

**Department of Utilities
FY 2011 Rate Study and
Annual Report**

**Council Work Session
February 23, 2010**



Department of Utilities
FY 2011 Rate Study
and Annual Report

Table of Contents

	Page
Section I – Executive Summary	3
Section II – Rate Increases	4
Section III – Rate Comparisons	11
Section IV – Capital Projects Discussion	13
Section V – Conclusion	18
Water and Sewer Fund Financial Projections	Appendix I
Department of Utilities Statistical and Financial Data	Appendix II
“Sustainable Water Systems - Redefining the US Infrastructure Challenge”	Appendix III

Mission Statement:

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

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To: The Honorable Mayor and Members of the City Council
From: Timothy A. Mitchell, P.E., Director of Utilities
Re: FY 2011 Rate Study and Annual Report
Date: February 23, 2010

I. EXECUTIVE SUMMARY

The Utilities Department prepares the Rate Study and Annual Report 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 and ensure compliance with the CSO financial criteria. 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 Consent Order.
- Meet Council's financial policies.

The proposed water volume rate is recommended to be increased by 4%, while no increase is recommended in the sewer volume rate. The water rate increase is primarily driven by increases in power costs, the need for continuous investment in the water infrastructure, and reduced consumption. As a result of declining household incomes, a sewer rate increase is not needed in FY 2011 in order to comply with the CSO Consent Order median household income (MHI) requirement. The average annual sewer bill is projected to be at or slightly above the 1.25% of the MHI.

However, not increasing the sewer rate does not come without consequence; the sewer capital program was previously based on the assumption of a 3% sewer rate increase. As a result of not implementing a rate increase, the Sewer Capital Program will need to be scaled back by approximately \$4 to \$5 million per year, primarily impacting the CSO Program. Reducing the CSO expenditures from \$14 million per year to \$10 million per year impacts the CSO Program by extending the timeframe of the Program and complicating the planning of some of our remaining James River Interceptor projects. Divisions 3 and 5 still need to be constructed at an estimated to cost between \$11 and \$13 million. The loss of \$4 million per year of VCWRLF funding eliminates almost 2 CSO separation projects per year from the CIP- as the average project has \$2-3M in eligible construction costs. Assuming an annual investment of \$10 million instead of the previously planned \$14 million extends the CSO Program by approximately 10 years.

In addition to the water volume rate increase, other fees are also proposed to be increase in order to more closely recover the actual cost of service. These include:

- Industrial surcharges for BOD and TSS - 10% per year until the fee matches the cost of service.
- Septic hauler charges – 5% per year until the fee matches the cost of service.
- Industrial permit fees – increase to match the actual cost of service which varies by industry - 10% maximum per year until the fee matches the cost of service.
- Fire protection fees - 10% per year until the fee matches the cost of service.

The most important of the recommended increases is the water volume rate increase of 4%. As we have reported in the past, investment in our water infrastructure is vital in the long term sustainability of our infrastructure and ultimately the City as a whole. Without a clean, safe, reliable water supply, a thriving economy can not exist. It is also vital to the health and safety of our community. Hence our mission: *“To provide excellent water and wastewater services that promote the health, safety, and prosperity of the community.”* As I like to tell all our new employees, what we do touches well over 100,000 people every day, from making baby formula to keeping industries operating to providing adequate quantity and pressure for fire protection. As a result, we must be good stewards of water and our infrastructure.

A 4% water rate increase enables us to continue with our capital plan of \$3.5 million annually for distribution system improvements. This is the absolute minimum needed if we plan on replacing or renewing just 1% of our water lines per year. As we have previously pointed out, this need easily doubles or more over the next decade as water lines in our system reach the end of their reliable service life. By not increasing the sewer rate, the composite water and sewer bill for the typical residential customer increases by slightly over 1%.

As a comparison, rate increases where compared to other communities using the *“21st Annual Virginia Water and Wastewater Report 2009”* prepared by Draper Aden Associates, the statewide average water rate increased by 4.8% and the average sewer rate increased by 6.6%.

Other proposed fee increases, while not as critical as the water rate increase, are important as well to maintain rate equity. Based on cost of service evaluations, many of our current fees do not adequately recover the actual cost of providing that service. We recommend that they be increased to more equitably recover costs where they are incurred.

II. RATE INCREASES

The rate adjustments proposed in this report will result in a typical composite monthly water and sewer bill increase of approximately 1%. *“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	\$57.38	\$58.01	1.1%
Commercial	30 hcf	\$233.79	\$236.49	1.2%
Industrial	1000 hcf	\$7,673.69	\$7,763.69	1.2%

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. An annual investment in the distribution system of \$3.5 million is planned through the projection period. When in fact, just considering the small main replacements that are needed now, there is over \$15 million in immediate needs in the water system. In order to sustain just \$3.5 million per year in distribution system improvements an annual rate increase of 4% is needed through the projection period. A typical water bill will increase by \$0.63 per month as a result of the 4% increase.

B. Sewer Volume Rate

No increase in the sewer volume rate is recommended. 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, 2009, the calculated average annual sewer bill was 1.29% of the MHI, slightly above that required by the Special Order. Based on assumptions that household income will either remain flat or decline, a rate increase is not needed to maintain compliance with the CSO Special Order. The impact, when compared to previous planning assumptions that assumed 3% annual increases, is that the annual sewer capital expenditures will be reduced by \$4 to \$5 million through the planning period, primarily impacting the CSO program.

C. Industrial Surcharges

These charges are designed to recover the cost of treating high strength sewerage which is measured in pounds of biological oxygen demand (BOD) or total suspended solids (TSS) over the amounts assumed to be included in domestic sewerage. There are eight customers in the City that are currently billed for high strength BOD and TSS plus Rock Tenn and Frito-Lay which are billed based on contract rates.

Except for the charges to Rock Tenn and Frito-Lay, the current BOD and TSS rates have not been increased in a couple of years. A comparison between the current rates and the cost of treating BOD and TSS is shown in Table II-2.

Table II-2 Pre-treatment Cost Analysis

	Current Rate	Cost Rate	% Difference
BOD charge / 100 lbs.	\$18.46	\$26.19	41.8%
TSS charge / 100 lbs.	\$20.88	\$24.01	15.0%

We recommend that the current BOD and TSS rates be increased 10% per year until they reach actual cost of service levels.

D. Septic Hauler Charges

There are approximately 20 septic haulers that recurrently dispose of septic material at the Wastewater Treatment Plant plus approximately 40 large companies that have contracts with the City to dispose their septic material at the plant.

Revenues from septic haulers and customers with contracts that dispose of waste in the Wastewater Treatment Plant have averaged \$350,000 over the past five years. The current minimum septic hauler charge is \$177.00 and applies to all trucks that carry up to 2,500 gallons of septic material. The septic hauler charge increases by \$30.00 for every 500 gallon increase in the septic carrying capacity of a truck.

The septic hauler charges were last increased about ten years ago. If the charges are based on the average concentrations of BOD and TSS in septic material that are treated in the wastewater plant, the charge for a 2,500 gallons truck load of septic material would be as follows in Table II-3.

Table II-3 Septic Hauler Charges

	Lbs.	Rate / lb.	Charge
BOD	155	\$.2619	\$40.59
TSS	730	\$.2401	\$175.27
Administration ⁱ			\$50.00
Total for a 2,500 gallon truck load			\$265.86
Charge for each additional 500 gallons ⁱⁱ			\$43.17

¹ Administration includes approximately 4 hours of City time to register a septic hauler at the wastewater plant, take PH samples, and record information for billing purposes.

² Each additional 500 gallon charge based on $(\$40.59 + \$175.27) / 2,500 \text{ gallons} \times 500 \text{ gallons} = \43.17

The BOD and TSS rates included in the above table are based on a recent cost of service analysis that was used to determine the rates charged to Frito-Lay and Rock Tenn Company.

If the current septic hauler charges are increased to amounts shown in the above table the cost to each septic hauler and contract customer will increase by 50%. The last time the septic hauler charges were increased many of the septic haulers and contract customers found alternative locations to dispose of septic material. It took several years before these customers returned to the City for their disposal needs. In order to avoid a repeat, we recommend that current septic hauler charges be increased 5% per year until they approach the actual cost of service levels.

E. Industrial Permit Fees

Customers that discharge more than 25,000 gallons of wastewater into the sewer system as well as certain industrial customers are subject to pretreatment charges. These charges consist of: (1) a permit renewal fee of \$600, payable every three years (\$200 per year); (2) sampling charges that range from \$250 to \$1,450 depending on the type and number of sampling days needed; and (3) laboratory testing charges which are based on actual cost from independent laboratories plus 15% for overhead.

Currently 19 customers are charged for pretreatment. The amount billed varies by customer due to the frequency of sampling and testing required, which is based on the nature of each customer's wastewater discharge into the sewer system. The pretreatment charges have not been increased in at least ten years and the total pretreatment charges to these customers averages \$50,000 per year. Actual cost of the pretreatment program is approximately \$138,000 per year. The Utilities Department recommends that the pretreatment charges be based on a cost of service analysis, which is currently in the process of being developed but that no customer's total annual billing increases by more than 10% per year for the next three years.

Table II – 4 Industrial Permit Fee Analysis

	Total Cost	Permit Renewal	Sampling Events	Convent. Test	Outsourced Test
1. Salaries & benefits					
a. Industrial coordination	\$66,000		66,000		
b. Laboratory staff	26,000		23,000	3,000	
c. Administration	8,000	8,000			
2. Supplies	5,000		3,000	1,000	1,000
3. Outside laboratory charges	24,000				24,000
4. Vehicle & equipment	9,000		9,000		
5. Total cost	138,000	8,000	101,000	4,000	25,000
6. Number of Activities					
a. Permit renewals / year		7			
b. Sampling days			250		
c. Conventional test				180	
d. Outsourced test					650
7. Unit Cost (line 5 / applicable line 6)		\$1,143	\$404	\$22	(A) \$38

Notes:

A. Average cost per test. Charges to be based on actual cost of specific type of test as charged by private lab.

F. Sewer Only Rates

Since no sewer volume rate increase is proposed, there will be no increase in the sewer only rate.

G. Fire Protection

As detailed in *Table II – 5 Fire Protection Fee Analysis*, the cost of providing fire protection in the City is estimated at \$879,000, or roughly 8% of the annual operating expense, including depreciation, of the Water Fund. This estimate is based on ISO standards which suggest that a municipal water system should be able to fight three simultaneous fires lasting four hours. In order to meet the ISO standards, 10% of the water storage capacity and 20% of the water treatment plant capacity needs to be kept in reserve for fire fighting purposes. The cost of the water distribution system is also approximately 20% more than it would be had the water mains not been sized to meet fire protection needs.

Table II – 5 Fire Protection Fee Analysis

Cost:	Deprec.	O&M	Total	Fire Protection	
				%	\$
Storage	\$358,983	\$19,277	\$378,260	10%	\$37,826
Treatment	414,208	2,611,080	3,025,288	19%	574,805
Pumping	177,629	58,825	236,454	5%	11,823
Transmission	470,867	515,979	986,846	5%	49,342
Distribution	458,404	570,109	1,028,513	20%	205,703
					\$879,498
Billable units:				Equiv. Factor	
Hydrants & 6" private fire lines			2800	1.00	2,800
8" private fire lines			305	1.71	522
10" private fire lines			14	2.71	38
12" private fire lines			3	3.57	11
					3,370
Monthly rates:				Current	Calculated
Hydrants				\$17.99	\$21.75
8" private fire lines				\$17.99	\$37.19
10" private fire lines				\$32.30	\$58.93
12" private fire lines				\$51.25	\$77.64

Notes:

- Cost numbers derived from cost of service analysis used to determine wholesale water services to Counties.
- 10% storage allocation based on the following:
 - Maximum single fire flow rate is: 3,500 gpm ISO standard
 - The duration of the maximum fire is: 4 hours ISO standard
 - Number of simultaneous fires 3
 - The maximum aggregate storage reserve for coincident fires is 2,520,000 gallons 3500 x 4 x 60 x 3
 - Total system storage available: 30,000,000 gallons
 - 2,520,000/30,000,000 = 8.4% - Round to 10%
- 19% treatment allocation based on the following:
 - System production capacity: 26 MGD
 - Production Capacity (gpm) (5) 18,055 26 x 1m / 1440 m/day
 - Max Fire Rate/Production Capacity 19.4% 3,500 / 18,055
- 20% distribution allocation based on the following:
 - Cost of 8" main per LF \$90
 - Cost of 6" main per LF \$75
 - Difference \$15/\$75 applicable to over sizing to met fire protection needs 20%
- Assuming 17 MGD / max day - plant capacity provides sufficient fire flow for almost two fire events without disrupting service (26-17/1440) x 1m = 6,250 gpm.

There are approximately 2,800 fire hydrants in the City and 325 private fire lines. As detailed in *Table II-5*, this equates to 3,370 equivalent 6" fire hydrants. The fire protection cost rate for a six inch hydrant or private fire line is \$21.75. This rate is equal to the total fire protection cost (\$879,000) divided by the total equivalent 6" private fire lines (3,370) divided by 12 months. As shown in *Table II – 6 Fire Protection Charges*, the larger private fire line rates are based on the equivalency factor suggested by the American Water Works Association (AWWA) for larger size mains.

Table II – 6 Fire Protection Charges

	Equivalency Factor	Calculated Rate	Current Rate	% Increase
6" private fire lines	1.00	\$21.75	\$17.98	21.0%
8" private fire lines	1.71	37.19	17.98	106.8%
10" private fire lines	2.71	58.93	32.30	82.4%
12" private fire lines	3.57	77.64	51.25	51.5%

The fire protection rates have not been increased in at least 10 years and thus a significant increase is needed to bring them up to the cost of service levels. However, the percent increase shown above is too much of an increase in one year. Therefore, we recommend that all the water fire protection rates increase 10% per year until they reach the cost of service levels.

H. Water and Sewer Availability Fees

We are not recommending increases at this time. However, these fees should be examined in more detail in the future. For example, our current fee structure bases the fees on floor space for commercial development, which has little correspondence to water consumption. A more recognized and defensible approach is to base the fees on meter size. Generally, the larger the water meter, the higher the volume used, therefore placing a higher demand on the system. This approach would result in a more equitable approach to availability fees.

I. 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. While actual costs are not currently being recovered, we are not recommending an increase in these fees at this time.

J. 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. The actual cost to provide this service is in excess of \$5.00 per month. No increase is recommended at this time; however, an adjustment in this fee should be made in the near future.

"Table II-7 Water and Sewer Rates – FY 2007 to FY 2011", provides a comparison of the current water and sewer rates and the rates proposed for City Council approval, effective July 1, 2010. A summary of all water and sewer rates in effect over the past four years is also included in this table.

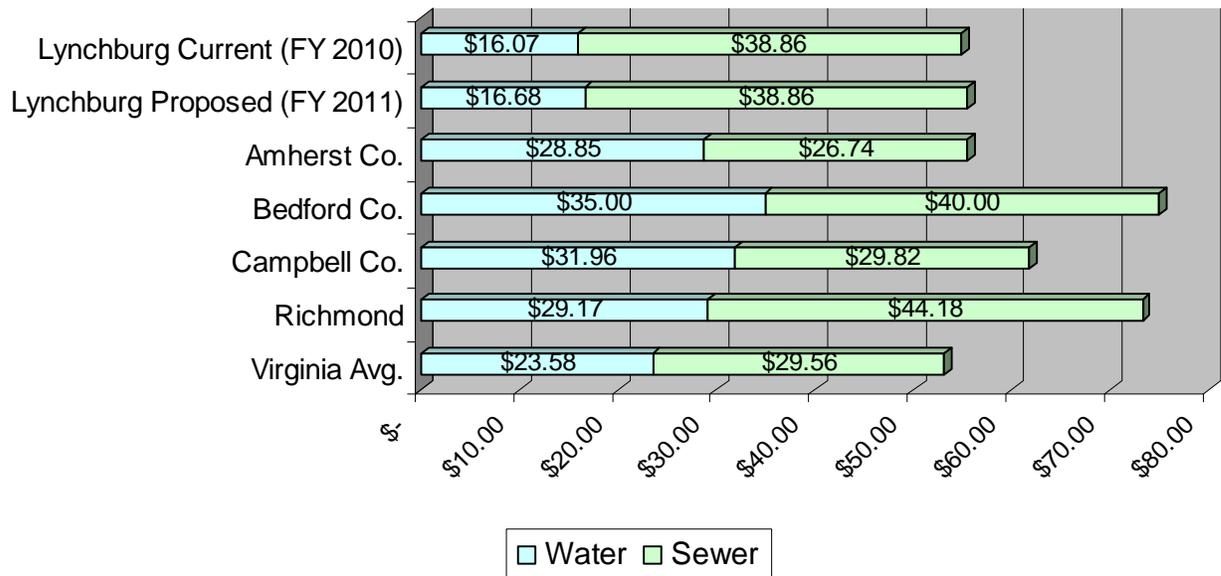
Table II-7 Water and Sewer Rates – FY 2007 to FY 2011

	FY 2007	FY 2008	FY 2009	FY 2010	Proposed FY 2011	% Increase
Water						
Volume charge / hcf	\$1.89	\$1.97	\$2.05	\$2.13	\$2.22	4%
Sewer						
Volume charge / hcf	4.97	5.17	5.38	5.54	5.54	0%
BOD charge / 100 lbs	16.78	18.46	18.46	18.46	20.31	10%
TSS charge / 100 lbs.	18.98	20.88	20.88	20.88	22.97	10%
Septic hauler charge	177.00	177.00	177.00	177.00	185.85	5%
Industrial permit fee	200.00	200.00	200.00	200.00	varies	10%max
Sewer only	38.48	39.88	41.35	42.47	42.27	0%
Fire Protection						
Hydrants & 8" or smaller fire lines	17.99	17.99	17.99	17.99	19.79	10%
10" fire lines	32.30	32.30	32.30	32.30	35.53	10%
12" fire lines	51.25	51.25	51.25	51.25	56.38	10%
Availability Fees						
Water	1,220.00	1,220.00	1,220.00	1,220.00	1220.00	0%
Sewer	1,950.00	1,950.00	1,950.00	1,950.00	1950.00	0%
Water Connection Fees						
¾" & 5/8" meters	775.00	850.00	950.00	950.00	950.00	0%
1" service – 5/8" meter	790.00	870.00	1,000.00	1,000.00	1000.00	0%
1" service – 1" meter	935.00	1,030.00	1,150.00	1,150.00	1150.00	0%
Greater than 1"-minimum	935.00	1,030.00	1,150.00	1,150.00	1150.00	0%
Sewer Connection Fees						
4" sewer line	875.00	965.00	1,100.00	1,100.00	1100.00	0%
Greater than 4"-minimum	950.00	1045.00	1,200.00	1,200.00	1200.00	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

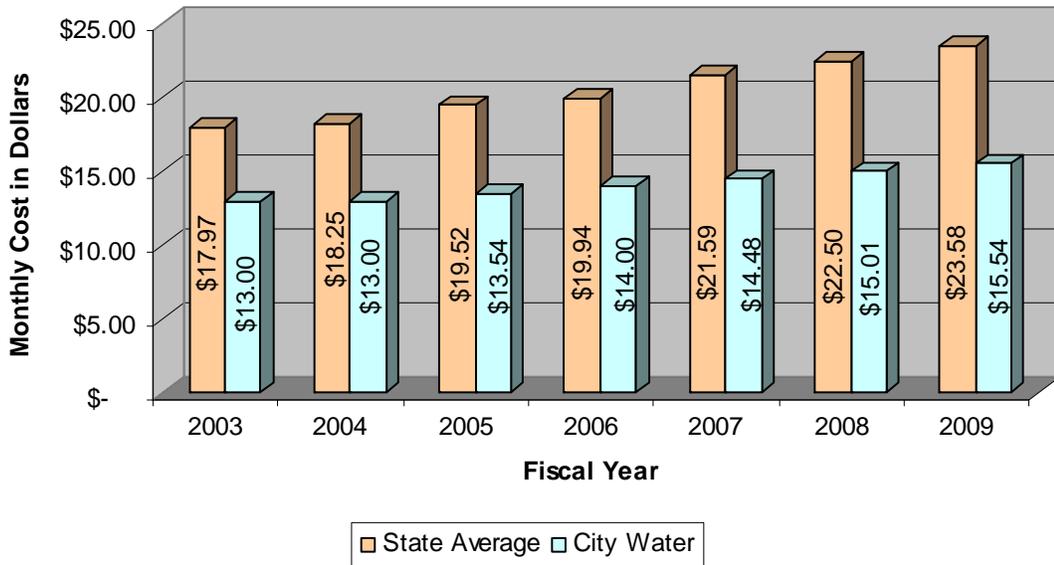
A comparison of the City's water and sewer bills for a customer using 5,000 gallons (6.68 hcf) of water per month to other communities is shown in "Figure III-1 Bill Comparisons". (Information from other localities and the statewide average is based upon the "21st Annual Virginia Water and Wastewater Report 2009", prepared by Draper Aden Associates.)

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

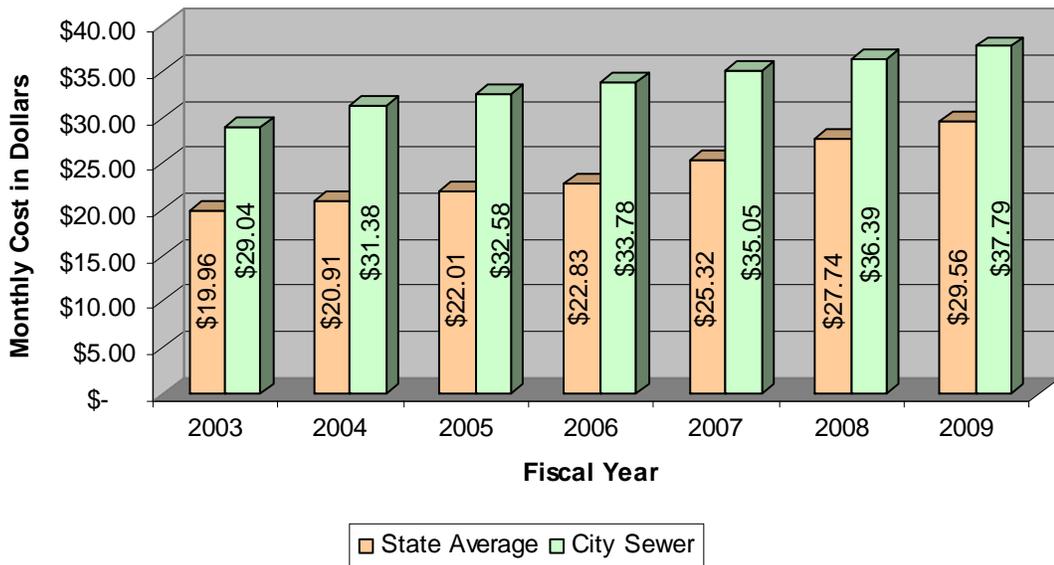


Overall statewide rate increases continue to outpace Lynchburg. As a result, there is little difference in the combined water and sewer rate to the state average. Lynchburg also has overall lower rates than the surrounding counties and the City of Richmond.

