

Department of Utilities FY 2010 Water and Sewer Rate Study and Status Report



Council Work Session
February 24, 2009





Department of Utilities
FY 2010 Water and Sewer Rate Study
and Status Report

Table of Contents

	Page
Section I – Executive Summary	3
Section II – Rate Increases	5
Section III – Rate Comparisons	9
Section IV – Capital Projects	12
Section V – Emerging Issues	15
Water Fund Financial Information	Appendix I
Sewer Fund Financial Information	Appendix II

Mission Statement:

“Provide excellent water and wastewater services that promote the health, safety, and prosperity of the community.”

To: The Honorable City Council
From: Timothy A. Mitchell, P.E., Director of Utilities
Re: FY 2010 Water and Sewer Rate Study and Status Report
Date: February 24, 2009

I. EXECUTIVE SUMMARY

The Utilities Department prepares the annual Financial Projections and Rate Study in order to determine the adequacy of the water and sewer rates to fund the operating and capital expenses of the Water and Sewer funds. As always, the following are the key objectives used in developing the recommended rates and fees:

- Equitable sharing of water and sewer costs based on actual services provided.
- Ensure rates promote sustainable water and sewer operations and infrastructure.
- Minimize future rate spikes.
- Meet the financial obligations related to the CSO Special Order.
- Meet Council's financial policies.

The proposed Water volume rate is recommended to be increased by 4% and Sewer volume rate is recommended to be increased by 3% this coming fiscal year. The water rate increase is primarily driven by significant increases in chemical and power costs, and the need for continuous investment in the water infrastructure. The sewer rate increase is needed in order to continue to meet the financial criteria of the CSO Special Order.

This year's rate study process was extremely challenging. While we are not facing many of the challenges of the General Fund, our goal, in these tough economic times, was to keep the water and sewer rates as low as possible while at the same time keeping the long term sustainability of the water and wastewater systems in mind. As mentioned above, the increases in the chemical and power costs have posed a significant challenge. In previous rate studies we assumed that operating costs would increase at an average rate of 3% due to inflation. Chemical prices in some cases have increased by as much as 75% and it is anticipated that power costs may increase as much as 40%, and as we saw this past year the weather conditions and the amount of time we use the James River can also have a significant impact. Further, it is assumed that there will be no increase in consumption for either the water or sewer fund.

As we developed the FY 2010 budget for the Water and Sewer funds we explored ways to reduce our overall operating expenses. Policy changes that have been implemented in the General Fund are also being implemented in the Water and Sewer funds including reductions in: travel and training, meals, uniforms, overtime, dues and memberships, etc. We have also reduced areas such as legal, engineering, and contractual services. In some areas, operational changes have been made in an effort to help reduce costs.

The combination of these actions has resulted in us being able to maintain a Water rate increase of 4% as was previously anticipated for this coming fiscal year despite the significant increases in chemicals and power. It is anticipated that in future years an annual rate increase of 5% will be needed. As a result of the current economic conditions, we looked at what would be needed to minimize the water rate increase for FY 2010. Essentially the only option is to significantly reduce the Water capital program. In order to keep the water rate the same, (0% increase), the Water Capital Program would have to be reduced by \$5.8 million. A rate increase of 2% would result in the Capital Program being reduced by \$2.8 million. Under each of these scenarios, subsequent rate increases of 5% annually are still needed. The average difference in a monthly water bill, when comparing the recommended 4% increase to the 0% and 2% scenario, would be \$0.56 and \$0.28 per month respectively.

A lesser rate would do little to help address by far the biggest challenge in the Water Fund, the aging infrastructure, specifically the water lines. The number of water main breaks annually is steadily increasing with the impact of these breaks becoming more severe. This past year a main break on Christmas Eve on Main Street flooded five businesses and resulted in significant damage. A few months ago, a water main break on Lakeside Drive put the UVA Health Systems out of water, as a result, dialysis for patients with Stage 5 Chronic Kidney Disease had to be stopped potentially creating a life or death situation. Other main breaks, in addition to being costly to repair, result in the following: disruption to residents and businesses, damage public and private property, potential water contamination, and compromised fire protection. By the end of January there were already nearly 90 water main breaks.

In the Sewer Fund, as previously stated, the rates are driven by the CSO Special Order criteria. Based on a methodology utilizing the median household income and approved by the Department of Environmental Quality, a rate increase of 3% is required to maintain compliance. Similar actions have been taken in the Sewer Fund as in the Water Fund to reduce costs. The rate increases will primarily fund chemical and power increases, and as usual all additional resources are used for CSO.

