division to ensure water atlas updates are accurate and reflective of the City’s water distribution system.

### *Assessments Not Yielding Recommendations*

Assessments were conducted in the following areas which did not warrant any changes or yield any recommendations:

- **Charge-back usage:** LWED currently performs work only benefiting the Water Fund, and does not use charge-backs.
- **Certification of staff and training:** All LWED employees hold the required specialized certification to complete job functions. Having certified employees allows LWED to complete all divisional job functions internally, thereby increasing productivity.

- **Salaries:** Varying job duties and divisional functions accounted for discrepancies, thus, this analysis did not yield a recommendation.

## Findings and Recommendations

### *Organizational Structure and Staffing*

F5.1 LWED currently performs various functions pertaining to the City's water system, including maintaining the water line atlas; designing, drafting, and inspecting water line projects; updating and revising the hydrant and valve records; and providing information to assistance to the water consuming public. The City's Engineering Department conducts similar functions, but it concentrates on the sewer system, streets and other City infrastructure. The City is considering combining the two departments to streamline operations, but has not developed an integration plan for merging LWED with the Engineering Department. The City needs to address issues regarding Geographic Information Systems (GIS) implementation, space, personnel and communication before completing the merger.

Prior to January 2, 2004, LWED employed 4 FTEs: an engineering designer, two draftsmen, and an engineering aide. A draftsman retired January 2, 2004 and the City does not plan to fill the position. Additionally, the LWED engineering designer tentatively plans to retire in 2004. The City plans to assign his duties to the City Engineer in the City Engineer's Department.

Peers' water and sewer engineering functions are encompassed as a single unit within a Public Works Department. Hamilton's engineering functions include both updating water atlas maps, and water and sewer engineering duties. Springfield also completes engineering planning and design for both water and sewer functions within the same department. The benefits of combining departments include streamlining staffing for water and sewer projects, reduced departmental operating costs, and the ability to share GIS software. By having separate departments that complete similar functions, Lorain may experience duplication of duties, excess staffing, increased costs, and a lack of City-wide coordination.

**R5.1** LWED should combine with the City Engineering Department. The City should develop a written plan to combine the departments that outlines duties and responsibilities, reporting structures, and benefits. The plan should address the following issues:

- Technology – complete and implement GIS.
- Facilities – address space issues and purchase a scanner to reduce the amount of paper.
- Personnel – restructure and obtain qualified GIS/Computer Aided Design (CAD) employees.

- Communication – improve communication between the two departments to ensure successful integration.

Initial planning stages should include both LWED and City engineers, Water Distribution management, the utilities director, and other appropriate City officials. Special attention should be paid to funding sources and contractual agreements.

LWED should not replace the vacant draftsman position until making a decision on combining with the City Engineering Department and installing GIS software (see **R5.2**). If the Utilities Department or Engineering Department decides to hire a draftsman, the employee should have GIS and CAD skills. Further, when the engineering designer retires, the City should not hire a replacement until finalizing a decision on combining departments and assessing technical needs.

*Financial Implication:* By not replacing the vacant draftsman position, LWED will save approximately \$45,500 in salary and benefits. If the City decided not to replace the engineering designer position, it would save an additional \$63,700 in salary and benefits. Further indirect savings, such as shared utilities and technology costs, could be realized upon combining departments.

### *Technology Utilization*

F5.2 Lorain owns and is currently installing a GIS system using Arcview software throughout many City departments, including LWED and the City Engineering Department. This software contains a database management system and mapping functions. GIS also can be used to create digital maps for water lines. These maps can be manipulated or analyzed for specific information such as the number of water taps and lines in a particular area. Lorain formed a project team to develop installation plans and to examine the full use of GIS software. The project team has been spearheading the installation of GIS hardware since 2002 with the assistance of Lorain County Community College's Public Service Institute for a one-time cost of approximately \$25,000. Upon installation of the hardware, the project team will purchase a software package that includes annual training, costing approximately \$30,000.

In LWED, water engineers maintain multiple copies of the water line atlas. The water line atlas provides an outline of water line equipment and outputs in the City, and requires frequent changes. Changes and updates to the atlas are made by hand. The City's GIS software capabilities will allow the Division to electronically update the water line atlas. Using GIS software could save the Division significant time in updating the water line atlas by storing the document electronically and allowing instantaneous electronic updates.

Springfield uses a GIS system as a complete working model of water systems. GIS software allows the department to electronically update water and sewer line data. Once installed, specific Springfield staff received Arcview training. Those employees currently serve as GIS coordinators and provide training to other Springfield staff as necessary.

**R5.2** Lorain’s GIS project team should develop software policies which govern training, usage, benefits, upgrades, and funding. This policy should act as a guide for software use. Upon installation of GIS software, Lorain should assign costs to the various divisions and departments that use the program. Likewise, once GIS is programmed with the Lorain waterlines, LWED should cease updates of the manual water atlas.

## Financial Implications Summary

The following chart presents a summary of the annual cost savings discussed in this section. For purposes of this table, only recommendations with quantifiable financial impacts are included.

### Summary of Financial Implications for LWED

Recommendations	Cost Savings
<b>R5.1</b> Elimination of the engineer designer and draftsman positions.	\$109,200
<b>Total</b>	\$109,200



# The City of Lorain, Ohio

Craig Foltin, Mayor

200 West Erie Avenue, 7<sup>th</sup> Floor City Hall  
Lorain, OH 44052 (440) 204-2002 Fax (440) 246-2276

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May 21, 2004

James W. Penning, Chief Auditor  
Performance Audit Section  
Auditor of State of Ohio  
Lausche Building  
615 Superior Avenue, NW, 12th Floor  
Cleveland, Ohio 44113-1801

Dear Jim:

I have fully reviewed the Utilities and Building Performance Audit. I believe it is an excellent road map to help further improve the operations of these departments. We have already begun implementing many of the recommendations.

We plan to detail each recommendation and have a lead person responsible for each area with follow-up directly from this office. If a recommendation cannot be implemented, we will require strong justification as to why not. I see the performance audit as a valuable tool for better efficiency and effectiveness in the City with positive benefits to our citizens.

The entire staff was great, particularly Jennifer [redacted], whom I worked closest to. [redacted] [redacted] also ran a tight ship and was very helpful.

Thank you for helping make our City a better place.

Sincerely,

A handwritten signature in cursive script that reads 'Craig Foltin'.

Craig Foltin, Mayor  
City of Lorain, Ohio

CF:kd