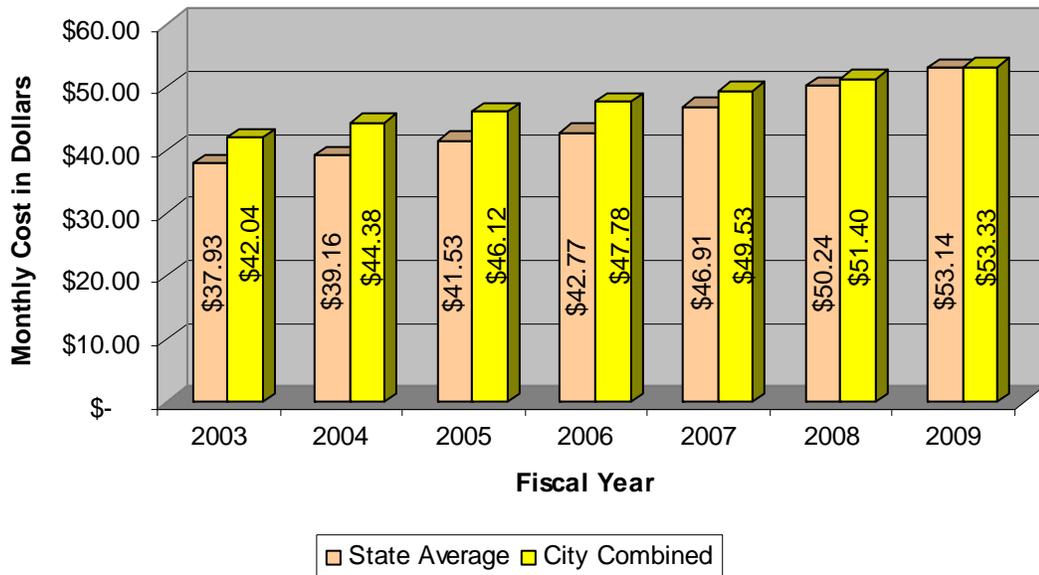
**Figure III-2 Water Increases
(5000 Gallons per Month)**



**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% and 3% respectively, while average statewide water rates increased by 4.8% and sewer rates increased by 6.6%. It is important to note on this graph the fact that the statewide average combined water and sewer rates have essentially closed the gap to where they are essentially the same as the combined City rate. Overall statewide water and sewer rates have increased 44% and 72% respectively over that past decade. What this tends to indicate is that despite the City's challenges with CSO, we have been able to manage costs, regulatory mandates, and resources well when compared to other utilities.

IV. CAPITAL PROJECTS DISCUSSION

As we have discussed in previous years, significant annual capital investments are needed to ensure that our water and wastewater systems are safe, dependable, and sustainable. Also, included in Appendix III is an article entitled "Sustainable Water Systems – Redefining the US Infrastructure Challenge", as published in the February, 2010 issue of *Opflow*, a publication of the American Waterworks Association. In this article a number of sustainable path elements are identified and discussed. The Utilities Department strives to adhere to these elements as much as practical and possible with the goal of operating the water and wastewater systems as efficiently and effectively as possible.

Below are brief descriptions of the most significant challenges that we must address.

A. Water System

The biggest challenge facing the water system is the need to renew and replace the aging water lines. The absolute minimum recommended water industry standard for replacing water lines is 1% of the system per year, which equates to renewing the water system every 100 years. Lynchburg has over 480 miles of water lines, so this means that if we were replacing water lines at the optimum pace all along, we should be replacing approximately 5 miles of water lines per year. At \$125 to \$150 per foot, this is a minimum of \$3.5 million annually. Currently, there is over 105,000 linear feet of small water mains that are in need of immediate replacement (>\$15 million) due to their age and inadequate fire protection. Additionally, the Utilities Department is in the process of selecting a consultant to develop a master plan for addressing the aging water system in the downtown area. Projects such as the 5th Street water line are critical elements in addressing the significant challenges as it will serve as the backbone for the downtown water system. We are also in the process of assessing the condition and developing a long term plan for the 36" raw water line from the Pedlar Reservoir.



In addition to the water lines, ongoing maintenance and upgrades of the City's 9 water pump stations, and 14 water tanks is included the capital improvement program (CIP). Significant upgrades to the Pedlar Dam will be needed in order to comply with the dam safety regulations. Water plant maintenance, water line extensions, and system development are also included in the CIP but vary by year based on need.

The Utilities Department has made significant strides to ensure the long term sustainability of our water system. It is absolutely critical that we continue on the planned pace of water system renewal and replacement or face unbearable rates in the future.



B. Sewer System

CSO

The biggest challenge facing the sewer system remains the CSO Program. With the infusion of the American Recovery and Reinvestment Act (ARRA) funding this past year, significant advances in the CSO Program are being made specifically with the James River Interceptor, a CSO separation project, and a joint effort with Randolph College to disconnect their rain leaders and install a rain garden. Additionally, a Long Term Control Plan (LTCP) update is underway. The LTCP will take a more holistic look at overall water quality in the streams and the James River. It will help us make the best possible decisions on how we spend our limited resources on achieving water quality and meeting regulatory requirements. The most significant element of the LTCP will be to evaluate if complete separation of the combined system is the best and most cost effective long term approach to achieving the water quality requirements. As previously discussed, this is somewhat tempered due to the fact that we are scaling back the program by approximately \$4 million per year.



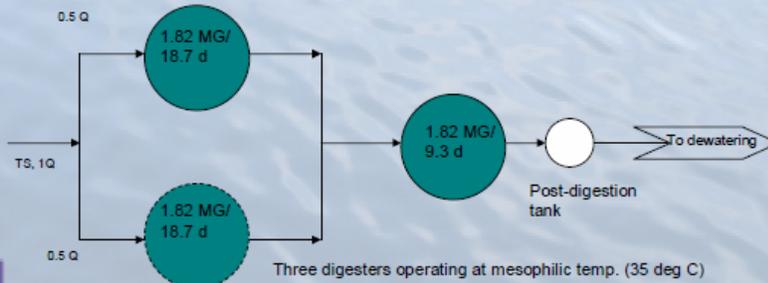
WWTP

The Regional Wastewater Treatment Plant (WWTP) is also facing some significant upgrades. In approximately four years the regional landfill adjacent to the WWTP will be closing. As a result, we must look at alternatives to sludge disposal. Currently the plant produces approximately 44,000 lbs. of biosolids each day from the treatment process. This waste is collected in containers and transported $\frac{1}{4}$ mile to the Region 2000 Landfill on Concord Turnpike for final disposal.

The regional landfill is scheduled to close in 2014. This closure will result in the City hauling biosolids to another regional landfill in Campbell County. A significant increase in operational costs for hauling the waste will result. The Campbell County landfill may close as early as 2025, at which time landfill disposal becomes a significantly greater issue. The production of biosolids at the wastewater plant is expected to increase to 85,000 lbs. per day by 2040. Currently, at least four options are being considered, all of which include some capital investment with 30 year present worth estimates ranging from \$22 million to \$44 million.

Alt. 3 - Class B Anaerobic Digestion

- Lynchburg – This alternative
 - Primary sludge fermentation in existing tank
 - 55% overall volatile solids reduction
 - 21.5-day detention time @ 35C and peak month
 - Three-equal-tank design



A more immediate need at the WWTP is upgrades to the secondary clarifiers. The Lynchburg Regional Wastewater Treatment Plant (RWWTP) is rated at 22 million gallons per day (MGD) annual average flow (AAF) with a peak flow capacity of 44 MGD. The four existing secondary clarifiers become stressed when handling the wet weather flows associated with an average daily flow (ADF) of 15 to 17 MGD. As a result, the plant effluent water quality suffers during wet weather high flow periods. The secondary clarifier mechanisms and associated pumping stations are approximately 30 years old and have reached the end of their useful life and are in need of upgrades and repair. Construction cost is estimated to exceed \$7,000,000 and is planned in our current CIP.

SEWER SYSTEM

In addition to the CSO areas, the remaining sewer system needs considerable maintenance and replacement. Similar to the water system, there are over 450 miles of aging sewer lines in the City. At a 1% per year renewal rate, we need to be on a minimum pace of replacing or rehabilitating 4.5 miles of sewer line per year. While the CSO Program essentially addresses the renewal of the sewer infrastructure in the combined areas, a program has been needed to address the maintenance of the separated areas. As a result, the Utilities Department has been working toward a comprehensive sanitary sewer evaluation study (SSES) which will help us to identify the most critical areas based on age, sewer overflow frequency, regulatory compliance, consequence of failure, etc., to enable us to again utilize the limited resources as efficiently as possible. An annual capital investment of approximately \$1 million is planned to renew, replace, and maintain the separated portion of the sewer system.

Also, as we have previously discussed and reported to PDC, approximately 25% of the City is currently unsewered. It is also critical for the long term sustainability of our neighborhoods and water quality issues that we have a plan to address this growing need. The Utilities Department is also working to develop this plan and will soon report back to PDC with additional details. At this time, we are planning to invest approximately \$1 million annually to begin addressing this concern.

IV. CONCLUSION

In order to continue to meet the long term capital needs of the water system and to address increases in power and other costs, a 4% water rate increase is needed. Additionally, full cost pricing of other services is also critical for long term sustainability; therefore, we are recommending that various fees for services be increased to more closely recover the actual cost of service. Lynchburg's recent annual increases in water and sewer rates have been well below the Virginia average. As a result, our combined water and sewer bill for a typical household is essentially the same as the statewide average. This is a significant accomplishment given the financial terms to comply with our CSO consent order.

Significant challenges lie ahead including regulatory compliance and aging infrastructure. Adequate planning and action is needed now to assure limited resources are spent wisely and effectively. It is only through this careful planning that these goals can be achieved.



Water and Sewer Fund Financial Projections

Appendix I



MEMORANDUM

TO: Honorable Mayor and Members of the City Council

FROM: Timothy A. Mitchell, P.E., Director of Utilities

DATE: February 16, 2010

RE: Water & Sewer Fund Financial Projections

We have assembled the accompanying financial projections of the Water and Sewer Funds of the City of Lynchburg for each of the six years ending June 30, 2015. The accompanying projections were prepared to help City Council evaluate the need for water and sewer rate adjustments and develop strategies for funding capital improvements.

The financial projections have been prepared based on the assumptions that are described in the notes to the financial projections. The key assumptions include the following:

1. The volume of water and sewer billed to non-contract customers in FY 2010 will be approximately 4% lower than the previous five year average. The volume of water and sewer billed thereafter will return to the previous five year average and remain constant.
2. The water volume rate will increase 4% effective July 1, 2010 and every year thereafter.
3. The sewer volume rate will not be increased in FY 2011 but will increase 3% effective July 1, 2011 and 3% per year thereafter.
4. The \$3.69 account charge will not be increased in FY 2011 but will be increased to \$5.00 effective July 1, 2011 and 3% per year thereafter.
5. The volume of water and sewer billed to Amherst, Bedford and Campbell County will continue to increase at the rate of approximately 1% per year.
6. The volume of water and sewer billed to Rock Tenn Company and Frito-Lay will remain stable.
7. Capital expenditures and debt financing will occur as planned (See pages W-1, S-1 and S-2).
8. No significant new sources of grant funds will become available after FY 2010 to fund CSO or other water and sewer needs.
9. Operations and maintenance expenses in FY 2010 and FY 2011 will be consistent with amounts included in the FY 2011 budget submission.
10. After FY 2011 operations and maintenance expenses will generally increase at the rate of 3% per year.

11. Debt financing for qualifying CSO projects will continue to be available at 0%; 30 year repayment terms. Debt financing for qualifying wastewater projects will be available at 3%, 20 year repayment terms.
12. Long term debt financing for other water and sewer capital expenditures will be available at 4.75%; 30 year repayment terms. Short term line of credit financing will be available at 2%.
13. The financial impact of implementation of future storm water regulations has not been included in these projections.

You should be aware that there will usually be differences between projected and actual financial results, because events and circumstances frequently do not occur as expected, and those differences may be material.

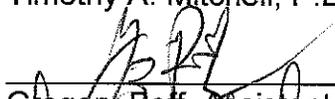
The Special Order between the City and the Virginia Department of Environmental Quality (DEQ) requires the City to increase sewer rates so that the average annual sewer bill is at least 1.25% of MHI (Median Household Income). As of July 1, 2009, the average annual sewer bill was equal to 1.29% of MHI. Thus, no increase in the sewer rates was required in FY 2011. However, effective July 1, 2011, we assume that 3% annual sewer rate increases will be needed to maintain the 1.25% Special Order MHI requirement.

The 4% annual increase to the water rate effective July 1, 2010 and 4% per year thereafter is needed to finance increasing capital improvements, particularly improvements to the water distribution system. These increases are also needed to maintain Council's criteria to maintain a debt coverage ratio of at least 1.2 and a year end cash reserve of at least 25% of operating expenses and debt service payments.

We the undersigned have participated in the preparation and review of the enclosed financial projections and to the best of our knowledge believe they reasonably present the expected capital expenditures, borrowings, revenues and expenses, and cash flows related to the City's Water and Sewer Funds for the projection period.



Timothy A. Mitchell, P.E., Director



Gregory Poff, Assistant Director



Tammi Turner, Fund Accountant

cc: L. Kimball III, City Manager
Bonnie Svrcek, Deputy City Manager
Donna Witt, Director of Financial Services

Water Fund

**CITY OF LYNCHBURG
WATER CAPITAL FINANCING PLAN**

	Est.	Budget	Proj.	Proj.	Proj.	Proj.
	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
BEGINNING FUNDS	\$1,211,493	\$5,849,295	\$1,838,666	\$1,211,366	\$1,006,767	\$1,541,667
RECEIPTS						
Transfers	500,000	700,000	800,000	900,000	1,000,000	1,100,000
LOC borrowing	-	4,000,000	-	4,000,000	-	4,000,000
G.O. borrowings, net proceeds	11,400,000	-	4,000,000	-	4,000,000	-
total receipts	11,900,000	4,700,000	4,800,000	4,900,000	5,000,000	5,100,000
EXPENDITURES						
Capitalizable cost (1)	105,000	110,000	113,300	116,699	120,200	123,806
Unexpended appropriations	5,199,732	1,297,356	355,450	100,000	100,000	93,720
Distribution system improvements	1,411,049	4,020,073	3,500,000	3,500,000	3,500,000	3,500,000
Annual water petitions	-	-	-	50,000	50,000	50,000
Water main replacements (CSO)	422,917	898,200	778,550	317,900	394,900	622,000
Water facilities improvements	123,500	200,000	200,000	200,000	200,000	200,000
Water tank rehabilitation	-	785,000	430,000	20,000	100,000	900,000
College Hill Office relocation	-	400,000	-	-	-	-
Pedlar dam repairs	-	1,000,000	-	-	-	-
Wingate Water Tank #2	-	-	50,000	800,000	-	-
Florida Avenue Pump Station	-	-	-	-	-	175,000
total expenditures	7,262,198	8,710,629	5,427,300	5,104,599	4,465,100	5,664,526
ENDING FUNDS	\$5,849,295	\$1,838,666	\$1,211,366	\$1,006,767	\$1,541,667	\$977,141

Notes:

1. Beginning funds in FY 2010 equals cash and investments in the Water Capital Fund.
2. Unexpended appropriations represents unspent funds applicable to FY 2009 and prior year appropriations.

**CITY OF LYNCHBURG
PROJECTED STATEMENT OF WATER FUND DEBT COVERAGE**

	Actual	Est.	Budget	Proj.	Proj.	Proj.	Proj.
	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Revenues:							
Charges for services	\$9,012,068	\$9,399,940	\$9,832,903	\$10,413,208	\$10,796,182	\$11,203,282	\$11,600,075
Water contracts	2,690,212	2,883,782	2,955,715	3,086,302	3,222,617	3,364,948	3,518,411
Interest and other	111,383	160,000	161,000	161,000	161,000	161,000	161,000
total revenues	11,813,663	12,443,722	12,949,618	13,660,510	14,179,799	14,729,229	15,279,486
Expenses:							
Water treatment	2,954,022	3,017,429	3,055,743	3,147,415	3,241,838	3,339,093	3,439,266
Water line maintenance	1,547,936	1,664,630	1,542,903	1,589,190	1,636,866	1,685,972	1,736,551
Meter reading	821,101	824,367	888,154	914,799	942,243	970,510	999,625
Administration / engineering	2,451,773	2,518,107	2,866,104	2,952,087	3,040,650	3,131,869	3,225,825
Non-departmental	160,984	231,364	243,366	249,916	256,664	263,614	270,772
Capitalizable cost (1)	0	(105,000)	(110,000)	(113,300)	(116,699)	(120,200)	(123,806)
total expenses	7,935,816	8,150,897	8,486,270	8,740,108	9,001,561	9,270,858	9,548,233
Operating income	3,877,847	4,292,825	4,463,349	4,920,403	5,178,238	5,458,372	5,731,252
Debt Service	2,688,916	3,124,956	3,403,985	3,587,099	3,750,956	3,885,884	3,982,884
Net Revenue	\$1,188,931	\$1,167,869	\$1,059,364	\$1,333,304	\$1,427,282	\$1,572,487	\$1,748,368
Debt Coverage Ratio	1.44	1.37	1.31	1.37	1.38	1.40	1.44

Notes:

1. Capitalizable cost includes internal labor charges applicable to time spent on capital project activities.

**CITY OF LYNCHBURG
PROJECTED STATEMENT OF WATER FUND SOURCES & USES OF CASH**

	Actual	Est.	Budget	Proj.	Proj.	Proj.	Proj.
	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Sources of Cash:							
Beginning cash balance	\$5,679,321	\$5,784,256	\$11,039,927	\$7,308,662	\$7,164,666	\$7,437,349	\$8,494,736
Net revenue	1,188,931	1,167,869	1,059,364	1,333,304	1,427,282	1,572,487	1,748,368
LOC borrowing	4,000,000	0	4,000,000	0	4,000,000	0	4,000,000
G.O. bond proceeds		15,400,000	0	8,000,000	0	8,000,000	0
	10,868,252	22,352,125	16,099,291	16,641,966	12,591,948	17,009,836	14,243,104
Uses of Cash:							
Capital Fund expenditures	5,454,573	7,262,198	8,710,629	5,427,300	5,104,599	4,465,100	5,664,526
Other capital expenditures	77,697	50,000	80,000	50,000	50,000	50,000	50,000
Repayment of LOC borrowing	0	4,000,000	0	4,000,000	0	4,000,000	0
Payments to other organizations	(75,761)	0	0	0	0	0	0
Change in working capital items	(359,751)	0	0	0	0	0	0
total uses of cash	5,096,758	11,312,198	8,790,629	9,477,300	5,154,599	8,515,100	5,714,526
Ending Cash	\$5,771,494	\$11,039,927	\$7,308,662	\$7,164,666	\$7,437,349	\$8,494,736	\$8,528,578

Cash in Capital Fund	\$1,211,493	\$5,849,295	\$1,838,666	\$1,211,366	\$1,006,767	\$1,541,667	\$977,141
Customer deposits	409,094	400,000	408,000	416,160	424,483	432,973	441,632
Unrestricted cash	4,150,907	4,790,632	5,061,996	5,537,140	6,006,099	6,520,096	7,109,805
Total cash	\$5,771,494	\$11,039,927	\$7,308,662	\$7,164,666	\$7,437,349	\$8,494,736	\$8,528,578
Unrestricted cash as a % of budget	39%	42%	43%	45%	47%	50%	53%

Notes:

1. G.O. Bond proceeds in FY 2012 and FY 2014 include funds to repay LOC borrowing.

**CITY OF LYNCHBURG
CHARGES FOR SERVICES**

	Actual	Est.	Budget	Proj.	Proj.	Proj.	Proj.
	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Water Sales							
HCF of use	3,184,498	3,100,000	3,200,000	3,200,000	3,200,000	3,200,000	3,200,000
Actual water rate	2.05	2.13	2.22	2.30	2.40	2.49	2.59
	\$6,539,246	\$6,929,000	\$7,088,640	\$7,372,186	\$7,667,073	\$7,973,756	\$8,292,706
% increase in revenues	10.02%	5.96%	2.30%	4.00%	4.00%	4.00%	4.00%
All Other:							
Account charge	591,019	600,000	600,000	800,000	816,000	832,320	848,966
Sewer Fund charge	1,063,248	1,100,000	1,381,000	1,422,430	1,465,103	1,509,056	1,554,328
Hydrant rentals-water	5,770	2,000	3,000	3,000	3,000	3,000	3,000
Hydrant rentals-equip.	6,550	2,000	5,000	2,000	2,000	2,000	2,000
General Fund hydrants	345,000	351,900	351,900	351,900	358,938	366,117	373,439
Cut-on/off-late fees	91,255	97,000	91,000	92,000	92,000	92,000	92,000
Meter removal	7,514	10,000	7,500	7,500	7,500	7,500	7,500
Delinquent account fee	93,123	100,000	85,000	85,000	85,000	85,000	85,000
Fire protection	82,073	79,040	85,363	92,192	99,568	107,533	116,136
Connection fee	86,016	50,000	60,000	95,000	95,000	95,000	95,000
Availability fee	58,223	50,000	45,000	60,000	75,000	100,000	100,000
Water cost plus & other	43,031	29,000	29,500	30,000	30,000	30,000	30,000
	2,472,822	2,470,940	2,744,263	3,041,022	3,129,109	3,229,526	3,307,369
	\$9,012,068	\$9,399,940	\$9,832,903	\$10,413,208	\$10,796,182	\$11,203,282	\$11,600,075

Notes:

1. Water sales in HCF are lower than historical average in FY 2009 and FY 2010 due to weather and economic conditions. FY 2011 amounts assumed to return to historical average.
2. No increase assumed in account charge in FY 2011. The account charge is assumed to increase 33% in FY 2012 and 2% per year thereafter.
3. Sewer Fund charge increase in FY 2011 due to transfer of General Fund staff to Utilities.
4. Fire protection fees assumed to increase 8% per year starting in FY 2011.
5. Connection fee and availability fee decrease in FY 2010 and FY 2011 due to economic conditions.

**CITY OF LYNCHBURG
WATER CONTRACTS**

	Actual	Est.	Budget	Proj.	Proj.	Proj.	Proj.
	FY 2009	FY2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
AMHERST							
HCF of use	55,355	55,000	55,000	55,000	55,000	55,000	55,000
Rate	2.00	2.00	2.00	2.06	2.12	2.19	2.25
	\$110,775	\$110,000	\$110,000	\$113,300	\$116,699	\$120,200	\$123,806
FY09 Water Settlement		6,070					
	\$110,775	\$116,070	\$110,000	\$113,300	\$116,699	\$120,200	\$123,806
BEDFORD							
HCF of use	798,263	800,000	816,000	832,320	848,966	865,946	883,265
Rate	1.88	1.94	2.04	2.10	2.16	2.23	2.30
	\$1,500,649	\$1,555,000	\$1,664,640	\$1,748,871	\$1,837,364	\$1,930,334	\$2,028,009
FY09 Water Settlement		82,266					
	\$1,500,649	\$1,637,266	\$1,664,640	\$1,748,871	\$1,837,364	\$1,930,334	\$2,028,009
CAMPBELL							
HCF of use	250,828	275,400	280,908	286,526	292,257	298,102	304,064
Rate	1.88	1.71	1.90	1.96	2.02	2.08	2.14
	\$471,779	\$470,000	\$533,725	\$560,732	\$589,105	\$618,913	\$650,230
FY09 Water Settlement		446					
	\$471,779	\$470,446	\$533,725	\$560,732	\$589,105	\$618,913	\$650,230
ROCK TENN							
HCF of use	440,087	400,000	400,000	400,000	400,000	400,000	400,000
Rate	0.99	1.18	1.21	1.24	1.27	1.30	1.34
	\$435,446	\$500,000	\$484,000	\$496,000	\$508,000	\$520,000	\$535,600
FRITO-LAY							
HCF of use	155,245	135,593	135,000	135,000	135,000	135,000	135,000
Rate	1.11	1.18	1.21	1.24	1.27	1.30	1.34
	\$171,563	\$160,000	\$163,350	\$167,400	\$171,450	\$175,500	\$180,765
	\$2,690,212	\$2,883,782	\$2,955,715	\$3,086,302	\$3,222,617	\$3,364,948	\$3,518,411

Notes:

1. County rates in FY 2009 and FY 2010 include year end settlement adjustments.
2. County rates in FY 2011 based on FY 2009 actual rates plus 6% (two years @3%). Rates thereafter increase 3% per year.
3. Rock Tenn and Frito-Lay rates after FY 2009 are based on new contract rates.
- 4 County water settlements always paid in next fiscal year.