As a comparison, rate increases were compared to other communities using the "20th Annual Virginia Water and Wastewater Report 2008" prepared by Draper Aden Associates, the Statewide average water rate increased by 4.2% and the average sewer rate increased by 9.5%. The only other proposed increase for FY 2010 is the sewer only fee.

II. RATE INCREASES

The rate adjustments proposed in this report will result in a typical composite monthly water and sewer bill increase of approximately 3%. "Table II-1 Monthly Bill Impact" provides a comparison of typical monthly water and sewer bills for a cross section of the customer base. It should be noted that over 50% of the residential customers use less than 7 hcf per month and there are approximately 850 customers that use over 30 hcf per month.

Table II-1 Monthly Bill Impact

Customer Type	Monthly Volume	Current Bill	Proposed Bill	% Increase
Residential	7 hcf	\$55.70	\$57.38	3.0%
Commercial	30 hcf	\$226.59	\$233.79	3.2%
Industrial	1000 hcf	\$7,433.69	\$7,673.69	3.2%

A. Water Volume Rate

The water volume rate is recommended to increase by 4%. Significant investment is needed in the water system infrastructure, particularly related to the renewal of the water distribution system. Over the next several years the annual investment in the distribution system is planned to increase up to \$4,500,000 annually by FY 2013. This is still far short of actual investment (approximately \$7,500,000 annually) needed in the water system. Based on current projections rate increases of approximately 5% per year will be needed beginning in FY 2011. A typical water bill will increase by \$0.56 per month as a result of the 4% increase.

B. Sewer Volume Rate

The sewer volume rate is recommended to increase by 3%. The City's CSO Special Order dictates that we maintain the average annual sewer bill at 1.25% of the Median Household Income (MHI). As of July 1, 2008, the average annual sewer bill was 1.24% of the MHI, slightly below that required by the Special Order. Based on estimates of MHI provided by the US Census Bureau, a rate increase of 3% on July 1, 2009 is needed in order to maintain compliance with the CSO Special Order. As a result, a typical sewer bill will increase by \$1.12 per month as a result of the 3% increase.

C. Sewer BOD, TSS, Septic Hauler Charges, and Industrial Permit Fees

No increases in these rates are recommended at this time.

D. Sewer Only Rates

Additional proposed increases include a 2.7% increase in the sewer only accounts. Because there is not a way to meter the sewer flow if a customer has no water service, an average of 7 hcf is used at the new proposed sewer rate plus the account charge to establish the new sewer only rate. This impacts approximately 20 customers city-wide.

E. Fire Protection

While we are not requesting that the fire protection charges be increased at this time, based on accepted methodology for calculating these rates, we have determined that the current charges are inadequate to cover the cost of providing fire protection citywide.

Fire protection fees differ from other fees in that they are essentially a standby service that is available on demand. Although rarely used, we must maintain adequate water quantities and pressure throughout the system at all times. Rates are based on the operation, maintenance, and capital costs associated with maintaining facilities that are oversized for the purpose of fire protection services including: supply, treatment, pumping, storage, and distribution capacity. Fees are then established proportionately based on the number and size of the fire services, including fire hydrants in the City. As a result, we are currently not recovering the actual costs associated with fire protection. Current fire protection rates and actual costs are shown below:

<u>Service</u>	<u>Current Rate</u>	<u>Actual Cost</u>
Hydrants	\$17.99/month	Currently Adequate
8" or smaller fire lines	\$17.99/month	\$30.00/month (1)
10" fire line	\$32.30/month	\$47.50/month
12" fire line	\$51.25/month	\$62.70/month
General Fund Charge	\$337,904/year	\$604,464/year (2)

(1) \$30.00 per month is needed for 8" fire lines; the current rate of \$17.99 per month is adequate for smaller lines.

(2) Based on 2800 fire hydrants x \$17.99/month x 12 months.

F. Water and Sewer Availability Fees

While we are not recommending increases at this time, these fees are designed to allow new customers to “buy capacity” in the existing water and sewer systems. Typically, the larger the demand on the system, the higher the fee is. Most utilities design this fee based on meter size, proportionally increasing the fee as the meter size increases. Generally, the larger the water meter, the higher volume used, therefore placing a higher demand on the system. However, our current structure bases these charges on floor space for commercial development which has little relation to water consumption. A future revision to this policy is recommended.

G. Water and Sewer Connection Fees

Connection fees as designed to cover the Utility Department’s cost to install water and sewer services from the water or sewer main to the property or easement line. A review of work orders indicates that we are still not recovering the average cost to install services. While the actual individual costs vary depending upon actual conditions, the average cost to install a ¾” water service is approximately \$1500 while the average cost to install a 4” sewer service is approximately \$1400. However, we are not recommending an increase in these rates at this time.