**CITY OF LYNCHBURG
INTEREST & OTHER WATER REVENUES**

	Actual	Est.	Budget	Proj.	Proj.	Proj.	Proj.
	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Interest revenues	82,844	150,000	150,000	150,000	150,000	150,000	150,000
All other	28,539	10,000	11,000	11,000	11,000	11,000	11,000
	\$111,383	\$160,000	\$161,000	\$161,000	\$161,000	\$161,000	\$161,000

Note:

1. Interest revenues bases on estimated average cash balance at 2% interest earnings rate.
2. All other includes Pedlar fishing permit fees, sale of bottled water, & miscellaneous revenue

**CITY OF LYNCHBURG
ADMIN. / ENGINEERING**

	Actual	Est.	Budget	Proj.	Proj.	Proj.	Proj.
	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Personal services	\$947,302	\$1,017,493	\$1,210,046	\$1,246,347	\$1,283,738	\$1,322,250	\$1,361,917
Fringe benefits	336,021	363,615	470,292	484,401	498,933	513,901	529,318
Supplies & materials	20,811	30,690	28,910	29,777	30,671	31,591	32,538
Gasoline / fuel	4,531	5,300	5,000	5,150	5,305	5,464	5,628
Internal service charges	7,083	15,187	14,653	15,093	15,545	16,012	16,492
Rentals & leases	4,472	4,400	5,100	5,253	5,411	5,573	5,740
Communication charges	6,329	9,500	9,800	10,094	10,397	10,709	11,030
Contractual services	77,576	137,909	87,740	90,372	93,083	95,876	98,752
Training & travel	12,466	12,700	13,250	13,648	14,057	14,479	14,913
Indirect costs	874,588	756,622	856,622	882,321	908,790	936,054	964,136
Self - insurance	150,538	148,191	148,191	152,637	157,216	161,932	166,790
Miscellaneous	10,056	16,500	16,500	16,995	17,505	18,030	18,571
	\$2,451,773	\$2,518,107	\$2,866,104	\$2,952,087	\$3,040,650	\$3,131,869	\$3,225,825

Notes:

1. Salaries and fringe benefits increase in FY 2010 and FY 2011 due to transfer of 5 staff positions from General Fund which is assumed to occur in January 2010.
2. No pay increase assumed in FY 2010 or FY 2011.
3. After FY 2011, all costs assumed to increase 3% per year.

**CITY OF LYNCHBURG
WATER TREATMENT**

	Actual	Est.	Budget	Proj.	Proj.	Proj.	Proj.
	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Personal services	\$972,026	\$968,340	\$986,923	\$1,016,531	\$1,047,027	\$1,078,437	\$1,110,791
Fringe benefits	365,423	379,642	410,438	422,751	435,434	448,497	461,952
Supplies & materials	117,958	127,600	119,200	122,776	126,459	130,253	134,161
Chemicals	504,027	476,400	496,400	511,292	526,631	542,430	558,703
Gasoline / fuel	6,442	6,200	6,500	6,695	6,896	7,103	7,316
Internal service charges	23,426	26,255	25,566	26,333	27,123	27,937	28,775
Rentals & leases	2,691	2,761	3,500	3,605	3,713	3,825	3,939
Communication charges	10,738	11,550	11,550	11,897	12,253	12,621	13,000
Utilities	614,545	637,600	657,600	677,328	697,648	718,577	740,135
Contractual services	270,278	315,221	269,566	277,653	285,983	294,562	303,399
Training & travel	15,147	14,000	14,000	14,420	14,853	15,298	15,757
Misc., incl. operations fee	51,321	51,860	54,500	56,135	57,819	59,554	61,340
	\$2,954,022	\$3,017,429	\$3,055,743	\$3,147,415	\$3,241,838	\$3,339,093	\$3,439,266

Notes:

1. No pay increase assumed in FY 2010 or FY 2011.
2. After FY 2011, all costs assumed to increase 3% per year.

**CITY OF LYNCHBURG
WATER LINE MAINTENANCE**

	Actual	Est.	Budget	Proj.	Proj.	Proj.	Proj.
	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Personal services	\$624,892	\$618,776	\$612,361	\$630,732	\$649,654	\$669,143	\$689,218
Fringe benefits	221,638	236,384	248,460	255,914	263,591	271,499	279,644
Supplies & materials	407,726	368,605	368,500	379,555	390,942	402,670	414,750
Gasoline / fuel	30,273	30,400	32,950	33,939	34,957	36,005	37,086
Internal service charges	131,585	141,422	106,558	109,755	113,047	116,439	119,932
Rentals & leases	1,665	3,400	3,000	3,090	3,183	3,278	3,377
Communication charges	3,219	5,700	5,550	5,717	5,888	6,065	6,247
Contractual services	126,870	255,875	160,574	165,391	170,353	175,464	180,727
Training & travel	0	4,000	4,250	4,378	4,509	4,644	4,783
Miscellaneous	68	68	700	721	743	765	788
	\$1,547,936	\$1,664,630	\$1,542,903	\$1,589,190	\$1,636,866	\$1,685,972	\$1,736,551

Notes:

1. No pay increase assumed in FY 2010 or FY 2011.
2. After FY 2011 all costs assumed to increase 3% per year.

**CITY OF LYNCHBURG
METER READING**

	Actual	Est.	Budget	Proj.	Proj.	Proj.	Proj.
	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Personal services	\$246,442	\$250,303	\$262,524	\$270,400	\$278,512	\$286,867	\$295,473
Fringe benefits	99,008	100,921	110,525	113,841	117,256	120,774	124,397
Supplies & materials	412,693	371,900	423,110	435,803	448,877	462,344	476,214
Gasoline / fuel	15,454	16,000	17,000	17,510	18,035	18,576	19,134
Internal service charges	37,782	31,816	36,349	37,439	38,563	39,720	40,911
Rentals & leases	72	100	100	103	106	109	113
Communication charges	2,261	3,350	2,850	2,936	3,024	3,114	3,208
Contractual services	4,761	48,277	33,996	35,016	36,066	37,148	38,263
Training & travel	2,560	1,500	1,500	1,545	1,591	1,639	1,688
Miscellaneous	68	200	200	206	212	219	225
	\$821,101	\$824,367	\$888,154	\$914,799	\$942,243	\$970,510	\$999,625

Notes:

1. No pay increase assumed in FY 2010 or FY 2011.
2. After FY 2011 all costs assumed to increase 3% per year.

**CITY OF LYNCHBURG
WATER NON-DEPARTMENTAL**

	Actual	Est.	Budget	Proj.	Proj.	Proj.	Proj.
	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Financial audit	\$22,875	\$22,174	\$22,712	\$23,393	\$24,095	\$24,818	\$25,563
Interest on customer deposits	10,172	15,450	15,914	16,391	16,883	17,389	17,911
OPEB/Retirees health/WC insurance	73,806	140,740	150,990	155,520	160,185	164,991	169,941
Utility billing upgrades	0	3,000	3,000	3,090	3,183	3,278	3,377
Allowance for doubtful accounts	20,734	25,000	25,750	26,523	27,318	28,138	28,982
Project costs charged to operations	33,397	25,000	25,000	25,000	25,000	25,000	25,000
	\$160,984	\$231,364	\$243,366	\$249,916	\$256,664	\$263,614	\$270,772

Notes:

1. All expense items assumed to increase 3% / year after FY 2011.

**CITY OF LYNCHBURG
WATER FUND BONDS PAYABLE AND DEBT SERVICE**

	Est.	Budget	Proj.	Proj.	Proj.	Proj.
	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
P&I on borrowings o/s @ 6/30/09 (1)	\$3,238,566	\$3,655,585	\$3,638,299	\$3,582,556	\$3,415,003	\$3,292,003
Interest on LOC borrowing	3,790	0	10,000	40,000	10,000	40,000
Interest only payments						
\$8.0 million issued in FY 2012			190,400	380,000		
\$8.0 million issued in FY 2014					190,000	380,000
Level debt service payments:						
Level P&I on \$8.0 million					522,481	522,481
IRS rebate	(117,400)	(251,600)	(251,600)	(251,600)	(251,600)	(251,600)
	\$3,124,956	\$3,403,985	\$3,587,099	\$3,750,956	\$3,885,884	\$3,982,884

Notes:

1. Per Finance Department's worksheet analysis of debt refinancing dated November 23, 2009.
2. Interest on LOC based on a 2.0% annual rate.
3. New debt issues assumed to occur in the first quarter of years shown; interest assumed at 4.75% and starts 6 months after issue date.
4. Level debt service assumed on all new G.O issues starting two years after year of issue.

Sewer Fund

**CITY OF LYNCHBURG
SEWER NON-VCWRLF CAPITAL FINANCING PLAN**

	Est.	Budget	Proj.	Proj.	Proj.	Proj.
	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
BEGINNING FUNDS (1)	\$10,537,117	\$9,871,857	\$3,255,116	\$3,525,787	\$680,787	\$6,343,287
RECEIPTS						
Transfers	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000
G.O. borrowings	3,500,000	0	3,500,000	0	9,000,000	0
Total Receipts	6,000,000	2,500,000	6,000,000	2,500,000	11,500,000	2,500,000
EXPENDITURES						
Other Unexpended Appropriations (2)	2,454,985	1,027,216	0	0	0	0
CSO Locally Funded Projects	2,788,425	3,717,675	3,123,029	2,745,000	3,237,500	3,635,000
Rainleader disconnect program	121,850	121,850	106,300	100,000	100,000	100,000
Major collection system repairs/SSES (3)	150,000	1,100,000	1,000,000	1,000,000	1,000,000	1,000,000
Annual sewer extensions	250,000	1,250,000	1,000,000	1,000,000	1,000,000	1,000,000
WWTP improvements	200,000	800,000	500,000	500,000	500,000	500,000
Burton Creek Interceptor	0	0	0	0	0	150,000
Office relocation	0	1,000,000	0	0	0	0
WWTP - Secondary treatment upgrades	300,000	100,000	0	0	0	0
Sludge Management Study	400,000	0	0	0	0	0
Total Expenditures	6,665,260	9,116,741	5,729,329	5,345,000	5,837,500	6,385,000
ENDING FUNDS	\$9,871,857	\$3,255,116	\$3,525,787	\$680,787	\$6,343,287	\$2,458,287

Notes:

1. Beginning funds in FY 2010 equals cash and investment accounts in the Sewer Capital Fund.
2. Unexpended appropriations represents unspent funds applicable to FY 2009 and prior year appropriations.
3. Major collection system repairs / SSES includes internal labor cost that are capitaizable.

**CITY OF LYNCHBURG
SEWER VCWRLF & Grant FINANCING PLAN**

	Est.	Budget	Proj.	Proj.	Proj.	Proj.
	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
BEGINNING FUNDS	\$31,355,076	\$19,285,036	\$25,592,600	\$17,907,348	\$14,344,848	\$13,627,348
Receipts						
ARRA/Stimulus proceeds	7,840,600	10,741,400	521,749	0	0	0
Grant proceeds	1,070,033	0	0	0	0	0
VCWRLF loan approvals - 3%	0	7,000,000	0	0	0	0
VCWRLF loan approvals - 0%	13,100,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Total Receipts	22,010,633	27,741,400	10,521,749	10,000,000	10,000,000	10,000,000
EXPENDITURES						
James River Interceptor projects	23,424,915	10,662,800	5,500,000	6,000,000	6,000,000	0
WWTP - Secondary treatment upgrades	0	0	3,500,000	3,500,000	0	0
Long Term Control Plan	1,800,000	1,200,000	0	0	0	0
Sewer separation projects	8,855,758	9,571,036	9,207,001	4,062,500	4,717,500	5,484,500
Fishing Creek Interceptor	0	0	0	0	0	2,680,000
Total Expenditures	34,080,673	21,433,836	18,207,001	13,562,500	10,717,500	8,164,500
ENDING FUNDS	\$19,285,036	\$25,592,600	\$17,907,348	\$14,344,848	\$13,627,348	\$15,462,848

Notes:

1. Beginning funds equal amounts due from other government account receivable per June 30, 2009 audited balance in GL.
2. Beginning funds and VCWRLF loan approvals are funds held by DEQ on behalf of the City. No interest is earned on these unexpended funds.

**CITY OF LYNCHBURG
PROJECTED STATEMENT OF SEWER FUND DEBT COVERAGE**

	Actual	Est.	Budget	Proj.	Proj.	Proj.	Proj.
	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Revenues:							
Charges for services	\$15,542,333	\$15,981,245	\$16,175,843	\$16,822,535	\$17,335,264	\$17,860,029	\$18,401,351
Sewer contracts	2,660,170	2,994,419	3,022,790	3,147,147	3,210,351	3,377,910	3,464,960
Interest and other	660,385	399,034	349,000	274,000	274,000	274,000	274,000
Total Revenues	\$ 18,862,888	\$ 19,374,698	\$ 19,547,633	\$ 20,243,682	\$ 20,819,615	\$ 21,511,939	\$ 22,140,311
Expenses:							
WWTP	5,051,556	6,037,900	6,454,150	6,804,319	6,793,194	7,088,267	7,300,915
Sewer line maintenance	1,920,962	2,359,183	2,582,246	2,659,713	2,739,505	2,821,690	2,906,341
Non-departmental	1,925,040	400,495	540,036	464,274	483,832	496,643	510,339
Capitalizable cost (1)	0	(105,000)	(265,000)	(272,950)	(281,139)	(289,573)	(298,260)
Total Expenses	8,897,559	8,692,578	9,311,432	9,655,356	9,735,392	10,117,027	10,419,334
Operating Income	9,965,329	10,682,120	10,236,201	10,588,326	11,084,223	11,394,911	11,720,977
Debt service	6,540,164	7,129,795	7,475,556	8,198,176	8,744,262	9,360,836	9,738,249
Net Revenue	\$3,425,165	\$3,552,325	\$2,760,645	\$2,390,150	\$2,339,961	\$2,034,076	\$1,982,728
Debt Coverage	1.52	1.50	1.37	1.29	1.27	1.22	1.20

Notes:

1. Capitalizable cost includes internal labor charges applicable to time spent on capital project activities.

**CITY OF LYNCHBURG
PROJECTED STATEMENT OF SEWER FUND SOURCES & USES of CASH**

	Actual	Est.	Budget	Proj.	Proj.	Proj.	Proj.
	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Sources of Cash:							
Beginning cash balance	\$14,945,887	\$14,466,696	\$14,676,536	\$8,135,440	\$8,196,261	\$5,091,222	\$10,187,798
Net revenue	3,425,165	3,552,325	2,760,645	2,390,150	2,339,961	2,034,076	1,982,728
G.O. bond proceeds, net	0	3,500,000	0	3,500,000	0	9,000,000	0
VCWRLF loan draw downs	6,969,936	25,170,040	10,692,436	17,685,252	13,562,500	10,717,500	8,164,500
ARRA grants	0	7,840,600	10,741,400	521,749	0	0	0
Proceeds from other organizations	658,435	0	0	0	0	0	0
Other capital grants	2,679,111	1,070,033	0	0	0	0	0
total sources of cash	28,678,534	55,599,694	38,871,017	32,232,591	24,098,722	26,842,798	20,335,026
Uses of Cash:							
Capital & VCWRLF expenditures	14,500,717	40,745,933	30,550,577	23,936,330	18,907,500	16,555,000	14,549,500
Other capital expenditures	162,756	177,225	185,000	100,000	100,000	100,000	100,000
Change in working capital items	(451,635)	0	0	0	0	0	0
total uses of cash	14,211,838	40,923,158	30,735,577	24,036,330	19,007,500	16,655,000	14,649,500
Ending Cash	\$14,466,696	\$14,676,536	\$8,135,440	\$8,196,261	\$5,091,222	\$10,187,798	\$5,685,526

Cash in capital fund	\$10,537,117	\$9,871,857	\$3,255,116	\$3,525,787	\$680,787	\$6,343,287	\$2,458,287
Unrestricted cash	3,929,579	4,804,679	4,880,324	4,670,474	4,410,435	3,844,511	3,227,239
Total cash	\$14,466,696	\$14,676,536	\$8,135,440	\$8,196,261	\$5,091,222	\$10,187,798	\$5,685,526
Unrestricted cash as a % of budget (2)	25%	30%	29%	26%	24%	20%	16%

Notes:

1. Other capital expenditures includes capital outlays in Sewer Operating Fund.
2. Budget includes Operating Fund expenses plus debt service.

**CITY OF LYNCHBURG
CHARGES FOR SERVICES**

	Actual	Est.	Budget	Proj.	Proj.	Proj.	Proj.
	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
CITY CUSTOMERS							
HCF of use	2,546,506	2,500,000	2,600,000	2,600,000	2,600,000	2,600,000	2,600,000
Rate	5.38	5.54	5.54	5.71	5.88	6.05	6.24
	\$13,700,203	\$14,399,070	\$14,404,000	\$14,836,120	\$15,281,204	\$15,739,640	\$16,211,829
% increase in revenues	8.0%	5.1%	0.0%	3.0%	3.0%	3.0%	3.0%
ALL OTHER:							
Account charge	415,536	423,044	424,000	563,920	580,838	598,263	616,211
College Hill backwash	112,600	112,600	115,978	119,457	123,041	126,732	130,534
Leachate treatment	59,280	60,471	62,285	64,154	66,078	68,061	70,102
Septic hauler charges	395,165	400,000	420,000	441,000	463,050	486,203	510,513
Industrial pre-treatment	4,550	7,000	4,500	4,500	4,500	4,500	4,500
Industrial surcharges	311,517	329,600	346,080	363,384	381,553	400,631	420,662
Industrial monitoring	35,087	40,000	25,000	30,000	35,000	35,000	35,000
Cut-on penalties	80,941	84,460	81,000	82,000	82,000	83,000	84,000
Connection charges	143,670	50,000	135,000	135,000	135,000	135,000	135,000
Availability charges	250,399	50,000	125,000	150,000	150,000	150,000	150,000
Sewer cost plus	23,035	15,000	23,000	23,000	23,000	23,000	23,000
Collection & Tax Lien Fees	10,350	10,000	10,000	10,000	10,000	10,000	10,000
All other	0	0	0	0	0	0	0
	1,842,130	1,582,175	1,771,843	1,986,415	2,054,060	2,120,389	2,189,522
	\$15,542,333	\$15,981,245	\$16,175,843	\$16,822,535	\$17,335,264	\$17,860,029	\$18,401,351

Notes:

1. No rate increase assumed in FY 2011; rate increases of 3% per year assumed thereafter.
2. No increase in account charge in FY 2011; account charge assumed to increase 33% in FY 2012 and 3% per year thereafter.
3. Septic hauler charges assumed to increase 5% per year starting in FY 2011.
4. Industrial sur-charges assumed to increase 5% per year starting in FY 2011.
5. Connection and availability fees reduced in FY 2011 due to economic conditions.

**CITY OF LYNCHBURG
SEWER CONTRACTS**

	Actual	Est.	Budget	Proj.	Proj.	Proj.	Proj.
	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
AMHERST							
Operating	\$123,102	\$202,162	\$168,244	\$176,912	\$176,623	\$184,295	\$189,824
Existing capital amort.	195,705	216,213	212,978	209,743	206,507	203,271	200,036
Future capital. - WWTP	0	20,478	56,820	56,820	56,820	110,231	110,231
Future capital -Interceptor	0	0	0	0	0	0	0
	318,807	438,853	438,042	443,475	439,950	497,797	500,091
BEDFORD							
Operating	162,396	242,802	194,127	204,130	203,796	212,648	219,027
Existing capital amort.	195,668	217,879	215,362	212,845	210,329	188,432	185,915
Future capital. - WWTP	0	353	22,725	22,725	22,725	44,087	44,087
Future capital -Interceptor	0	0		19,600	19,600	19,600	19,600
	358,064	461,034	432,214	459,300	456,450	464,767	468,629
CAMPBELL							
Operating	136,806	190,733	161,773	170,108	169,830	177,207	182,523
Existing capital amort.	94,544	103,446	102,036	100,626	99,216	97,805	96,399
Future capital. - WWTP	0	353	22,725	22,725	22,725	44,087	44,087
Future capital -Interceptor	0	0		16,333	16,333	16,333	16,333
	231,350	294,532	286,534	309,792	308,104	335,432	339,342
INDUSTRIAL							
Rock Tenn	1,138,835	1,200,000	1,236,000	1,273,080	1,311,272	1,350,611	1,391,129
Frito-lay	613,114	600,000	630,000	661,500	694,575	729,304	765,769
	1,751,949	1,800,000	1,866,000	1,934,580	2,005,847	2,079,914	2,156,898
	\$2,660,170	\$2,994,419	\$3,022,790	\$3,147,147	\$3,210,351	\$3,377,910	\$3,464,960

Notes:

1. County operating revenues based on % of WWTP expenses (Amherst-2.6%, Bedford-3%, Campbell-2.5%.
2. No significant change in sewer flows and loads anticipated from Frito-Lay or Rock Tenn from FY 2009 levels. Revenues increase due to increase in contract rates approved during FY 2009.

**CITY OF LYNCHBURG
OTHER SEWER REVENUES**

	Actual	Est.	Budget	Proj.	Proj.	Proj.	Proj.
Other Revenues	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Interest Revenue	363,942	300,000	250,000	175,000	175,000	175,000	175,000
State highway maintenance	38,500	93,000	93,000	93,000	93,000	93,000	93,000
Miscellaneous Revenue	257,943	6,034	6,000	6,000	6,000	6,000	6,000
	\$660,385	\$399,034	\$349,000	\$274,000	\$274,000	\$274,000	\$274,000

Notes:

1. State highway maintenance revenue is an allocation of funds received by the City from the State.
2. Interest excludes interest portion of County payments for capital billings.