H. Other Charges – Account Charge

The account charge is designed to recover the net costs associated with Meter Reading and Billings and Collections. The current charge of \$3.69 has been in place for over 10 years and has not been adjusted to adequately cover costs. Based on the current Meter Reading budget and charges for Billings and Collections based on the Maximus study and the number of meters citywide, the actual rate should be \$5.33 per month. However, as with the fire protection charges, we are not requesting an increase at this time.

"Table II-2 Water and Sewer Rates – FY 2006 to FY 2010", provides a comparison of the current water and sewer rates and the rates proposed for City Council approval, effective July 1, 2009. A summary of all water and sewer rates in effect over the past four years is also included in this table.

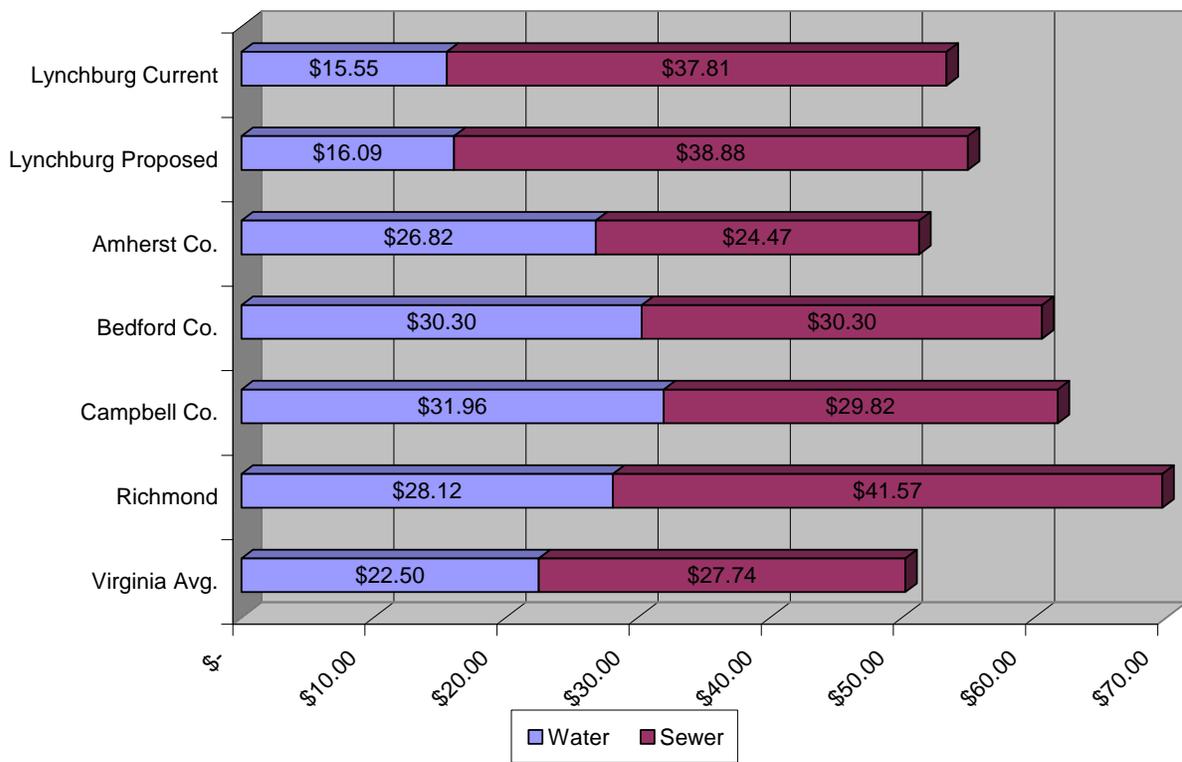
Table II-2 Water and Sewer Rates – FY 2006 to FY 2010