**CITY OF LYNCHBURG
WASTEWATER TREATMENT**

	Actual	Est.	Budget	Proj.	Proj.	Proj.	Proj.
	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Personal services	\$1,196,745	\$1,288,751	\$1,315,730	\$1,355,202	\$1,395,858	\$1,437,734	\$1,480,866
Fringe benefits	447,630	468,825	521,931	537,589	553,717	570,328	587,438
Supplies & materials	351,372	368,835	369,500	380,585	392,003	403,763	415,876
Sludge disposal - landfill	530,895	540,000	550,000	566,500	583,495	601,000	619,030
Chemicals	496,054	562,000	639,000	658,170	677,915	698,253	719,200
Gasoline / fuel	11,808	15,350	19,100	19,673	20,263	20,871	21,497
Internal service charges	99,185	100,924	101,270	104,308	107,437	110,660	113,980
Rentals & leases	7,443	12,000	10,000	10,300	10,609	10,927	11,255
Communication charges	10,989	12,900	8,000	8,240	8,487	8,742	9,004
Electricity	570,949	600,000	650,000	669,500	689,585	710,273	731,581
Other utilities	120,069	164,400	164,250	169,178	174,253	179,480	184,865
Contractual services	738,134	722,213	731,271	753,209	775,805	799,080	823,052
Training & meetings	9,676	13,800	14,800	15,244	15,701	16,172	16,658
Indirect costs	368,419	357,934	342,291	352,560	363,137	374,031	385,252
Self-insurance	75,268	73,047	73,047	75,238	77,496	79,820	82,215
Admin/OH Pmts to Water Fund	0	707,921	911,460	938,804	966,968	995,977	1,025,856
Nutrient control credits	0	0	0	156,544	(54,014)	35,643	36,712
Misc.	16,921	29,000	32,500	33,475	34,479	35,514	36,579
	\$5,051,556	\$6,037,900	\$6,454,150	\$6,804,319	\$6,793,194	\$7,088,267	\$7,300,915

Notes:

1. No pay increase assumed in FY 2010 or FY 2011.
2. Adm. OH Payments to Water Fund in FY 2009 are included as non-departmental expenses.
3. After FY 2011 all expenses, except nutrient control credits / expenses assumed to increase 3% per year.

**CITY OF LYNCHBURG
SEWER LINE MAINTENANCE**

	Actual	Est.	Budget	Proj.	Proj.	Proj.	Proj.
	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Personal services	\$569,988	\$602,177	\$614,633	\$633,072	\$652,064	\$671,626	\$691,775
Fringe benefits	226,410	235,285	259,724	267,516	275,541	283,807	292,322
Supplies & materials	141,022	154,560	177,200	182,516	187,991	193,631	199,440
Gasoline / fuel	49,110	50,300	52,500	54,075	55,697	57,368	59,089
Internal service charges	251,565	290,680	277,409	285,731	294,303	303,132	312,226
Rentals & leases	1,011	1,500	1,500	1,545	1,591	1,639	1,688
Communication charges	5,408	7,550	8,550	8,807	9,071	9,343	9,623
Contractual services	69,349	171,928	151,723	156,275	160,963	165,792	170,766
Training & meetings	1,376	5,000	5,250	5,408	5,570	5,737	5,909
Indirect costs	484,275	327,285	442,928	456,216	469,902	483,999	498,519
Self-insurance	121,448	120,839	120,839	124,464	128,198	132,044	136,005
Admin/OH Pmts to Water Fund	0	392,079	469,540	483,626	498,135	513,079	528,471
Miscellaneous Expenses	0	0	450	464	477	492	506
	\$1,920,962	\$2,359,183	\$2,582,246	\$2,659,713	\$2,739,505	\$2,821,690	\$2,906,341

Notes:

1. FY 2010 and FY 2011 based on Divisional Budget Worksheets dated 1/14/10.
2. No pay increase assumed in FY 2010 or FY 2011.
3. Adm. OH Payments to Water Fund in FY 2009 are included as non-departmental expenses.
4. After FY 2011 all expenses assumed to increase 3% per year.

**CITY OF LYNCHBURG
NON-DEPARTMENTAL-SEWER**

	Actual	Est.	Budget	Proj.	Proj.	Proj.	Proj.
	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Financial audit	\$15,728	\$16,250	\$17,368	\$17,889	\$18,426	\$18,978	\$19,548
Allowance for doubtful accounts	30,054	25,000	25,750	26,523	27,318	28,138	28,982
OPEB/Retirees health/WC insurance	139,498	140,172	126,523	148,106	164,928	174,922	185,716
Water operating payments	1,063,248	0	0	0	0	0	0
Legal & professional (CSO)	8,999	44,073	45,395	46,757	48,160	49,605	51,093
Major sewer line cleaning	20,185	150,000	300,000	200,000	200,000	200,000	200,000
Project costs charged to operations	647,329	25,000	25,000	25,000	25,000	25,000	25,000
	\$1,925,040	\$400,495	\$540,036	\$464,274	\$483,832	\$496,643	\$510,339

Notes:

1. Unless noted, all expense items increase at the rate of 3% per year after FY 2011.
2. Retirees health insurance based on information provided by Human Resources Dept.
3. Legal & professional includes funds that may be needed for permit renewal and other CSO related regulatory advice.
4. Water operating payments after FY 2009 are included with the Division expenses.

**CITY OF LYNCHBURG
SEWER FUND BONDS PAYABLE**

	Est.	Budget	Proj.	Proj.	Proj.	Proj.
	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
P&I on debt o/s @ 6/30/09 (1)	7,151,240	7,521,509	8,056,004	7,977,298	7,644,453	7,484,783
Interest only payments						
\$3.5 million issue in FY 2012			83,125	166,250		
\$9.0 million issue in FY 2014					213,750	427,500
\$7.0 million VCWRLF @ 3%; closed 6/11 (2)			105,000	210,000	200,000	190,000
Principal payments on VCWRLF						
\$13.1 million loan closed 6/10 - 0%				436,667	436,667	436,667
\$10.0 million loan closed 6/11 - 0%					333,333	333,333
\$7,000,000 @ 3%; closed 6/11 (2)					350,000	350,000
\$10.0 million loan closed 6/12 -0%						333,333
Level debt service payments on Bond issues						
\$3.5 million issue in FY 2012					228,586	228,586
IRS rebate	(21,445)	(45,953)	(45,953)	(45,953)	(45,953)	(45,953)
	\$7,129,795	\$7,475,556	\$8,198,176	\$8,744,262	\$9,360,836	\$9,738,249

NOTES:

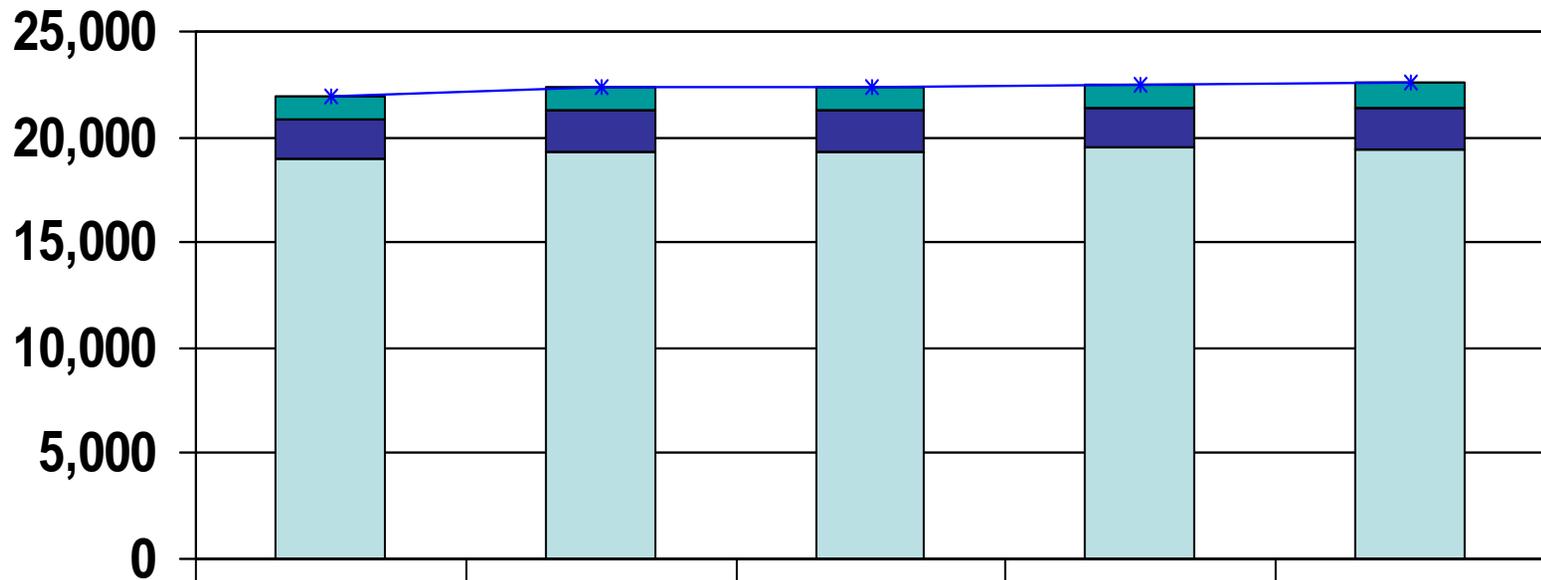
1. Per Finance Department's worksheet analysis of debt refinancing dated November 23, 2009.
2. VCWRLF 3% loan to be repaid over 20 years. All other borrowings to be repaid over 30 years.
3. Principal payments on VCWRLF loans paid over 30 years and starts two years and six months after date loans are closed.
4. G.O bonds assumed to be issued in first quarter of year shown. Principal on G.O bonds starts 2 years after year of issue.
5. Interest on new G.O bonds assumed to be at 4.75% and starts 6 months after issue date.

**Department of Utilities Statistical and
Financial Data**

Appendix II

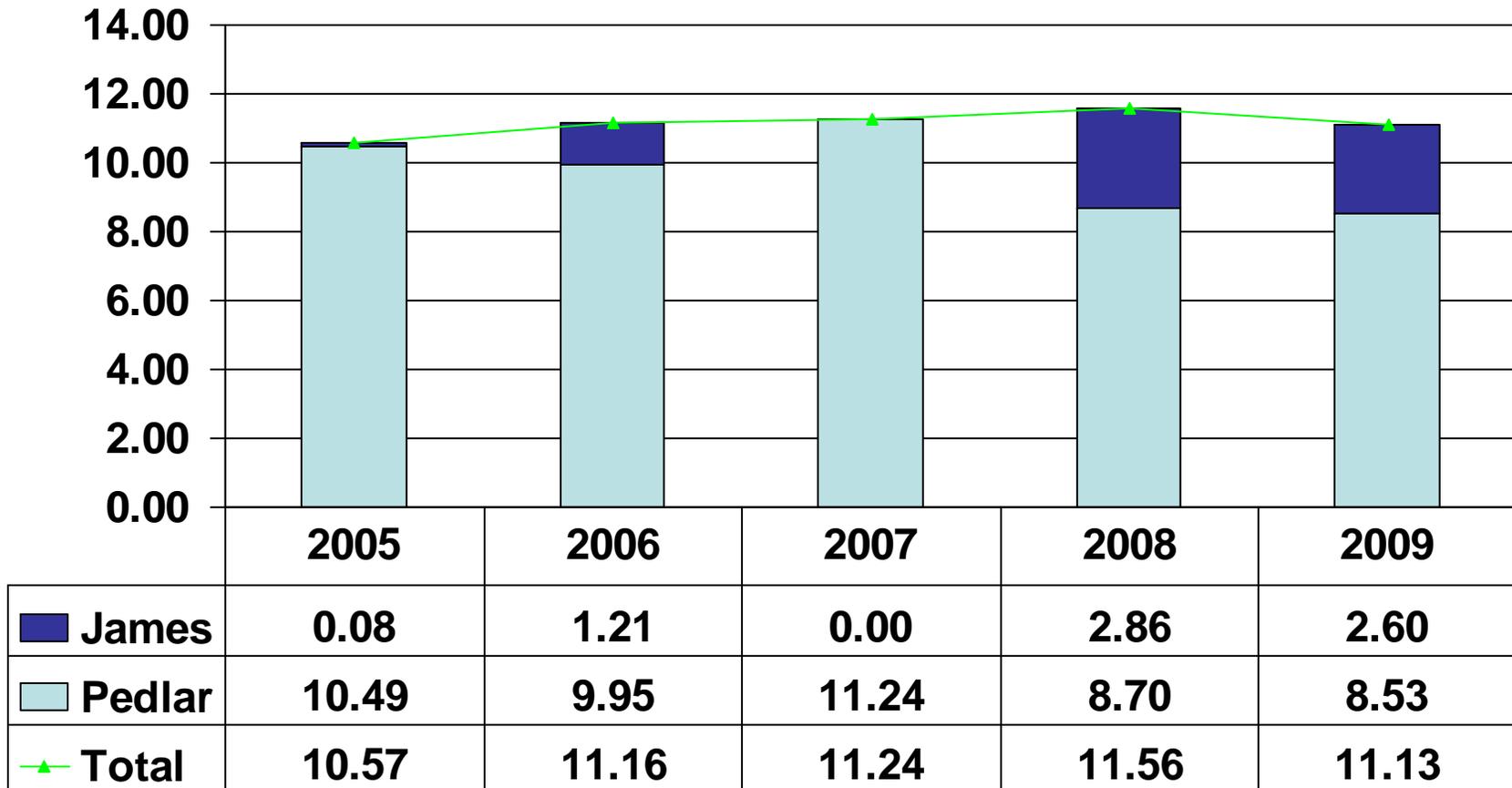
Water Fund Statistics

Number of Water Customers

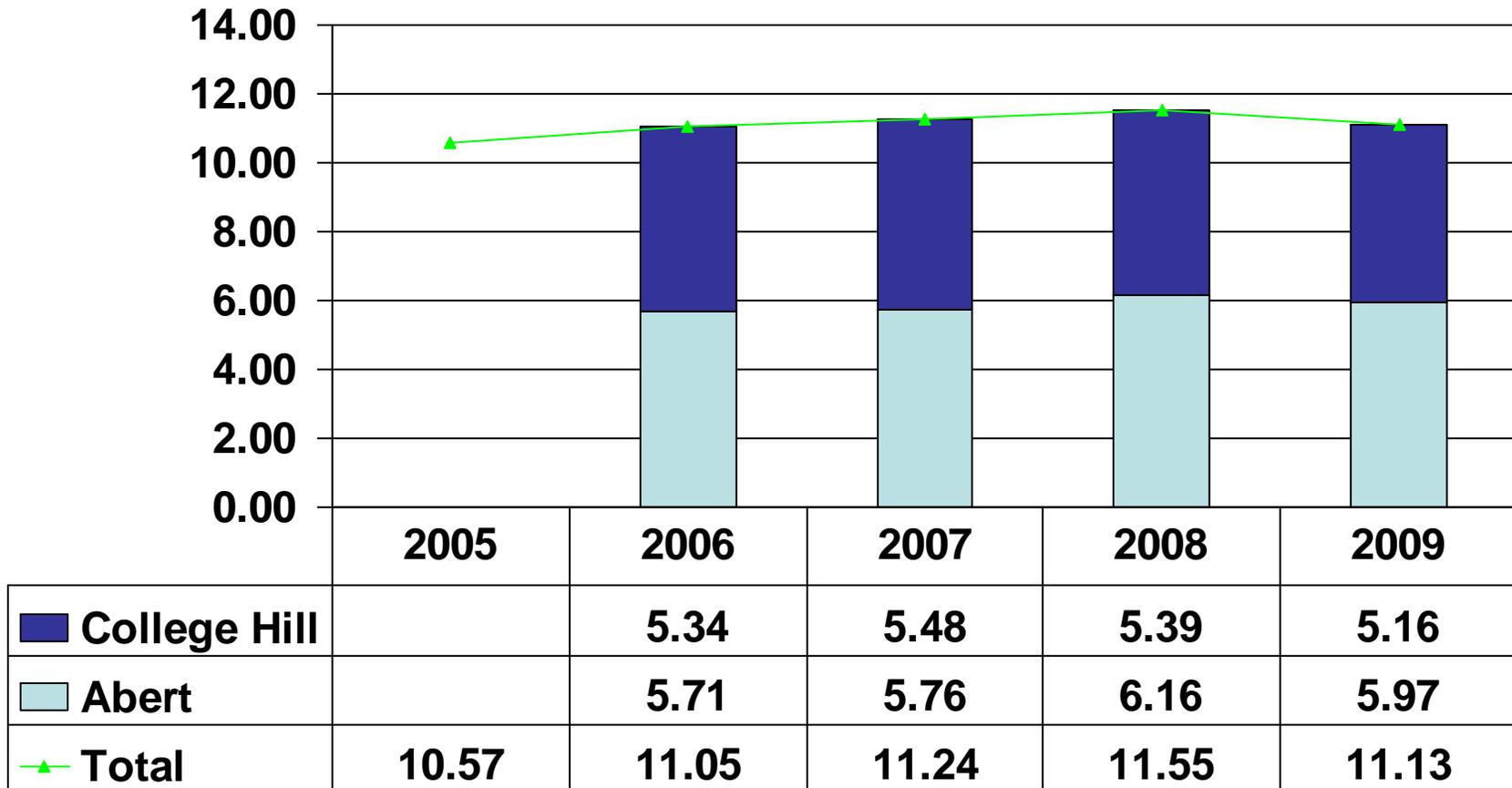


	2005	2006	2007	2008	2009
Other	1,106	1,154	1,154	1,130	1,158
Business	1,872	1,958	1,951	1,934	1,930
Domestic	18,921	19,268	19,293	19,466	19,447
* Total	21,899	22,380	22,398	22,530	22,535