	FY 2006	FY 2007	FY 2008	FY 2009	Proposed FY 2010	% Increase
Water						
Volume charge / hcf	\$1.82	\$1.89	\$1.97	\$2.05	\$2.13	4%
Sewer						
Volume charge / hcf	4.78	4.97	5.17	5.38	5.54	3%
BOD charge / 100 lbs	16.78	16.78	18.46	18.46	18.46	0%
TSS charge / 100 lbs.	18.98	18.98	20.88	20.88	20.88	0%
Septic hauler charge	177.00	177.00	177.00	177.00	177.00	0%
Industrial permit fee	200.00	200.00	200.00	200.00	200.00	0%
Sewer only	37.15	38.48	39.88	41.35	42.47	2.7%
Fire Protection						
Hydrants & 8" or smaller fire lines	17.99	17.99	17.99	17.99	17.99	0%
10" fire lines	32.30	32.30	32.30	32.30	32.30	0%
12" fire lines	51.25	51.25	51.25	51.25	51.25	0%
Availability Fees						
Water	1,220.00	1,220.00	1,220.00	1,220.00	1,220.00	0%
Sewer	1,950.00	1,950.00	1,950.00	1,950.00	1,950.00	0%
Water Connection Fees						
¾" & 5/8" meters	605.00	775.00	850.00	950.00	950.00	0%
1" service – 5/8' meter	617.00	790.00	870.00	1,000.00	1,000.00	0%
1" service – 1" meter	750.00	935.00	1,030.00	1,150.00	1,150.00	0%
Greater than 1"-minimum	750.00	935.00	1,030.00	1,150.00	1,150.00	0%
Sewer Connection Fees						
4" sewer line	847.00	875.00	965.00	1,100.00	1,100.00	0%
Greater than 4"-minimum	908.00	950.00	1045.00	1,200.00	1,200.00	0%
Other Charges						
Account charge	3.69	3.69	3.69	3.69	3.69	0%
Cut-on charge	15.00	15.00	15.00	15.00	15.00	0%
Cut-off charge	25.00	25.00	25.00	25.00	25.00	0%
Delinquent account fee	5%	5%	5%	5%	5%	0%

III. RATE COMPARISONS

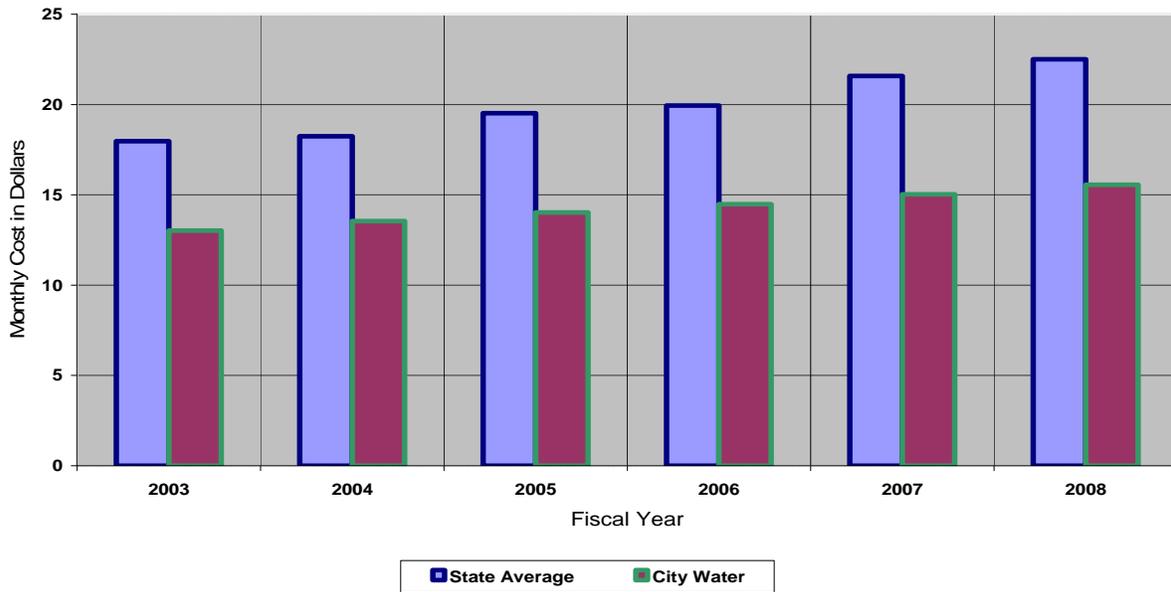
A comparison of the City's water and sewer bill for a customer using 5,000 gallons (6.68 hcf) of water per month to other communities is shown in "Figure III-1 Bill Comparisons". (Information from other localities and the statewide average is based upon the "20th Annual Virginia Water and Wastewater Report 2008", prepared by Draper Aden Associates.)

**Figure III-1 Bill Comparisons
(5000 Gallons per Month)**

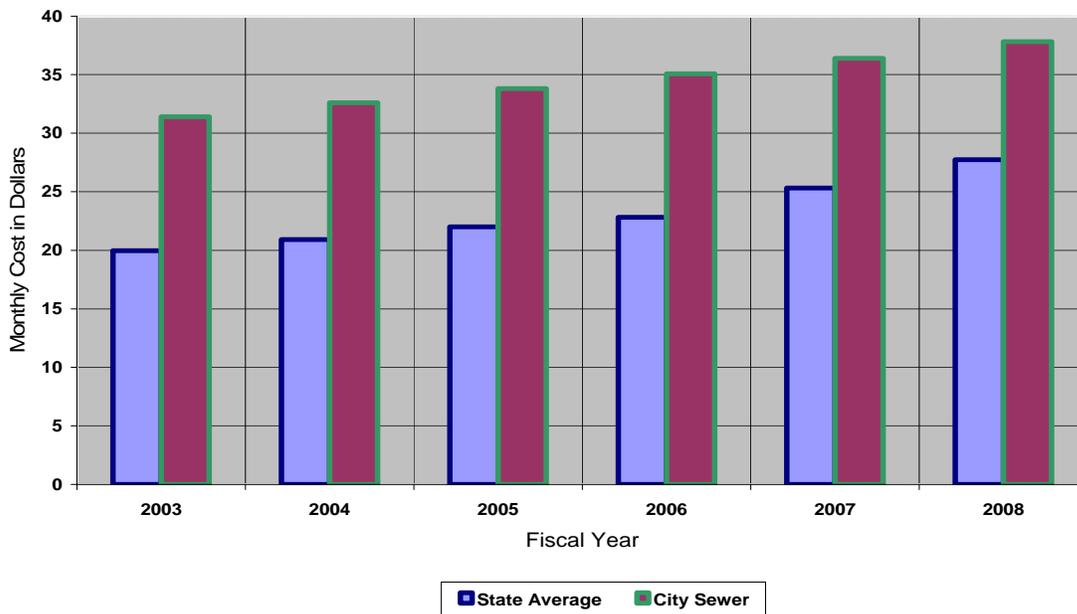


Overall rates increased at a similar pace when comparing Lynchburg to statewide average increases over the past five years, especially the combined water and sewer increases. Figures III-2, III-3, and III-4 compare Water Increases, Sewer Increases, and Combined Water and Sewer Increases respectively for the past six years.

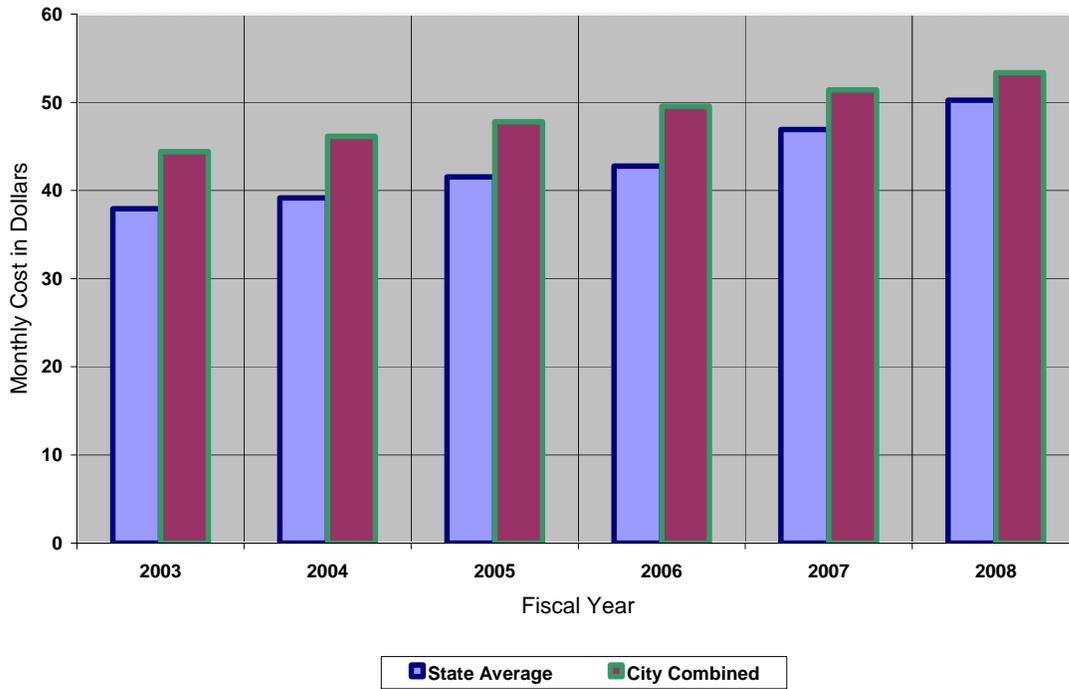
**Figure III-2 Water Increases
(5000 Gallons per Month)**



**Figure III-3 Sewer Increases
(5000 Gallons per Month)**



**Figure III-4 Combined Water and Sewer Increases
(5000 Gallons per Month)**



Last year Lynchburg's water and sewer rates increased by 4% while average statewide water rates increased by 4.2% and sewer rates increased by 9.5%.