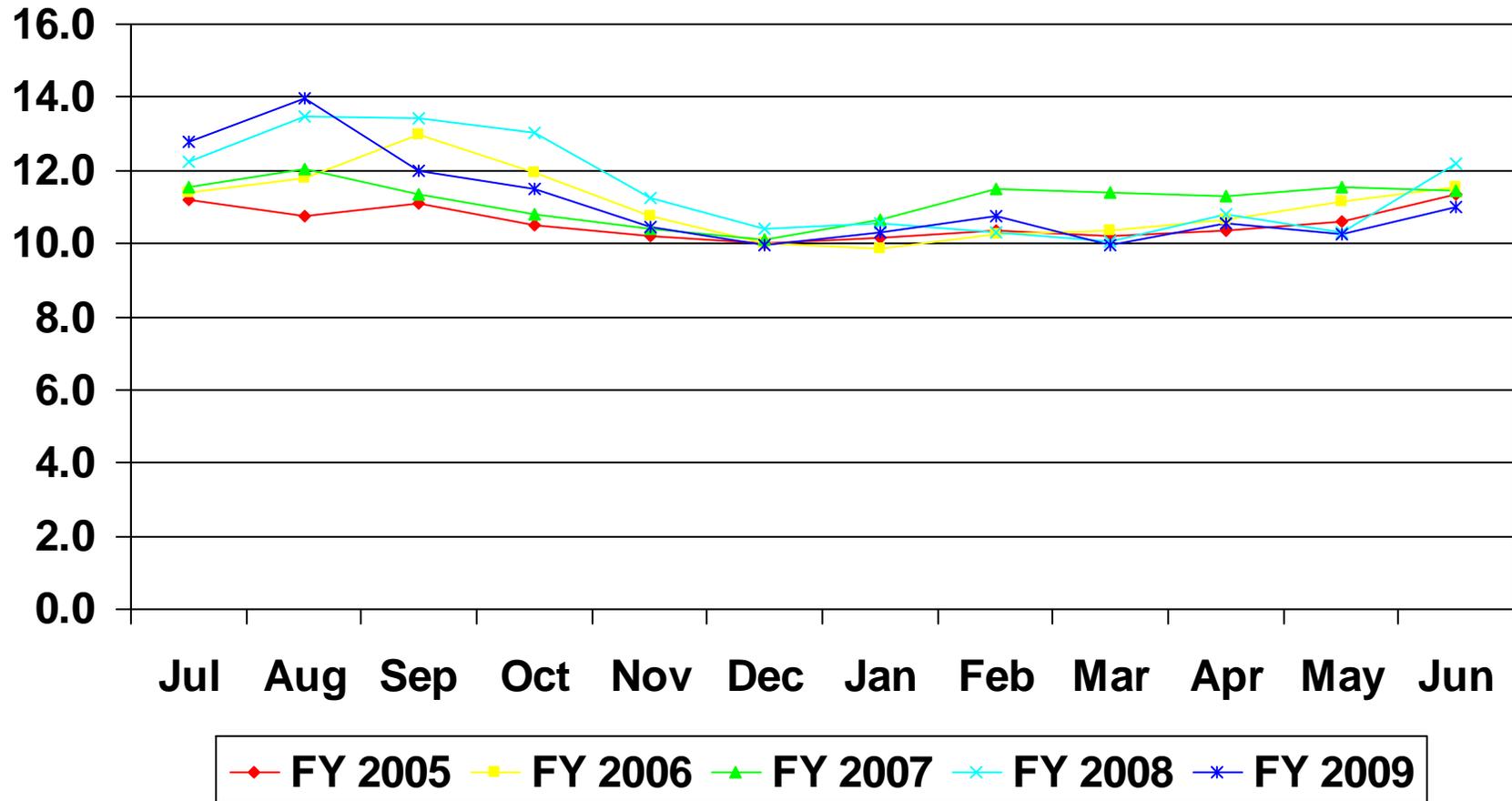
Water Withdrawals in MGD



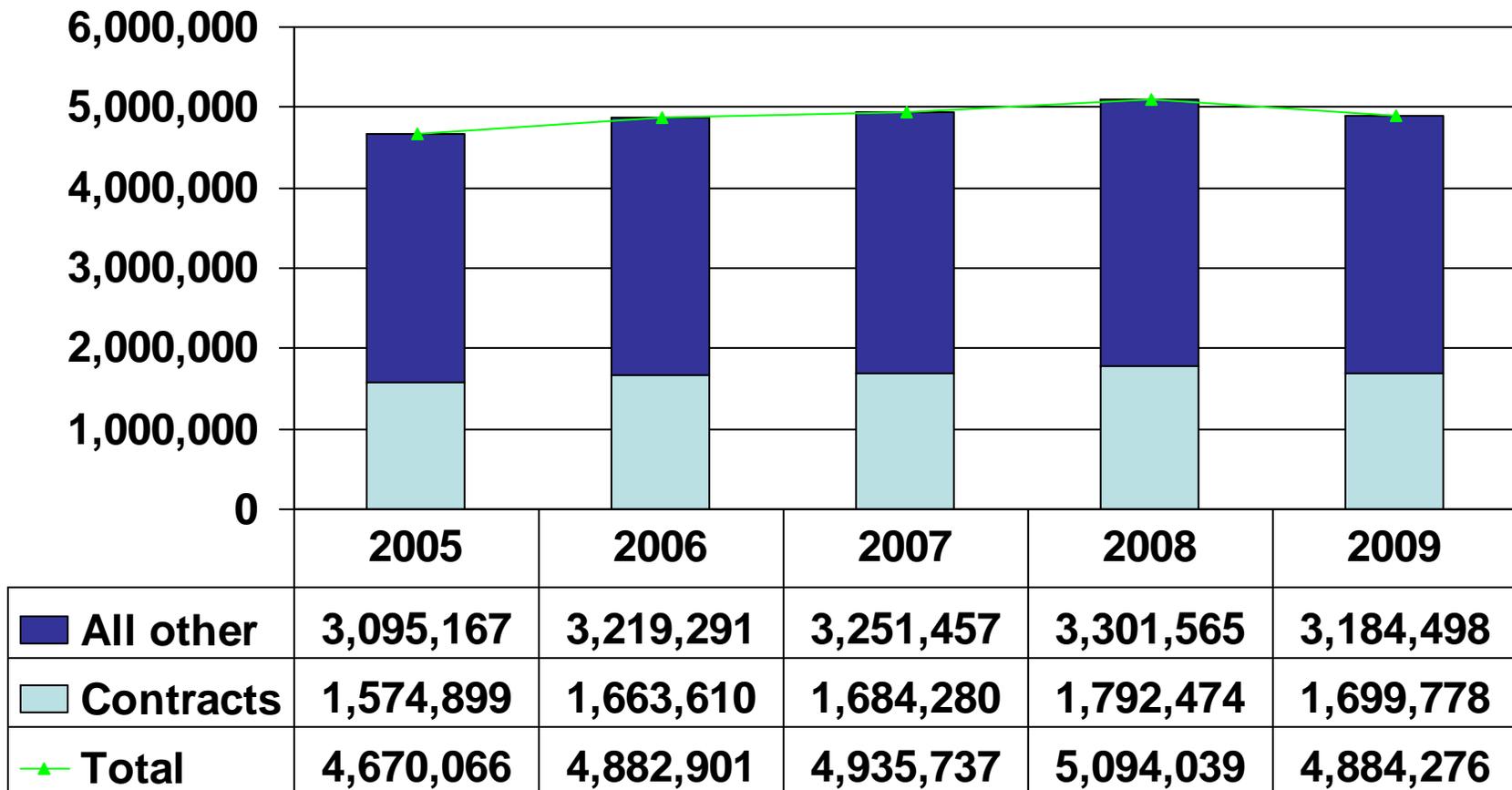
Water Production in MGD



Monthly Production in MGD



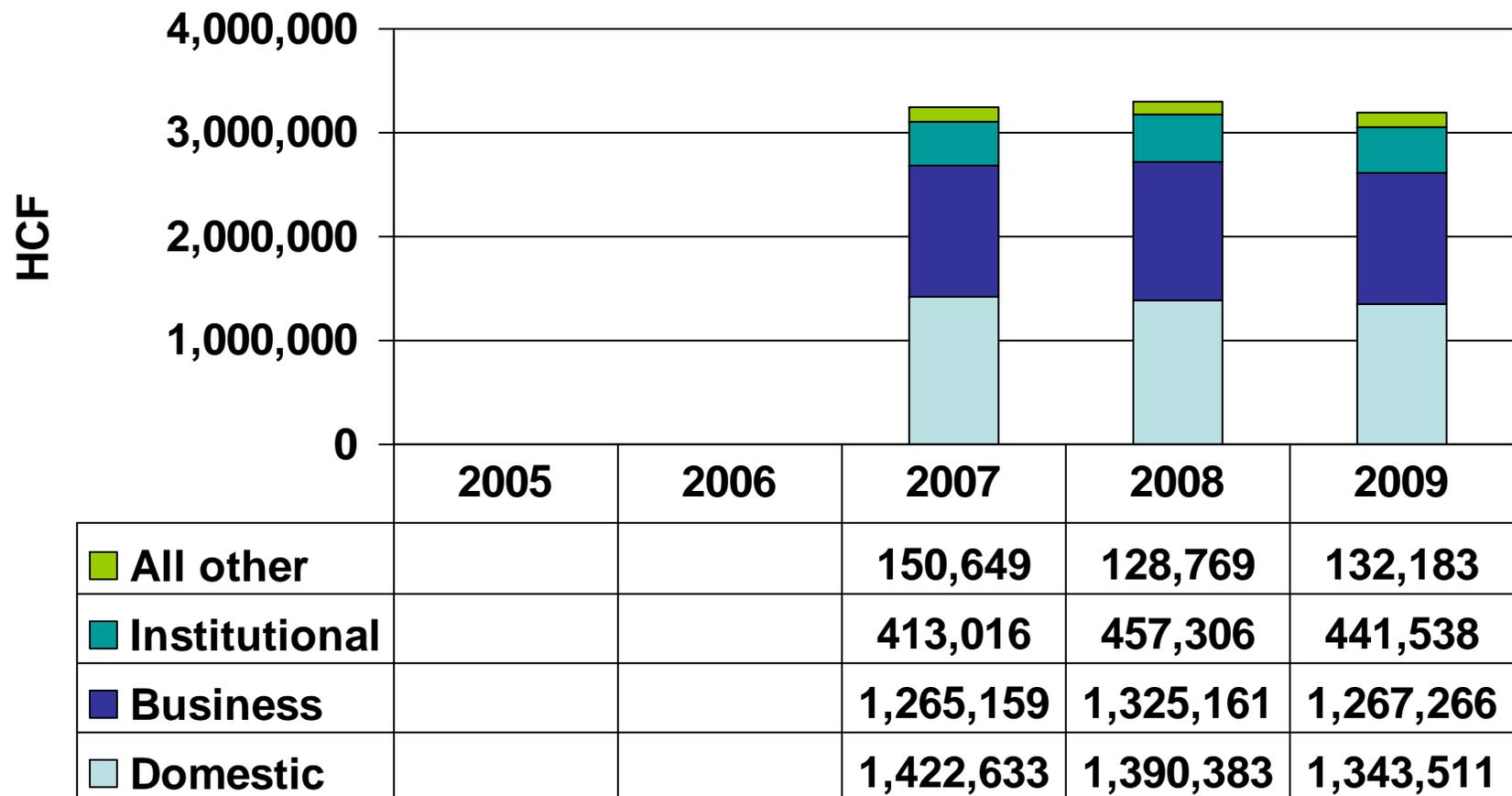
Water Sold in HCF



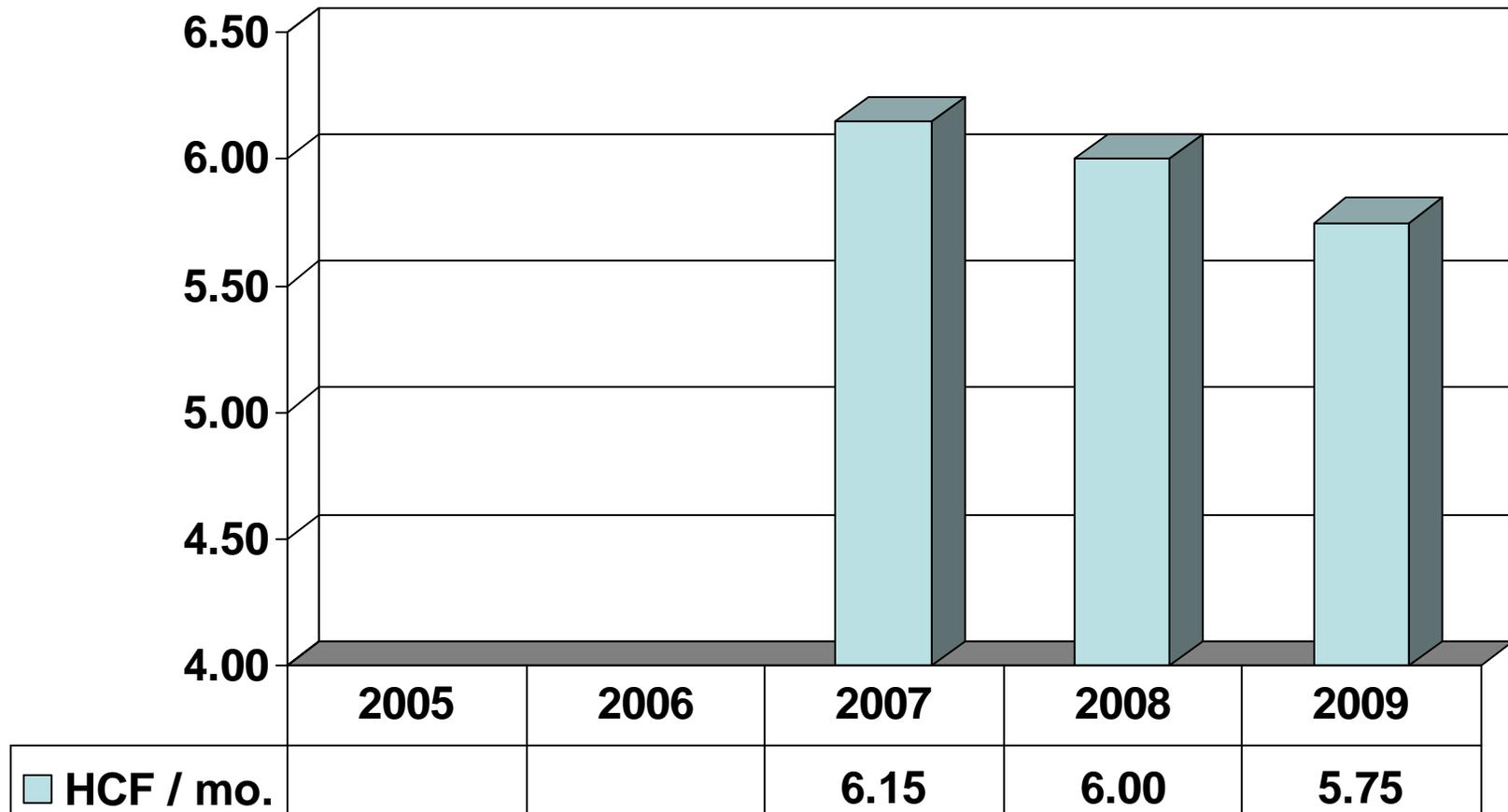
Contract Water Use in HCF

Customer	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Amherst	66,245	67,320	62,125	54,410	55,355
Bedford	678,485	706,242	722,722	806,541	798,263
CCUSA	235,452	284,389	287,918	268,788	250,826
Frito-Lay	221,709	197,058	174,554	181,668	155,245
Rock Tenn	373,008	408,601	436,961	481,067	440,087
Total contract use	1,574,899	1,663,610	1,684,280	1,792,474	1,699,776
Total use	4,670,066	4,882,901	4,935,737	5,094,093	4,884,276
Contract % of use	34%	34%	34%	35%	35%

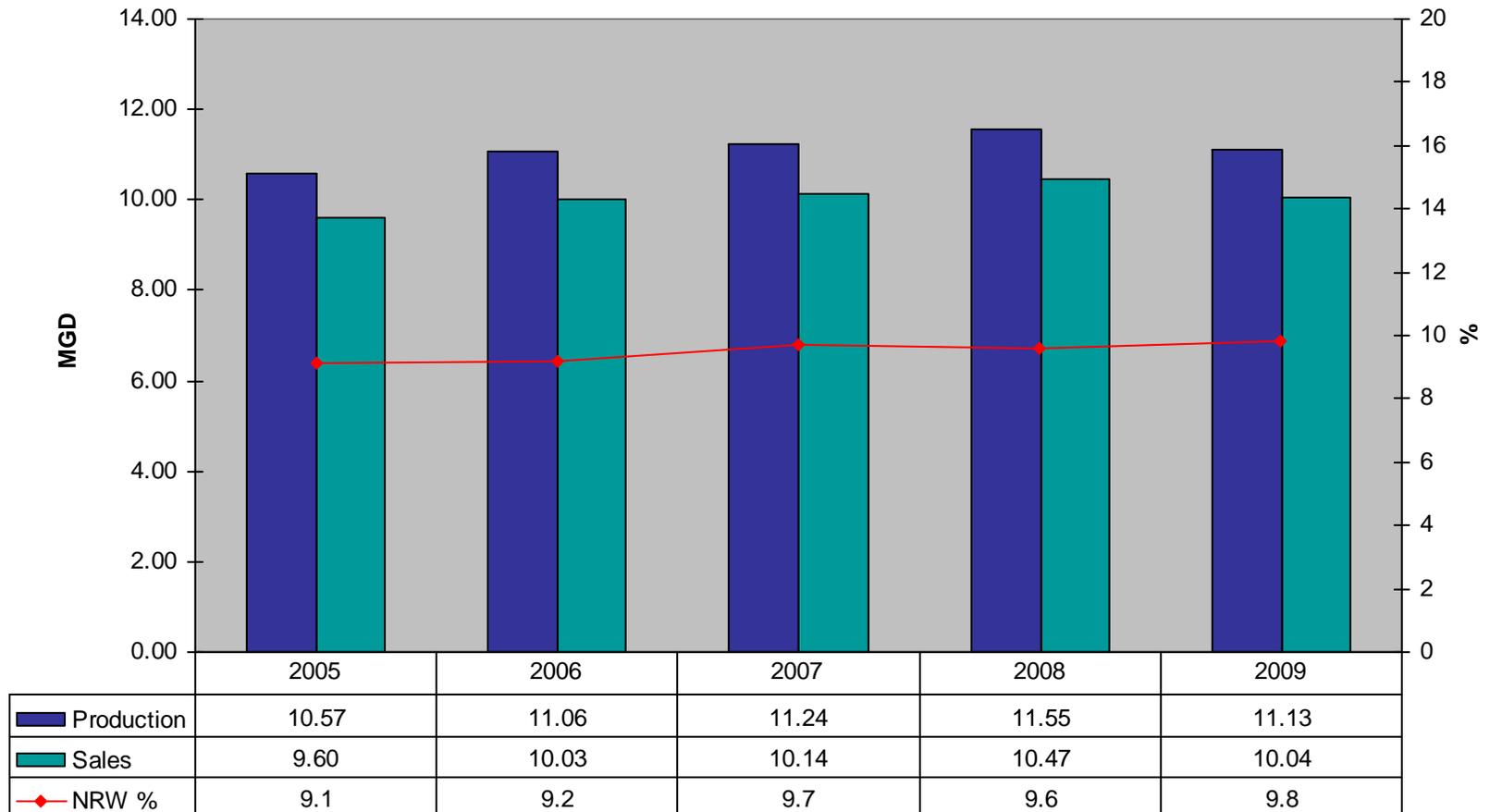
Non-Contract Water Sales in HCF



Avg. Monthly Water Sold Domestic Customers



Non Revenue Water



Water Complaints

Type of Complaint	FY 2005	FY 2006	FY 2007	FY 2008	FY2009
1. Discolored water	-	59	100	171	131
2. Odor / taste	-	8	3	4	8
3. No water	-	-	-	-	28
4. High pressure	-	2	9	4	7
5. Low pressure	-	55	117	137	87
6. Water line leaks	-	67	152	135	211
7. Main breaks	-	-	-	-	39
8. Meter leaks	-	45	62	69	79
9. Missing / broken valve / meter cover	-	29	21	12	55

Water Fund Financial Data

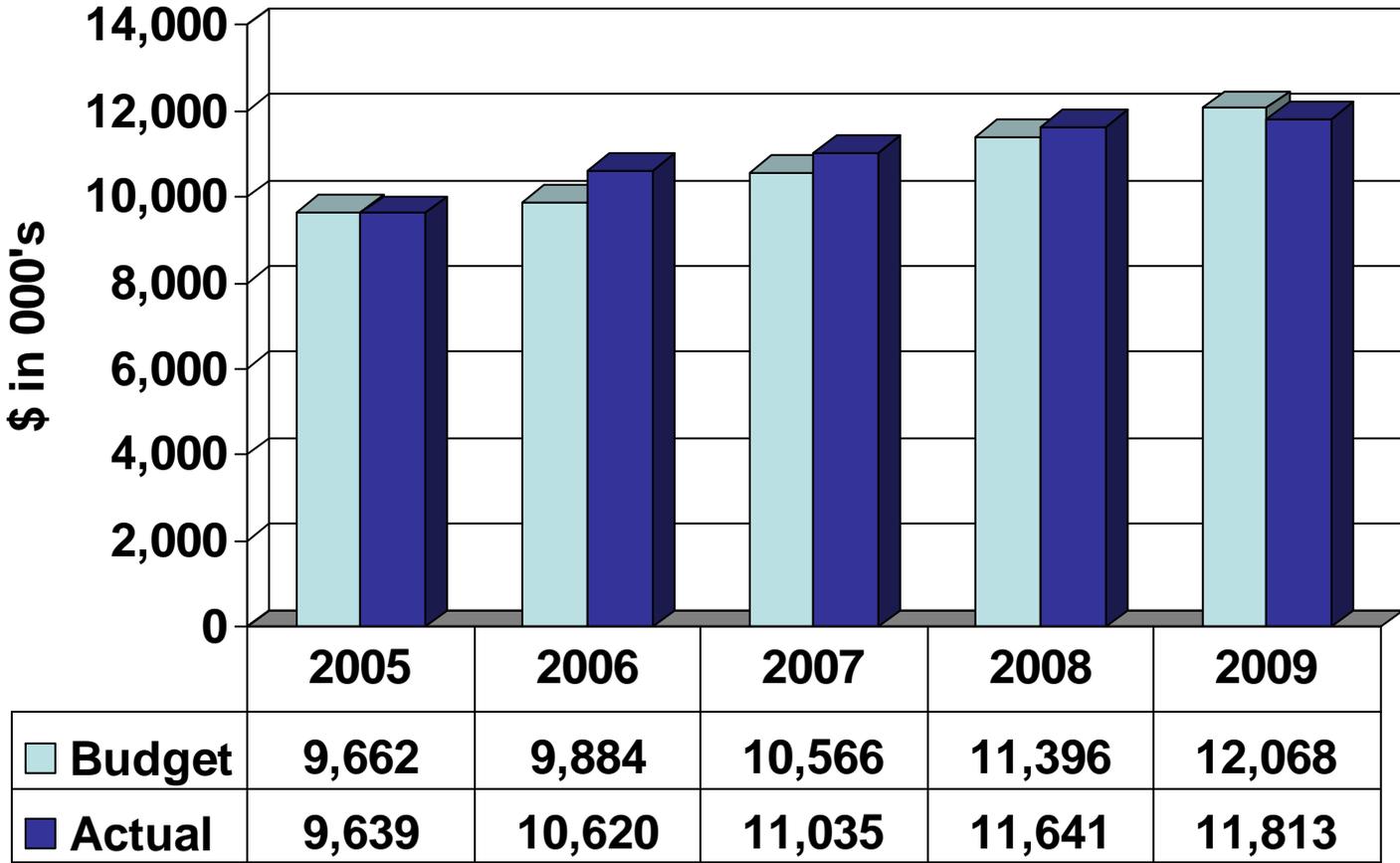
Water Fund Debt Coverage

(\$ in 000's)

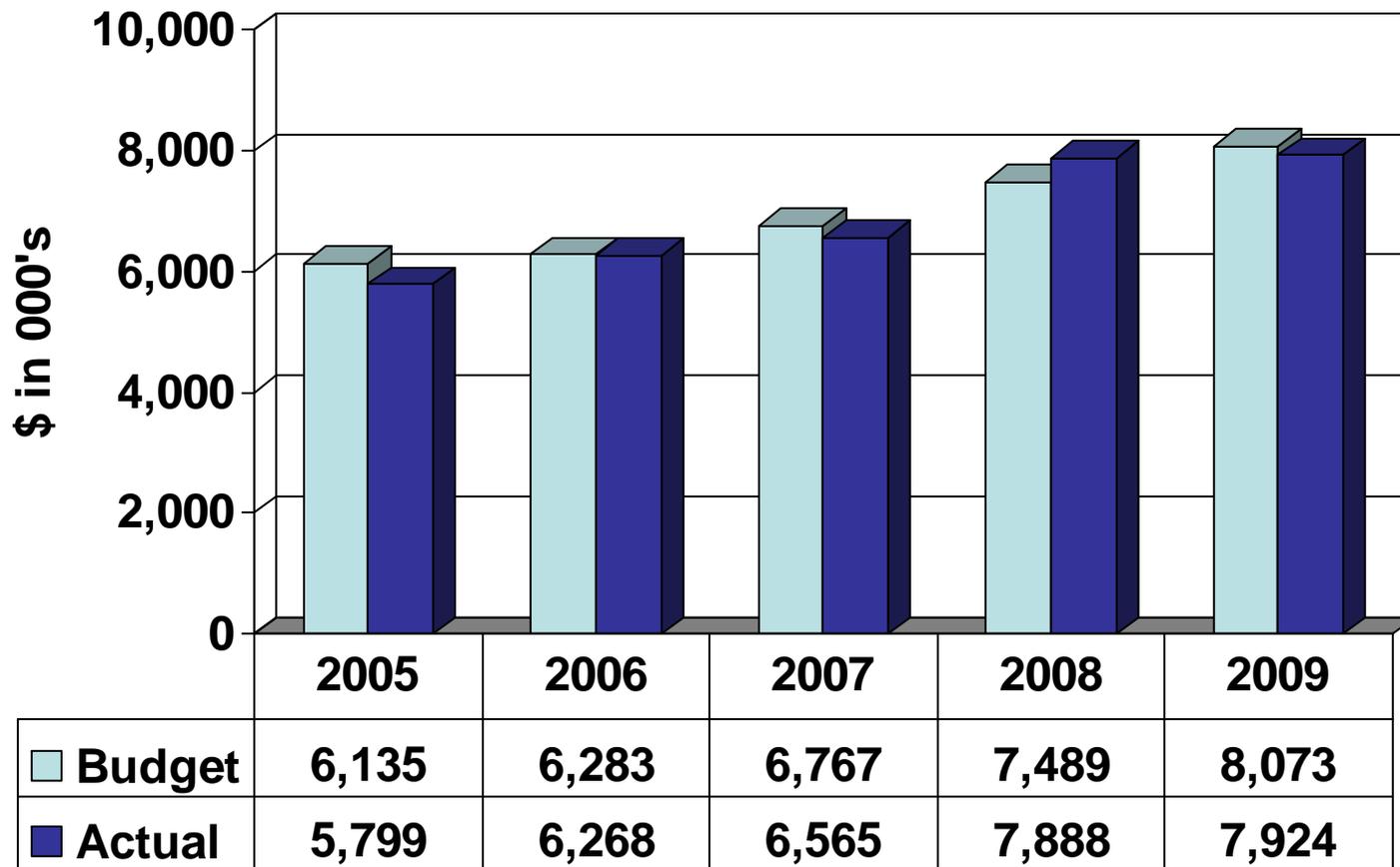
	FY 2005	FY 2006	FY 2007	FY 2008	FY2009
Revenues:					
Charges for services	\$7,328	\$7,880	\$7,985	\$8,763	\$9,034
Water contracts	2,158	2,469	2,412	2,502	2,690
Interest & other	153	271	638	376	89
	9,639	10,620	11,035	11,641	11,813
Expenses:					
Water treatment	2,086	2,209	2,260	2,683	2,954
Water line maintenance	1,154	1,157	1,205	1,400	1,548
Meter reading	575	486	646	879	821
Administration	1,867	2,193	2,170	2,478	2,440
Non-departmental	116	111	147	133	128
Project expenses	1	112	137	315	33
	5,799	6,268	6,565	7,888	7,924
Operating income	3,840	4,352	4,470	3,753	3,889
Debt service	2,337	2,659	2,980	2,877	2,703
Debt coverage	1.64	1.64	1.50	1.30	1.44

Water Revenues

Adopted Budget vs. Actual



Water Operating Expenses Adopted Budget vs. Actual



Ten Largest Water Customers

(\$ in 000's)

Customer	FY 2005	FY 2006	FY 2007	FY 2008	FY2009
1. Bedford County	\$1,056	\$1,259	\$1,195	\$1,326	\$1,389
2. CCUSA	455	534	527	432	473
3. Rock Tenn	356	386	431	472	436
4. Liberty University	91	165	184	217	215
5. Frito-Lay	186	169	156	179	169
6. Griffin Pipe	121	104	110	106	120
7. RR Donelly	96	97	93	111	115
8. Central Health	159	174	163	213	173
9. Kroger / Westover	93	98	102	122	105
10. Amherst County	105	122	102	93	97
Total top 10	2,718	3,108	3,063	3,271	3,292
Total water revenues	9,639	10,620	11,035	11,641	11,813
Top ten % of total	28%	29%	28%	28%	28%

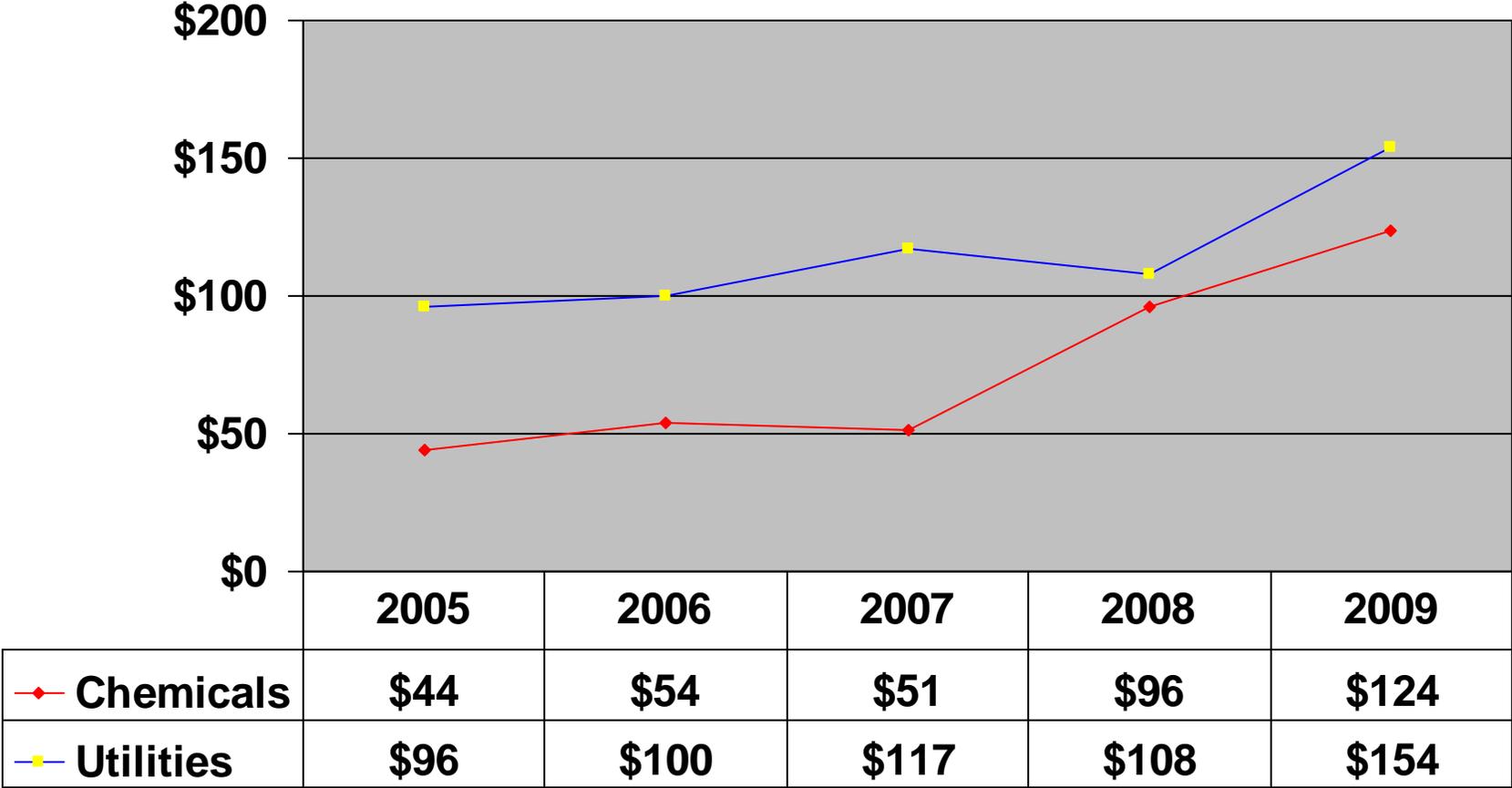
Water Expenses by Object

(\$ in 000's)

Expenses by object	FY 2005	FY 2006	FY 2007	FY 2008	FY2009
Personal services	\$2,077	\$2,122	\$2,208	\$2,636	\$ 2,764
Fringe benefits	726	762	862	969	1,023
Supplies & materials	465	617	705	994	959
Contractual services	572	600	454	603	479
Utilities	369	403	480	455	614
Chemicals	167	217	210	404	504
General Fund allocations	1,104	1,088	1,100	1,105	1,026
All other	319	459	546	722	540
Total	\$5,799	\$6,268	\$6,565	\$7,888	\$7,909
% increase	-	8.1%	4.7%	20.2%	0.3%

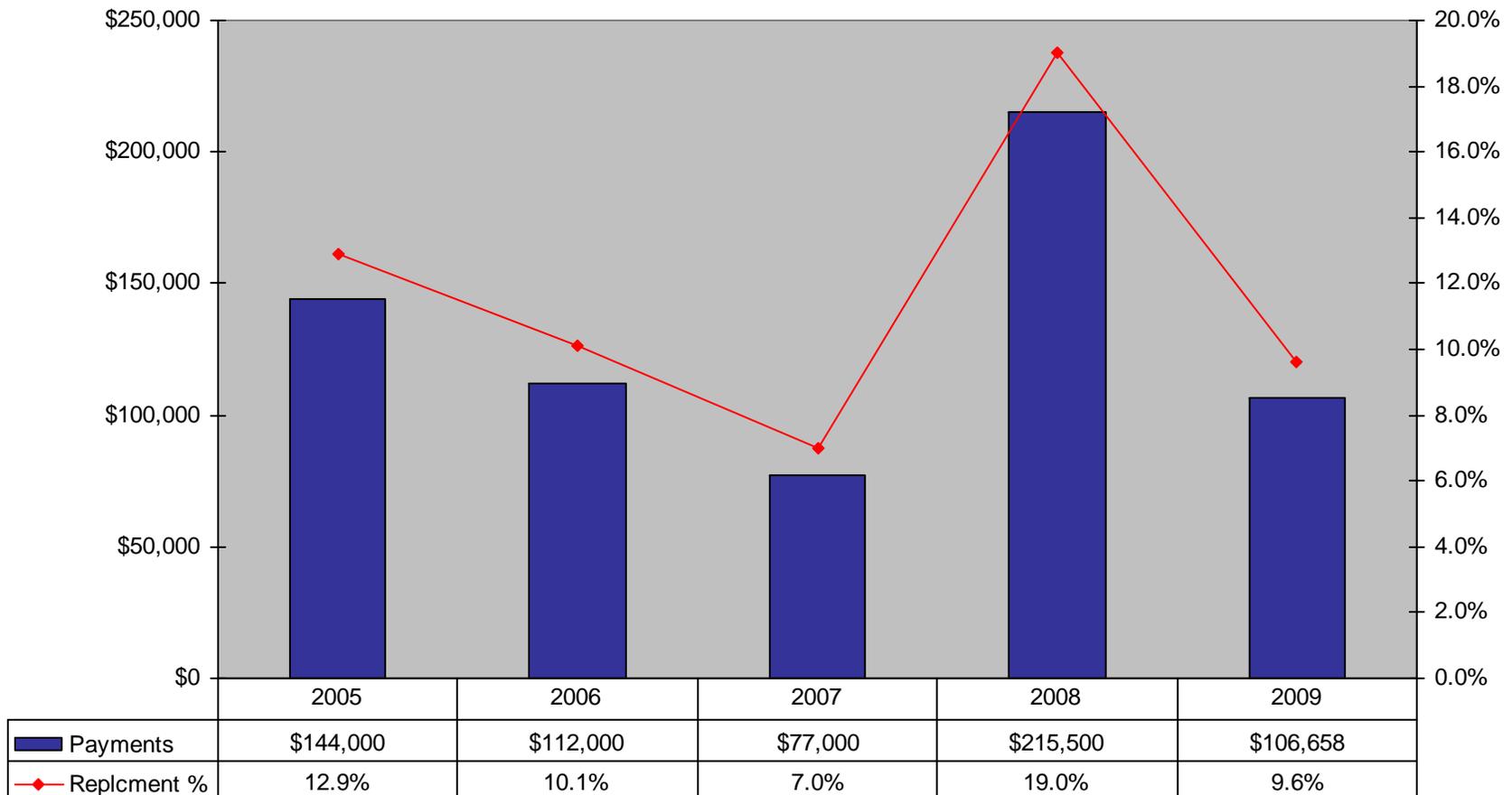
FY 2008 increase due to new staff positions and project costs that were expensed.

Water Variable Expenses / MG



Water Vehicle Costs

Total cost of all vehicles (\$1.1 million)



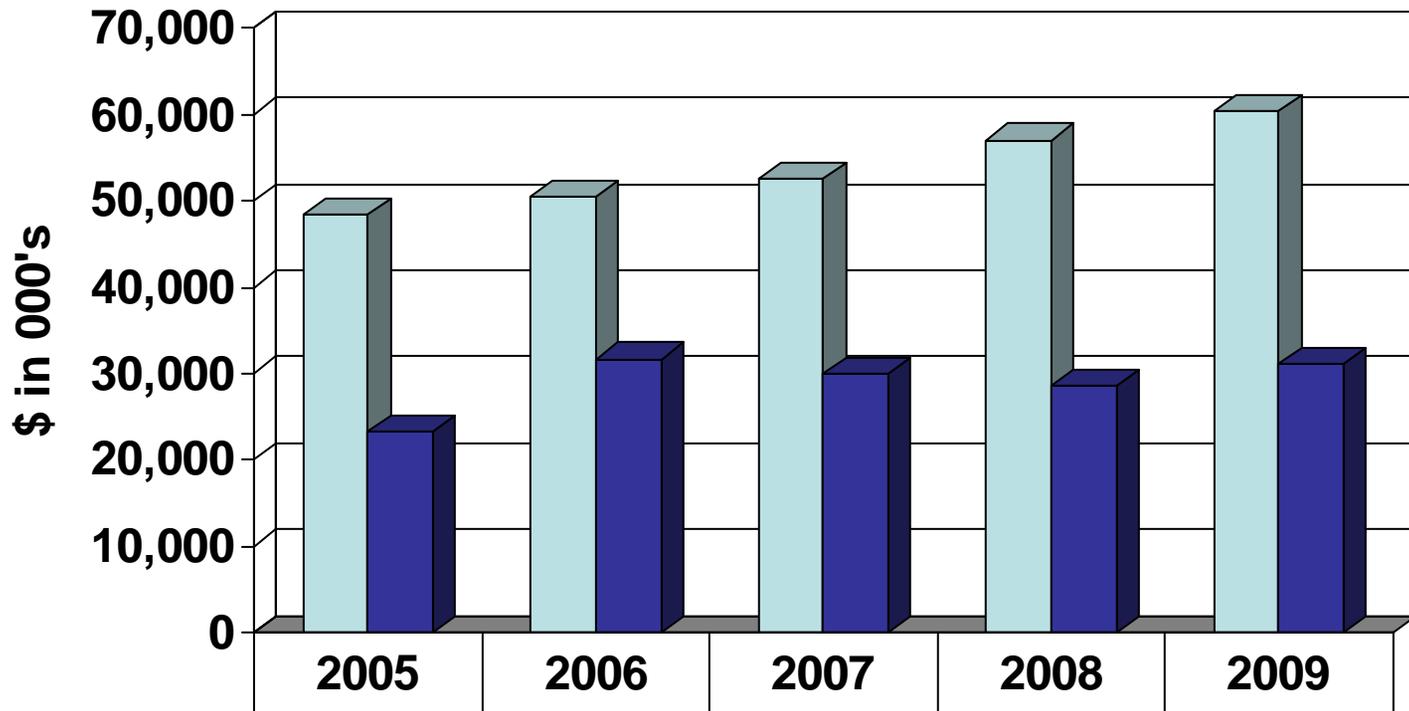
Water Capital Expenditures

\$ in 000's

	FY 2005	FY 2006	FY 2007	FY 2008	FY2009
Source of supply	0	0	0	45	220
Treatment plants	1,247	1,441	1,114	4,347	2,349
Storage tanks	1,546	489	1,424	683	733
Petitions & extensions	515	241	439	840	211
Distribution improvements	555	1,790	1,087	804	1,765
Other	351	0	0	0	182
Total	4,214	3,961	4,064	6,719	5,460

Other in 2009 includes work mgt. system and GIS upgrades.

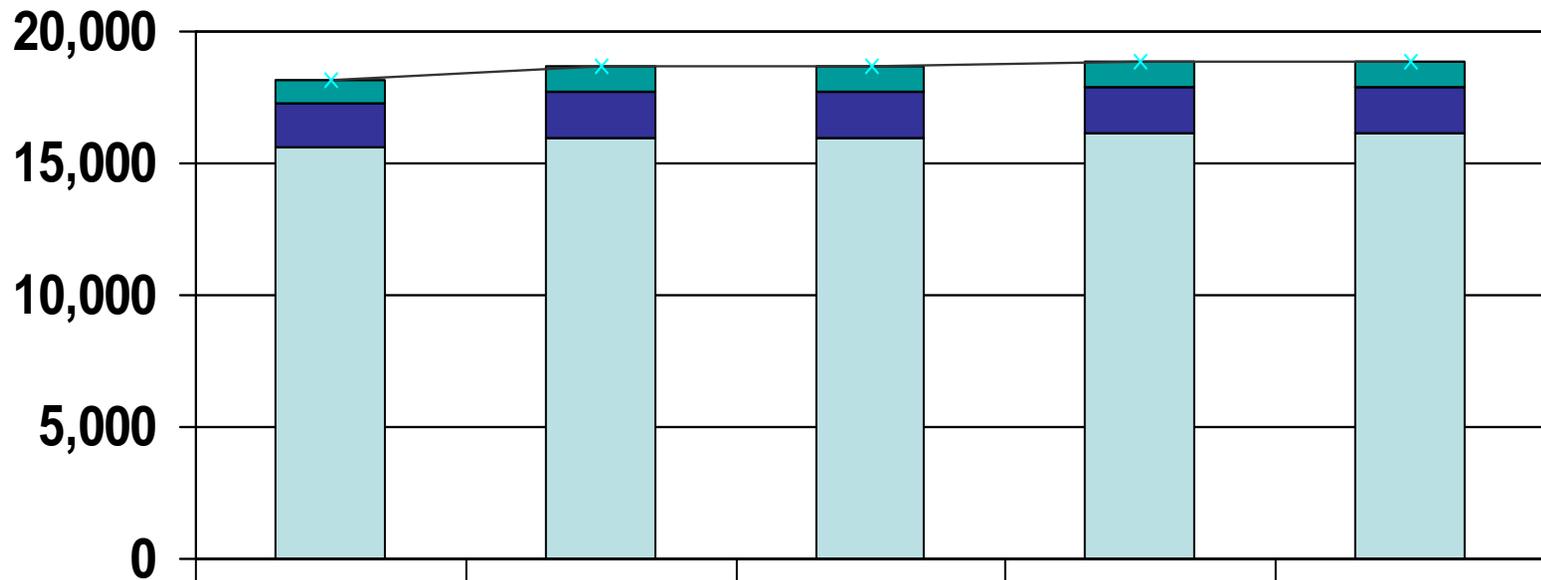
Net Water Capital Assets



Net fixed assets	48,367	50,439	52,562	57,028	60,391
Bonds & notes	23,184	31,649	29,942	28,572	31,138

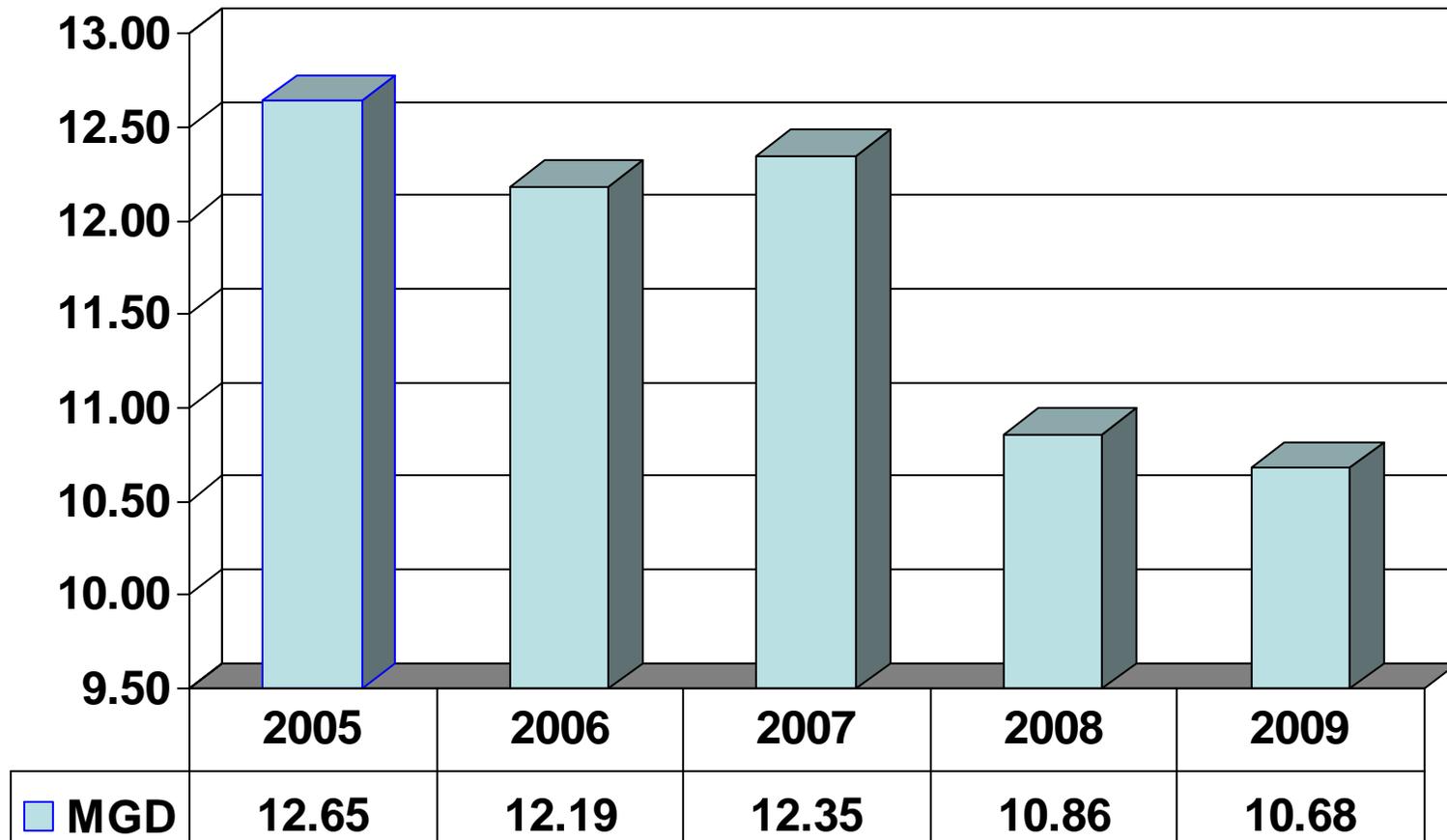
Wastewater Statistics

Number of Sewer Customers

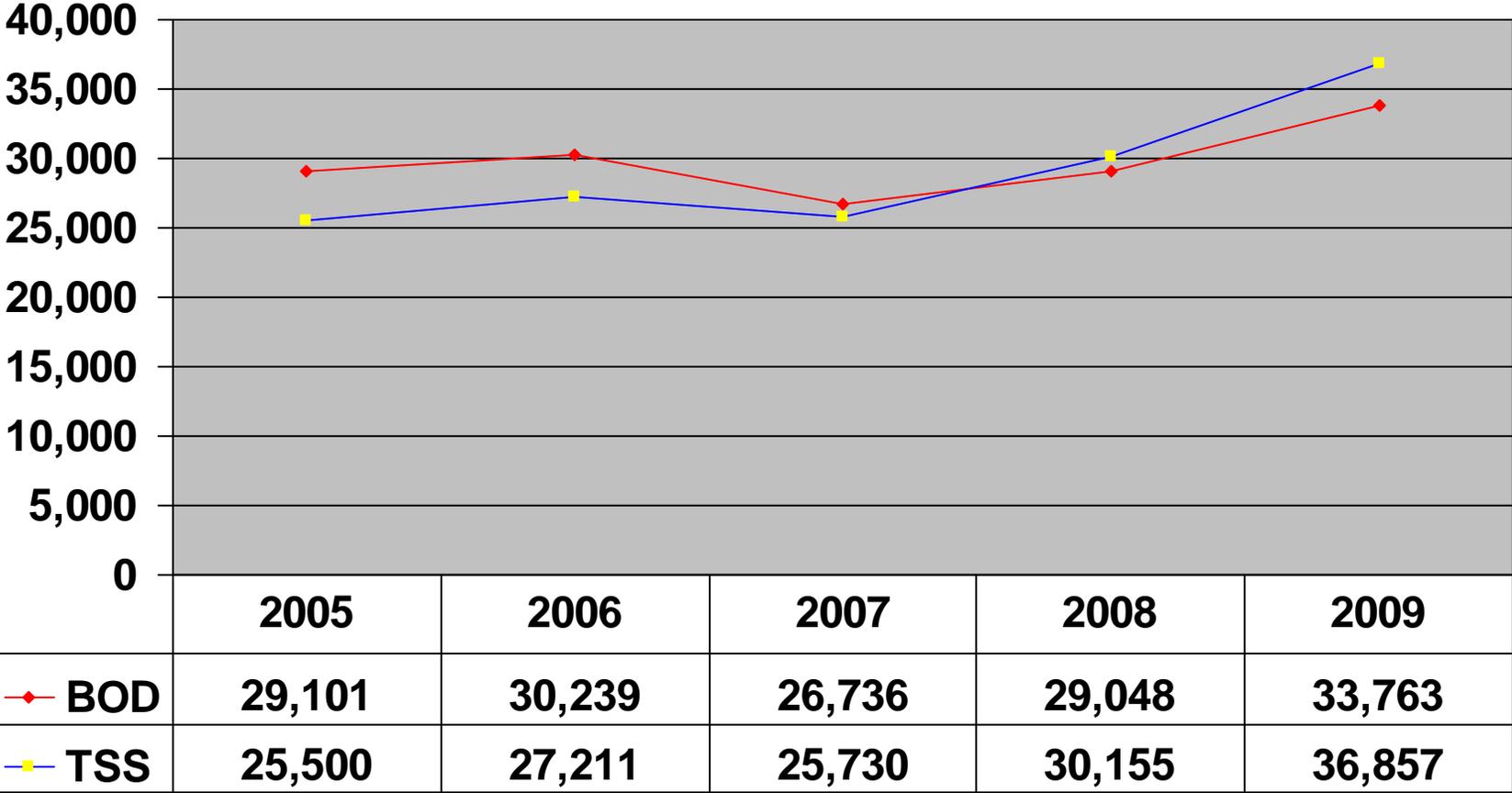


	2005	2006	2007	2008	2009
Other	917	956	961	938	967
Business	1,639	1,728	1,716	1,734	1,715
Domestic	15,599	15,958	15,987	16,167	16,155
Total	18,155	18,642	18,664	18,839	18,837