IV. CAPITAL PROJECTS

Described below are several key projects that are either recently completed or upcoming.

Significant Water Projects

Water Tanks

In FY 09, the Utilities Department renovated the 4.5 million gallon (MG) finished water tank at the College Hill Water Treatment Plant. The renovation included stripping and refinishing all metals, internal and external to the tank, as well as making some minor structural modifications and repairs. For FY 2010, the next tank renovation project will be the 1.4 MG tank at College Hill which acts as a clearwell for the plant.



1.4 MG Clearwell

College Hill Facility Improvements

In FY 09, the department completed a master plan for the College Hill Water Treatment Plant site. A multi-phased approach was recommended in the study. Included in the study was the construction of a new warehouse along with the renovation of the old warehouse into new administrative offices for the department. Scheduled construction of these projects has been postponed for at least a year due to the current economic situation.



Conceptual Warehouse

College Hill Water Treatment Plant (CHWTP)

The 14.0 million gallon per day College Hill Water Treatment Plant was built in 1957. Many of the systems were worn out or obsolete. Renovations began in 2007 and construction will be completed in the spring of FY 2009. Significant improvements include:

- installation of a new backwash surge tank and pipe bridge
- installation of a new emergency generator
- installation of new power feeds and major electrical switchgear
- replacement of the building's antiquated electrical system
- renovation of the old chlorine container room to new offices
- refurbishment of the seven water filters including painting, filter media replacement, installation of air scour equipment, wash water pump, filter valves and actuators, rate of flow controllers, water quality instrumentation and upgraded filter consoles
- remodeling of the laboratory and control rooms with new SCADA (Supervisory Control and Data Acquisition) systems and instrumentation
- installation of a completely new, building wide, fire alarm system



College Hill Filters and Air Scour Piping

Small Water Main Replacement Program

The City's water distribution system contains an estimate of over 30 miles of 2" or smaller diameter water mains. These mains were typically galvanized lines installed in the 1950's. Neighborhoods where these "small mains" are located lack adequate fire flows and are subject to degraded service flows and frequent main breaks. These "small mains" are being replaced in conjunction with CSO Separation projects along with an annual program of replacement in non-CSO areas.

The Utilities Department identified 64 small mains project areas containing over 67,000 linear feet of pipe with a total cost of over \$10 million. These projects were prioritized based on a number of criteria including: (1) number of connections, (2) cost per connection, (3) fire protection concerns, (4) street condition, (5) maintenance and repair costs, and (6) overall costs. A matrix was developed and projects identified. At this time, in addition to lines replaced in conjunction with CSO projects, approximately \$500,000 is dedicated annually towards this program. At this rate, the program will take over 20 years to complete. The Daniels Hill – South project (Hancock, Spring, E, F, and G Streets) will be completed in FY 09, The Patrick Street/York Street, and Knight Street areas will be next on the priority schedule.

Downtown Water Main Replacement

Much of the existing water main infrastructure in downtown Lynchburg is approaching, and in some cases exceeding 100 years old. The age of the water mains is evident with the increasing number of water main breaks in the downtown region. These main breaks cause disruption to domestic water service, fire protection, and traffic flow. These main breaks also potentially cause significant public and private property damage. Currently, these lines are patched and placed back into service.

The Utilities Department is working on developing a plan to address the future of the water distribution system in downtown Lynchburg. Water line replacements face many challenges due to the multiple utilities located in the streets, the age of these utilities, and maintaining water service, fire protection and traffic flow during construction. The first of these projects will be the waterlines being replaced with the 5th Street Streetscape project from Park Avenue to Main Street. There are over \$25 million in immediate needs for water line replacement in the downtown area alone.

Significant Sewer Projects

Wastewater Treatment Plant Alternate Disinfection Process

The wastewater plant is also undergoing a significant upgrade by eliminating the chlorine gas disinfection process with a safer liquid sodium hypochlorite system. This will significantly reduce chances for a hazardous chemical spill in the Downtown area. Construction will be completed in early 2009.