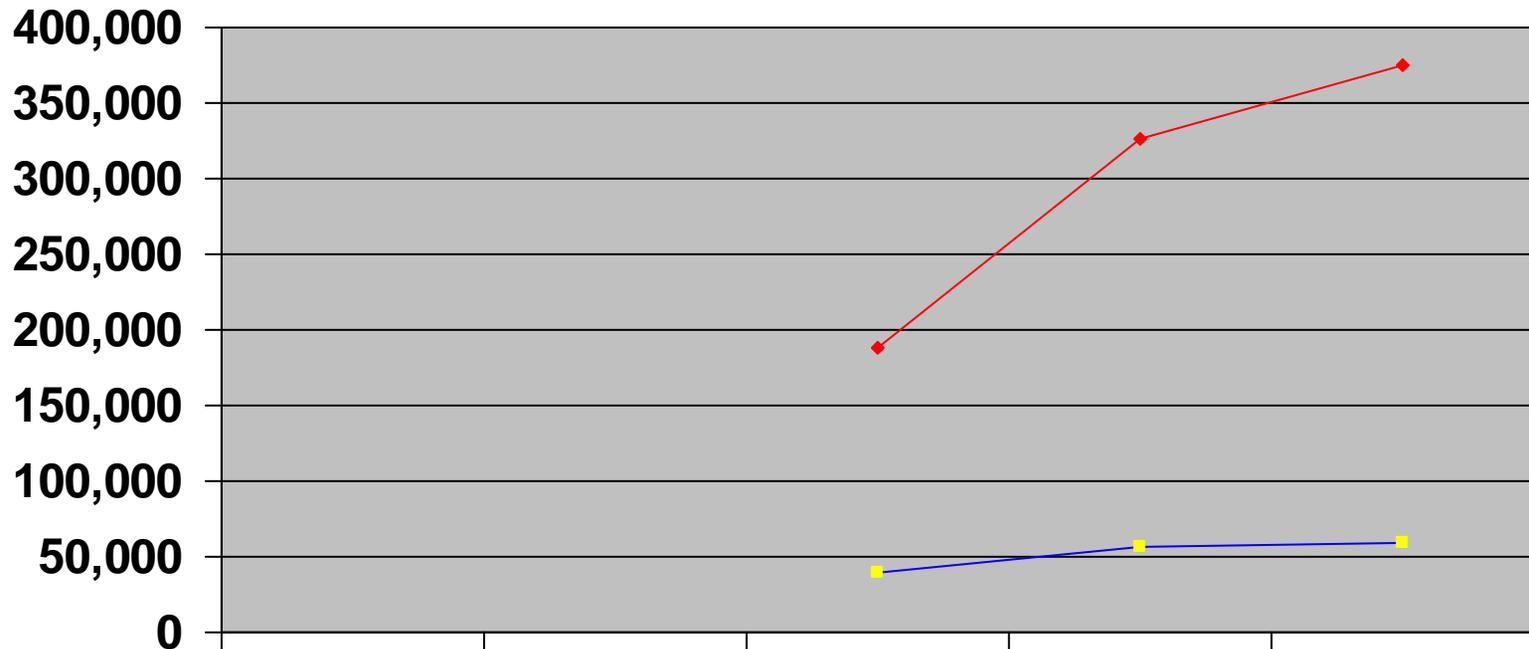
Wastewater Effluent in MGD



BOD / TSS Loadings in lbs. / Day

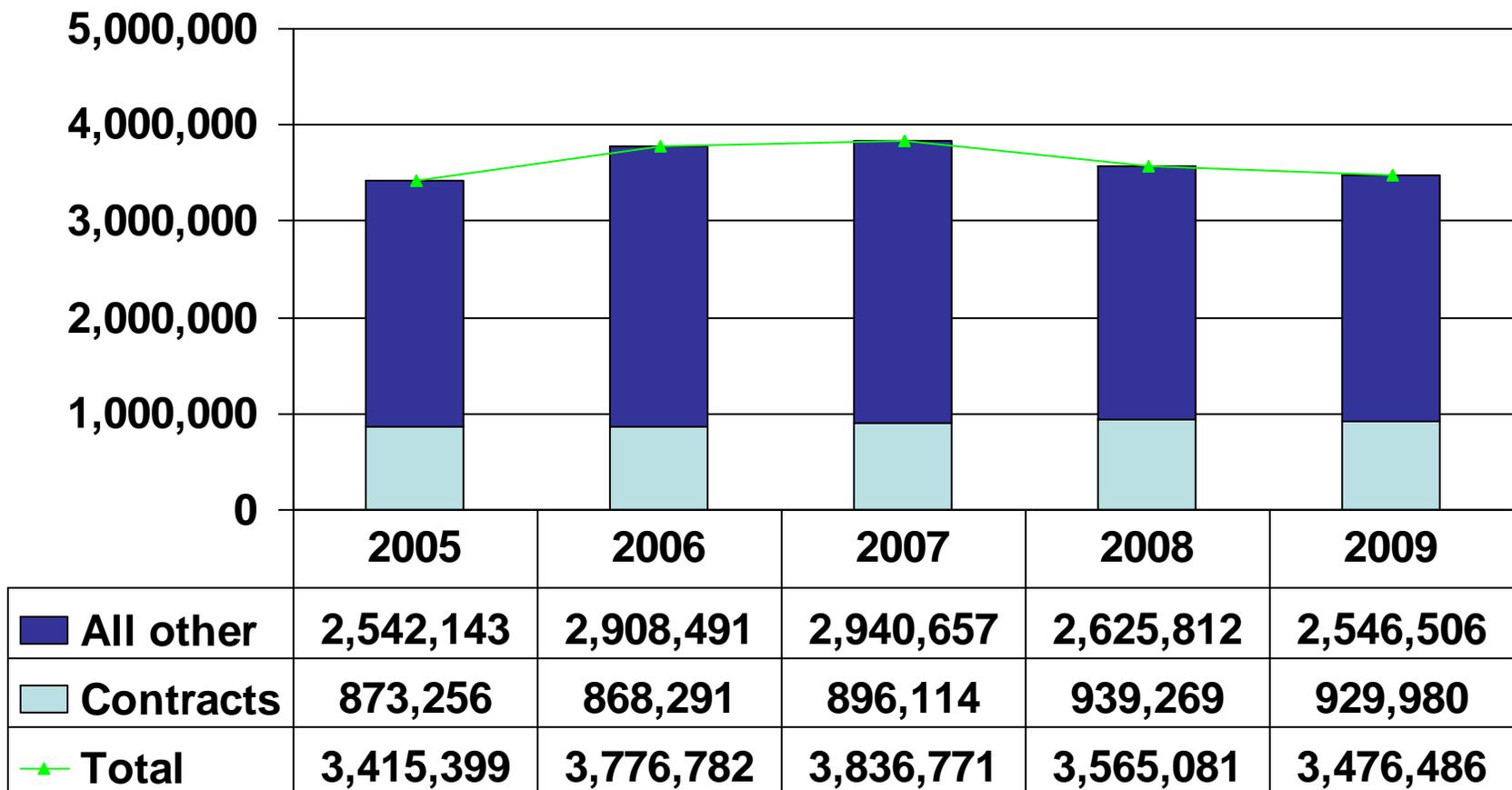


Nitrogen / Phosphorus Annual Discharge in lbs



	2005	2006	2007	2008	2009
◆ Nitrogen			187,987	326,623	375,106
■ Phosphorus			39,709	56,539	59,343

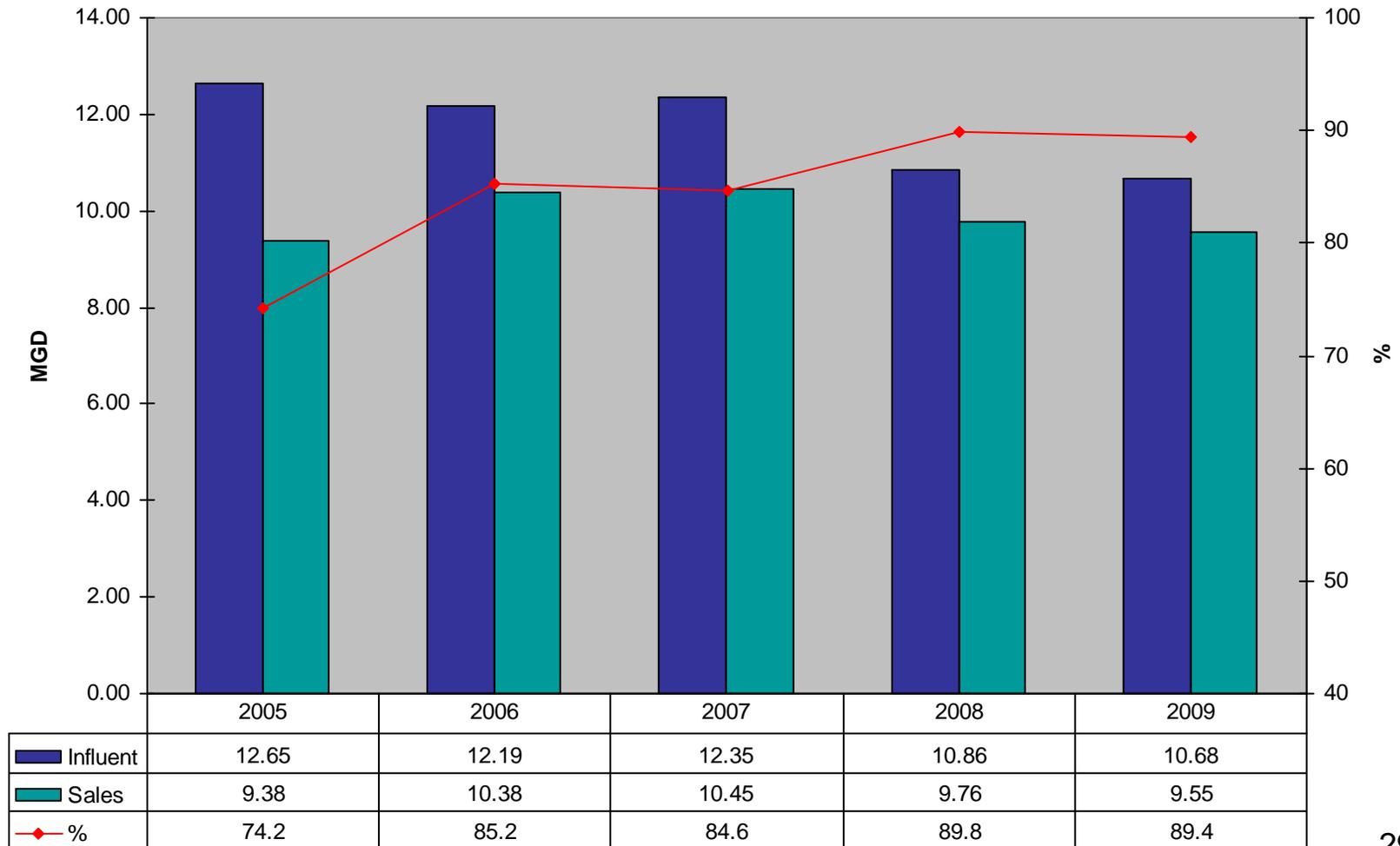
Sewer Sold in HCF



Contract Sewer Use in HCF

Customer	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Amherst	125,705	126,500	137,255	126,244	136,506
Bedford	126,900	133,863	145,874	163,292	165,327
CCUSA	105,536	116,237	128,423	131,163	135,043
Frito-Lay	220,314	197,058	174,554	181,667	155,245
Rock Tenn	294,801	294,633	310,008	336,903	337,859
Total contract use	873,256	868,291	896,114	939,269	929,980
Total use	3,415,399	3,776,782	3,836,771	3,565,081	3,476,486
Contract % of use	26%	23%	23%	26%	27%

Sewer Sales to Influent



Sewer Complaints

Type of Complaint	FY 2005	FY 2006	FY 2007	FY 2008	FY2009
1. Cave-in / broken sewer line	-	16	7	21	29
2. Sewer odor	-	19	31	45	76
3. Sewer overflow	-	20	30	27	58
4. Rats	-	19	30	24	27
5. Clogged inlet	-	75	98	123	146
6. Missing / broken manhole cover	-	25	34	40	39
7. Missing / broken inlet cover	-	25	23	38	74
8. Missing / broken cleanout	-	4	12	6	8

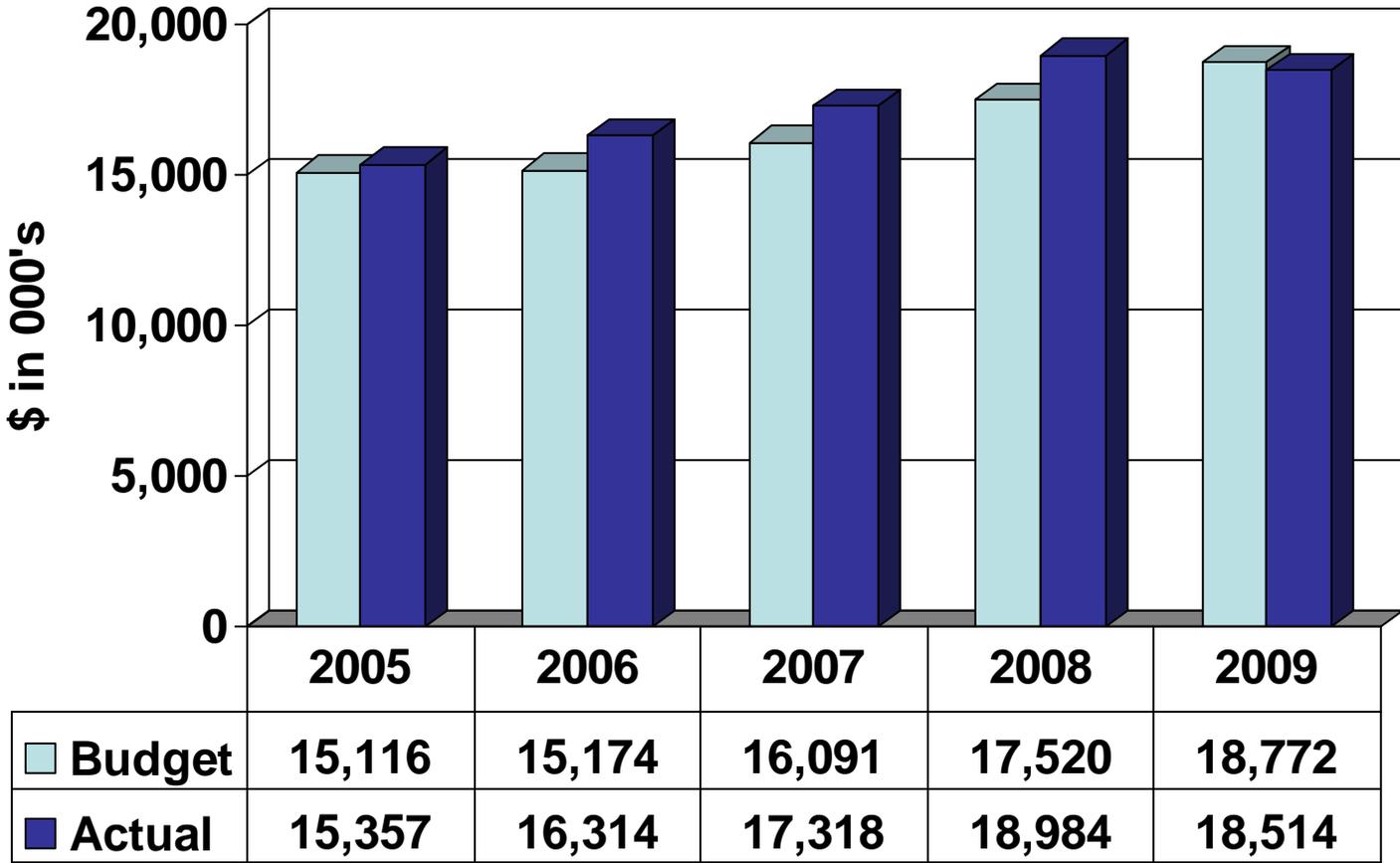
Sewer Fund Financial Data

Sewer Fund Debt Coverage

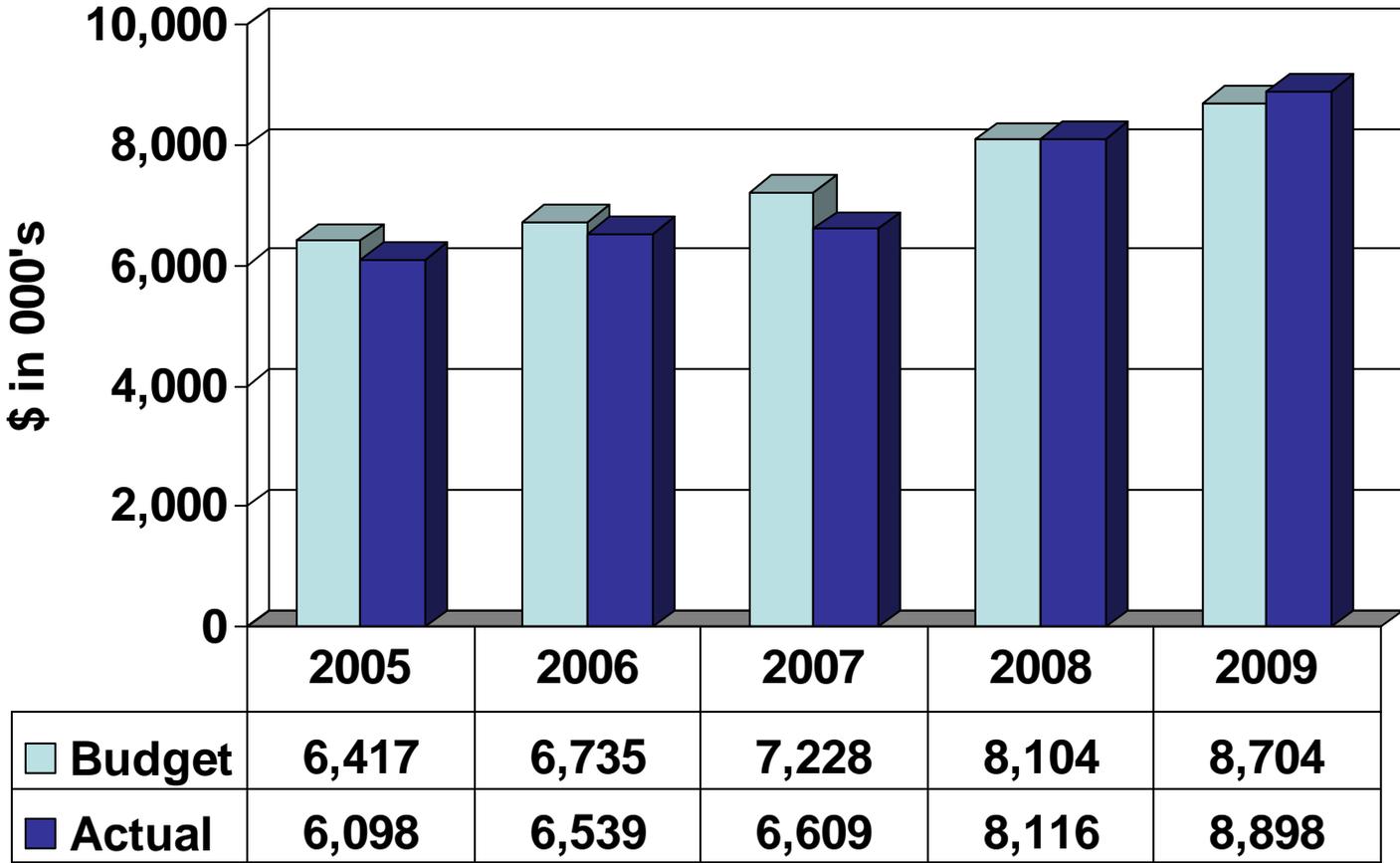
	FY 2005	FY 2006	FY 2007	FY 2008	FY2009
Revenues:					
Charges for services	13,135	13,910	14,187	15,525	15,542
Water contracts	2,060	2,001	2,342	2,836	2,562
Interest & other	162	403	789	623	410
	15,357	16,314	17,318	18,984	18,514
Expenses:					
WWTP	3,925	4,011	4,230	4,721	5,052
Sewer line maintenance	1,520	1,473	1,546	1,687	1,921
Non-departmental	619	1,047	747	1,283	1,278
Project expenses	34	8	86	425	647
	6,098	6,539	6,609	8,116	8,898
Operating income	9,259	9,775	10,709	10,868	9,616
Debt service	6,205	6,421	6,846	6,959	6,569
Debt coverage	1.49	1.52	1.56	1.56	1.46

Sewer Revenues

Adopted Budget vs. Actual



Sewer Operating Expenses Adopted Budget vs. Actual



Ten Largest Sewer Customers

(\$ in 000)

Customers	FY 2005	FY 2006	FY 2007	FY 2008	FY2009
1. Rock Tenn	\$765	\$801	\$1,015	\$1,431	\$1,139
2. Frito-Lay	514	431	499	578	613
3. Kroger / Westover Dairy	396	354	387	443	276
4. Bedford County	283	300	323	320	365
5. Amherst County	314	290	302	303	337
6. CCUSA	184	179	202	205	246
7. Liberty University	192	222	212	262	469
8. Griffin Pipe	321	475	314	298	295
9. Central Health	414	405	381	278	382
10. Azdel	195	238	162	312	175
Total top 10	3,578	3,695	3,797	4,430	4,297
Total sewer revenues	15,357	16,314	17,318	18,984	18,554
Top ten % of total	23%	23%	22%	23%	23%

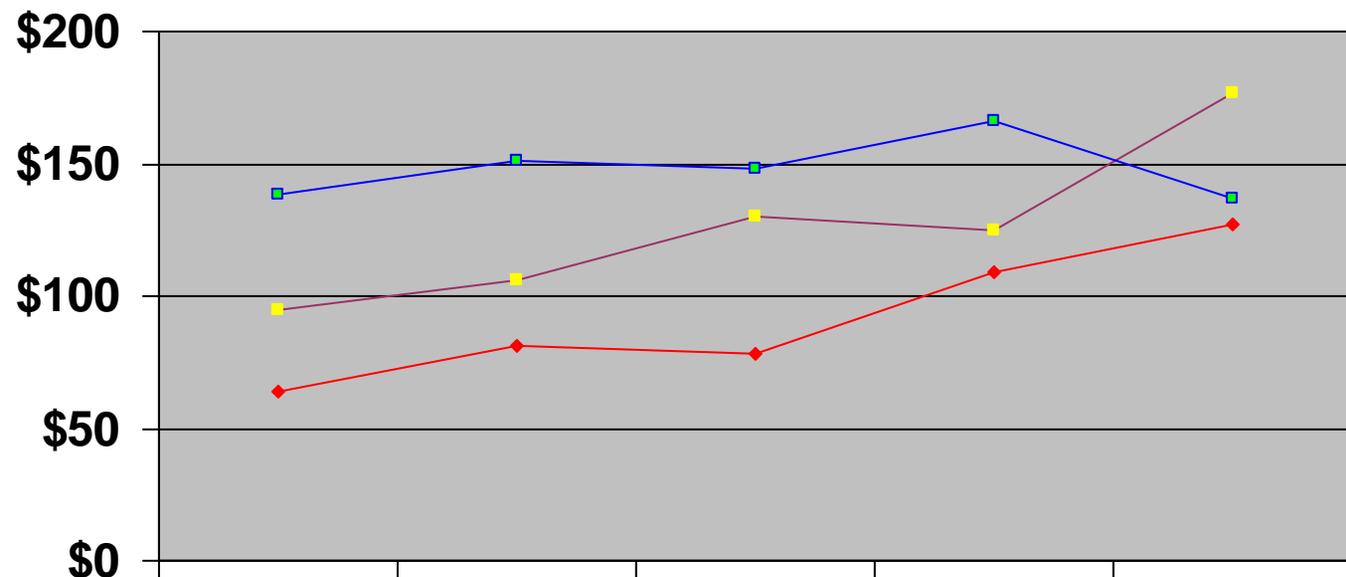
Sewer Expenses by Object

\$ in 000's

	FY 2005	FY 2006	FY 2007	FY 2008	FY2009
Personal services	\$1,360	\$1,362	\$1,439	\$1,660	\$1,761
Fringe benefits	481	490	475	630	674
Supples & materials	454	477	484	464	493
Contractual expenses	533	456	412	826	807
Sludge disposal	633	669	669	614	531
Utilities	439	470	586	498	690
Chemicals	295	360	352	434	496
General & Water Fund Allocations	1,623	1,613	1,663	1,815	2,112
All other	280	642	529	1,175	1,304
Total	\$6,098	\$6,539	\$6,609	\$8,116	\$8,868
% Increase	-	7.2%	1.1%	22.8%	9.3%

FY 2008 increase due to new positions and project costs that were expensed.