WWTP Sodium Hypo Building

Wastewater Treatment Plant General

The Utilities Department is working on general repairs, replacement or renovation to major plant process equipment or structures at the wastewater treatment plant. Projects completed; under construction or under design in FY 09 are:

- renovations of two sludge holding and thickening tanks
- installation of a new flowmeter vault for Rock Tenn flows
- construction of a new maintenance building and shop

Combined Sewer Overflow (CSO)

The City continues its CSO Program with 32 of the original 132 overflow points remaining to be closed. With an annual average expenditure of approximately \$10,000,000 and over \$130,000,000 spent to date, there remains over \$300,000,000 in projects to complete and many years to go to complete the program. The program continues to replace miles of sewer line and install a like amount of new storm sewer piping. Two additional overflow points will be closed in 2009.

James River Interceptor Replacement (JRI)

The City has completed the JRI -Division 1 project at a cost of \$10,000,000. Replacements of the later divisions up to the Downtown area have been planned in the upcoming CIP. Replacement of the Upper JRI Division 4 project will start in early spring 2009 and replace the existing line from Blackwater Creek to a point just above the Griffin Pipe plant. Subsequent divisions will continue in upcoming CIP years to the Reusens Dam. Estimated cost for replacement of the approximately 6.5 miles of large diameter sewer is \$40- \$50,000,000.

V – EMERGING ISSUES

Brief descriptions of current and upcoming challenges are described below.

The Economy

Our FY 2010 Rate projections are based on rising chemical, power and overall operating costs while our revenues are based on flat growth in both water and sewer usage. We recognize the need to be prudent with construction of new capital projects and rate increases however, that must be balanced with the need to provide reliable services to our customers now and into the future. Currently, we do not anticipate and significant reductions in water or sewer consumption, however, we are assuming that consumption will be flat through the projection period and will maintain an adequate fund balance in both funds in the event of a significant reduction in consumption related to the economic downturn.

Aging Sewer Infrastructure

The City owns and operates hundreds of miles of sanitary sewer with most lines being considered past their design life. As we are seeing in the water infrastructure, more lines are requiring replacement and rehabilitation. Although the CSO Program is replacing many thousands of feet of line, there is still a substantial amount in the system not being replaced or adequately maintained. With continuing overflows and Notices of Violation from DEQ, the Department is increasing its efforts to inspect and fix problems. Eventually, if these issues are not addressed additional mandates to address will be likely. Currently, existing staff and equipment levels are below what is needed to perform an effective and efficient program for this purpose.

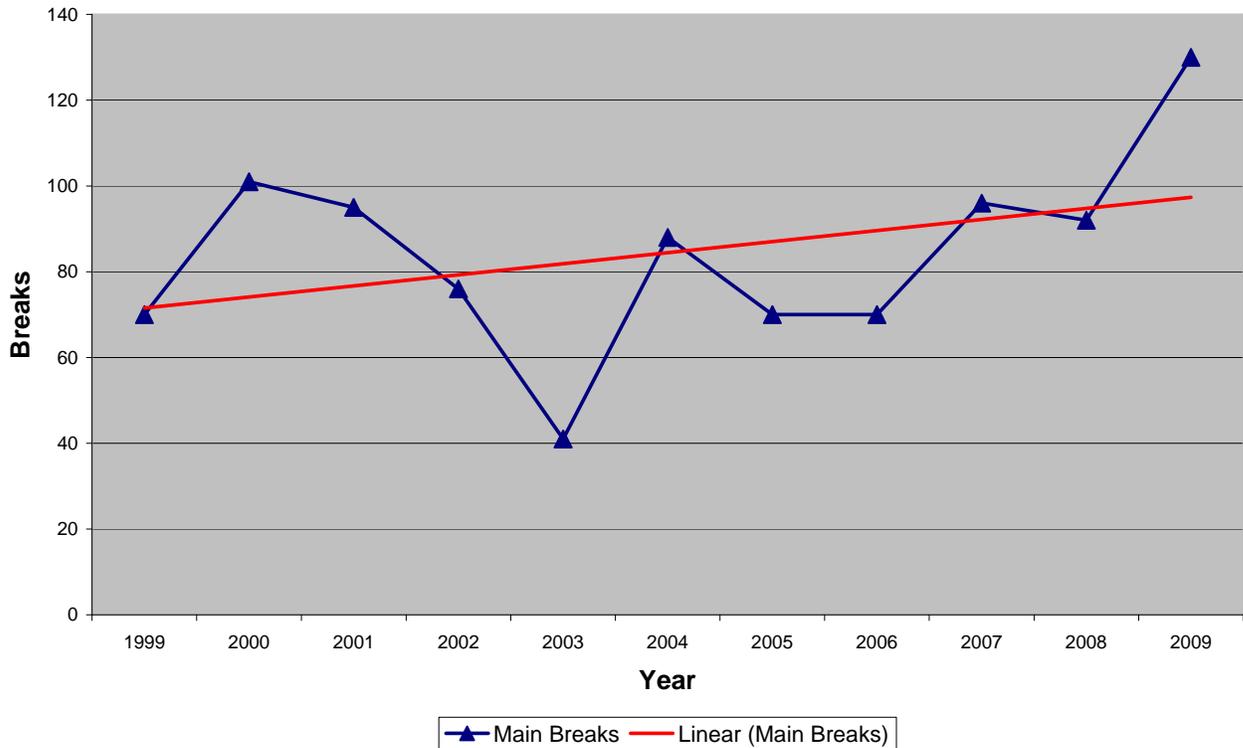
Aging Water Infrastructure

In order to adequately address the approaching wave of water infrastructure needs, over \$7.5 million needs to be invested annually just in water line replacements. The current proposed rate increases only fund \$3.5 million annually, less than half of what is needed.

As discussed in the Executive Summary, annual water line breaks are on the rise. While we continue to work towards a true asset management system where each asset has an optimal replacement strategy, we already know that many of our assets have surpassed their reliable service life and are essentially on borrowed time. Funding for the upgrade and renewal of these assets is absolutely critical for the long term sustainability of our assets. *Figure 1 – Annual Water Main Breaks*, illustrates the number of breaks over the past 10 years.

Figure 1

Annual Water Main Breaks



Dam Safety

New impounding structure regulations were approved by the Virginia Soil and Water Conservation Board in 2008. These regulations require extensive modeling and mapping of inundation zones downstream of any regulated dam. The Department has completed the required study and mapping for the Pedlar Lake Dam. Extensive renovations will not be required but additional armoring of the spillway and other maintenance items will be required. Significant staff time will be required to update the Emergency Action Plan for the dam every year to include property owner and contact information in the inundation zone along the Pedlar River and James River.

Combined Sewer Overflow Program Funding

The City has struggled to obtain a steady yearly funding source from the State and Federal governments. Our local state senator and delegate as well as Council and staff have made tremendous efforts to secure grants for the program. The City may not receive any State grant funding this year for CSO but staff is hoping that the City may receive "economic stimulus" funds from the new federal administration. By far, the majority of the program cost to date has come from the City, by way of escalating sewer rates and this will likely be the norm for the future.

Wastewater Treatment Plant – Nutrients

The City of Lynchburg is a member of the Virginia Nutrient Credit Exchange Program, the “Exchange”. As a member, we have executed an agreement to participate in the Exchange Compliance Plan, the “Plan”, along with 105 other facilities in the State. As a participant in the Plan we will achieve compliance with the Chesapeake Bay Nutrient General Permit by the January 1, 2011 deadline and defer significant capital upgrades to the Wastewater Treatment Plant. This is a significant accomplishment that has been years in the making, as a result, the point source loads from most every wastewater treatment in each river basin that drains to the Chesapeake Bay will be in compliance.

Initially we will be purchasing phosphorous credits and selling nitrogen credits. The first year of trading will start January 1, 2011 with the settling up of credits occurring in calendar year 2012. Payments for credits will be due in FY 2012; however, revenues from credits sold will not be received until early in FY 2013. As a result, the first year of the trading program we will incur a deficit of approximately \$156,000 due to the need to purchase phosphorous credits. We will approximately break even the next few years beyond that.

Annually the Plan is updated and during that process decisions will need to be made whether it make sense to proceed with a capital upgrade. Factor such as: the cost of the upgrade, the availability of grants or low interest loans, the market value of the credits, etc., will be used in the decision making process.

Unsewered Areas

The Utilities Department continues to develop better information on this issue utilizing Utility Billing records and GIS mapping. The goal of this effort is to report out to City Council the overall situation of unsewered properties and how best to meet the need for sustaining the neighborhoods with future sewer service. In any case, an extensive extension program will take years, cost multiple millions of dollars and require significant changes to policy and procedures.

Cross Connection and Backflow Program

The Department has been progressing with this mandated program over the last several years. However, only a small portion of the 22,000 water customers have been brought into compliance. Although new construction and most of the significant hazard locations are in compliance, existing residential and remaining non-residential customers must be addressed. This program has caused major issues for customers, mainly in the costs to implement. For larger lines, cost for the assembly, installation and enclosure are usually in the tens of thousands of dollars.