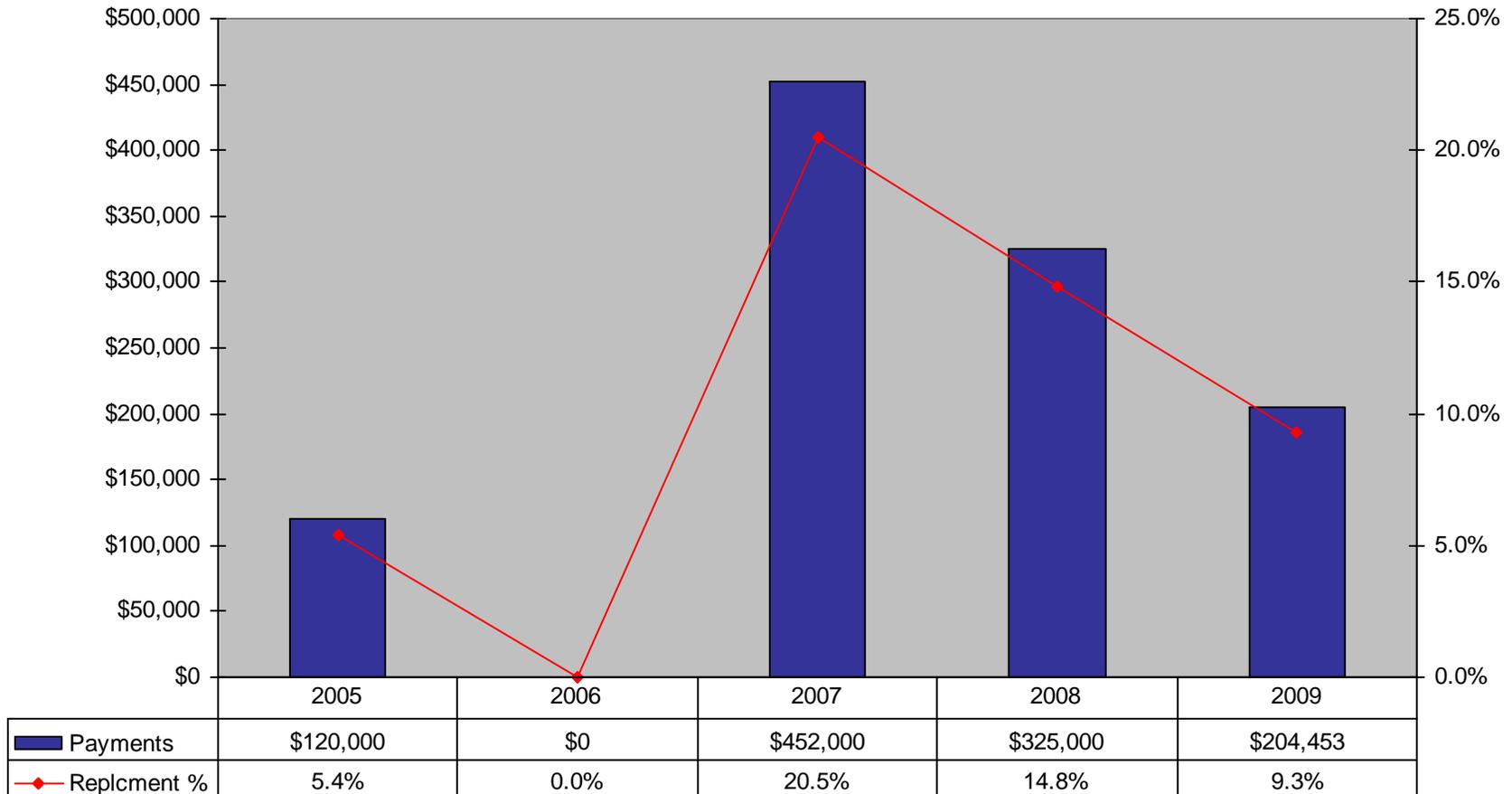
Sewer Variable Expenses / MG



	2005	2006	2007	2008	2009
◆ Chemicals	\$64	\$81	\$78	\$109	\$127
■ Utilities	\$95	\$106	\$130	\$125	\$177
■ Sludge disposal	\$138	\$151	\$148	\$166	\$137

Sewer Vehicle Costs

Total cost of all vehicles (\$2.2 million)

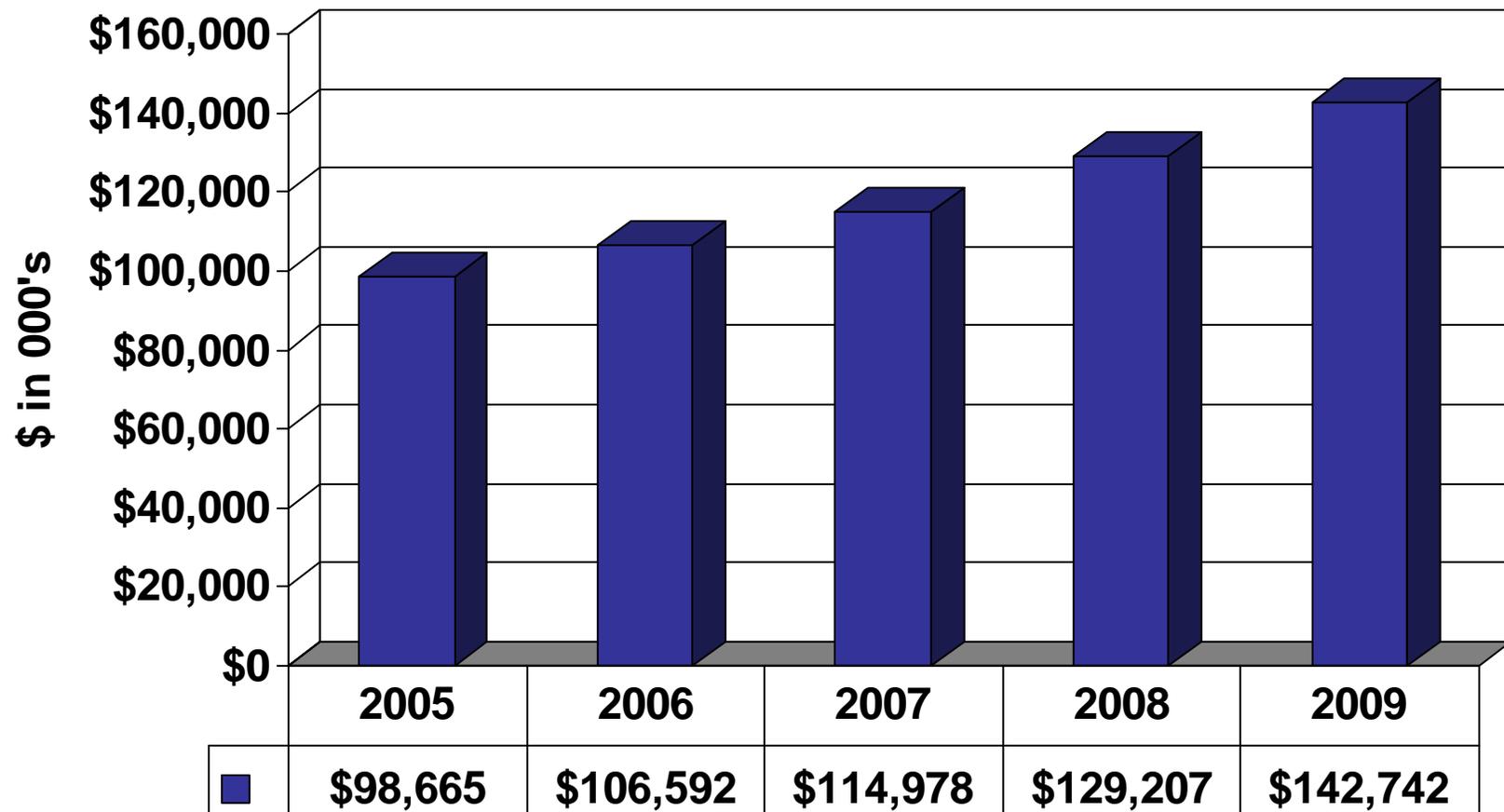


Sewer Capital Expenditures

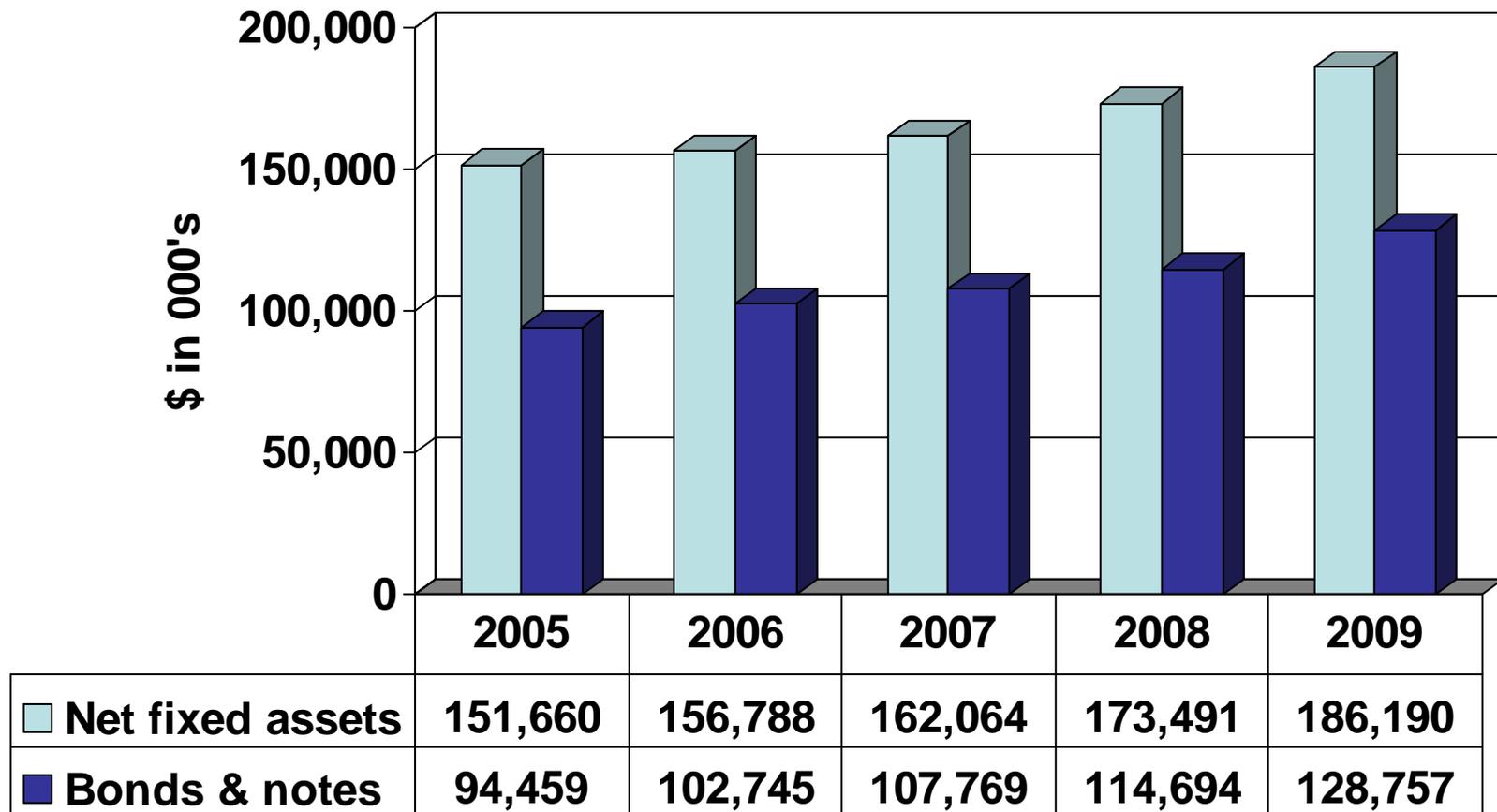
\$ in 000's

	FY 2005	FY 2006	FY 2007	FY 2008	FY2009
Sewer extensions	360	541	401	829	572
Treatment plant	67	404	276	630	2,564
Collection system repairs	0	58	299	103	309
CSO - separation & RDP	8,816	7,621	7,996	7,703	8,007
Interceptors	145	43	371	6,530	6,060
Other	25	304	115	102	218
Total	9,413	8,971	9,458	15,897	17,730

Cumulative CSO Expenditures



Net Sewer Capital Assets

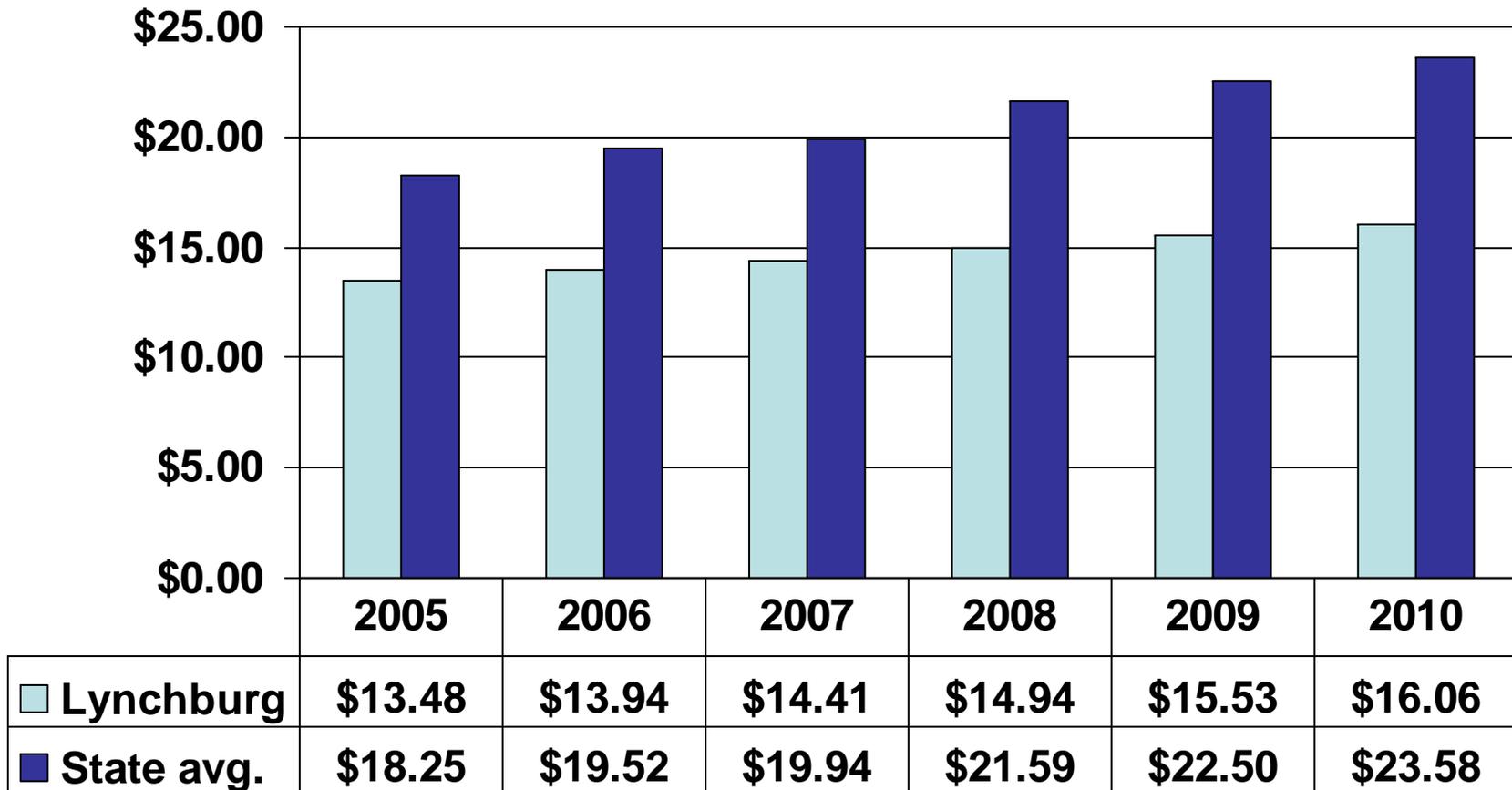


Rate & Bill Data

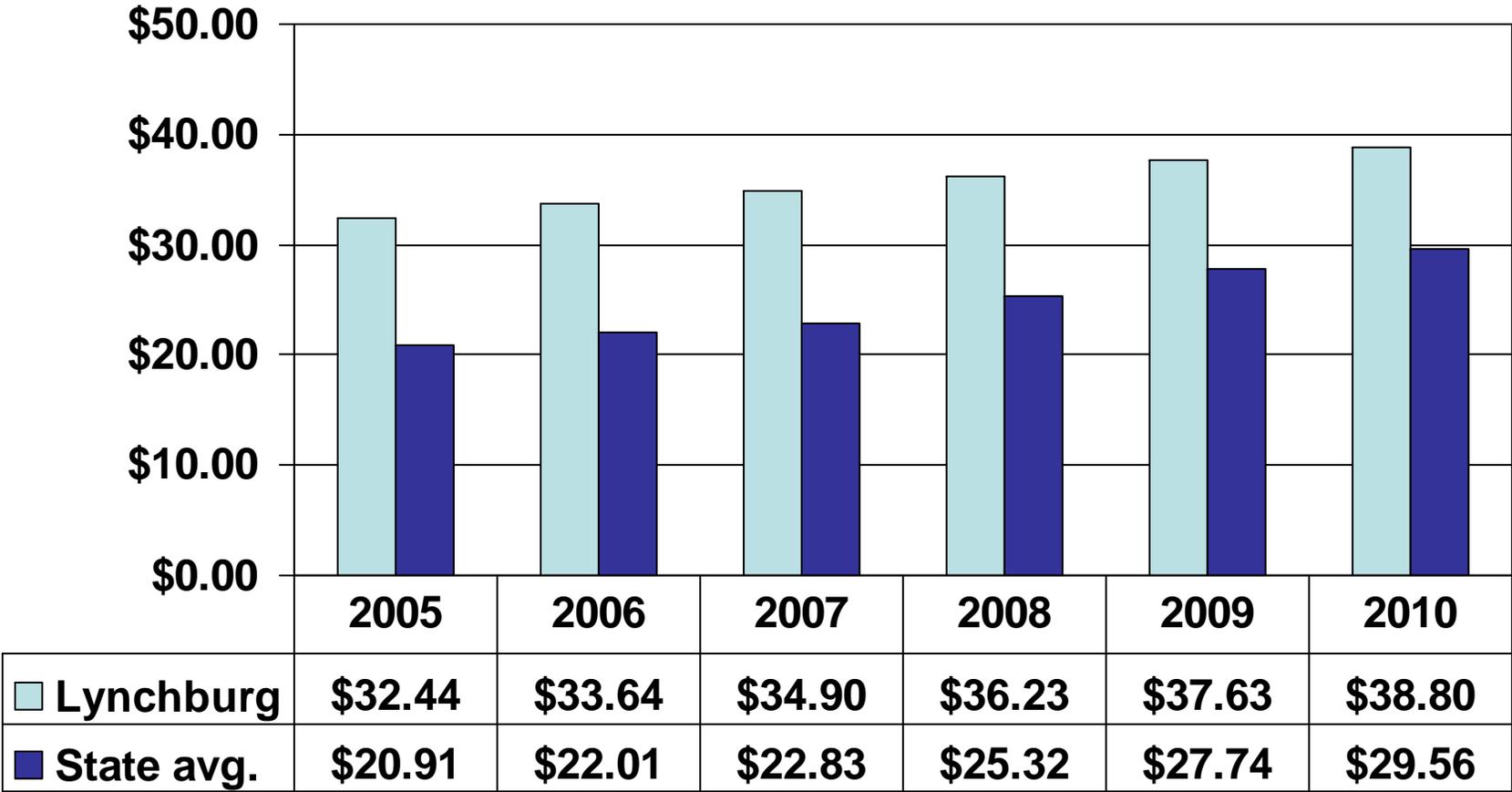
Water & Sewer Rates

	FY 2005	FY 2006	FY 2007	FY 2008	FY2009	FY 2010
Water volume charge / hcf	\$1.75	\$1.82	\$1.89	\$1.97	\$2.05	\$2.13
Sewer						
Volume charge / hcf	4.60	4.78	4.97	5.17	5.38	5.54
BOD / 100 lbs	16.78	16.78	16.78	18.46	18.46	18.46
TSS / 100 lbs.	18.98	18.98	18.98	20.88	20.88	20.88
Septic hauler charge	177.00	177.00	177.00	177.00	177.00	177.00
Industrial permit fee	200.00	200.00	200.00	200.00	200.00	200.00
Sewer only	35.89	37.15	38.48	39.88	41.35	42.47
Account charge	3.69	3.69	3.69	3.69	3.69	3.69
Water Connection fees						
3/4" & 5/8" meters	605	605	775	850	950	950
1" service - 5/8" meter	617	617	790	870	1,000	1,000
1" service - 1" meter	750	750	935	1,030	1,150	1,150
Greater than 1" minimum	750	750	935	1,030	1,150	1,150
Sewer Connection Fees						
4" line	847	847	875	965	1,100	1,100
Greater than 4" - minimum	908	908	950	1,045	1,200	1,200
Availability fee						
Water	1,220	1,220	1,220	1,220	1,220	1,220
Sewer	1,950	1,950	1,950	1,950	1,950	1,950
Fire protection fees						
Hydrants & 8" fire lines	17.99	17.99	17.99	17.99	17.99	17.99
10" fire line	32.30	32.30	32.30	32.30	32.30	32.30
12" fire line	51.25	51.25	51.25	51.25	51.25	51.25
Cut-on charge	15	15	15	15	15	15
Cut-off charge	25	25	25	25	25	25

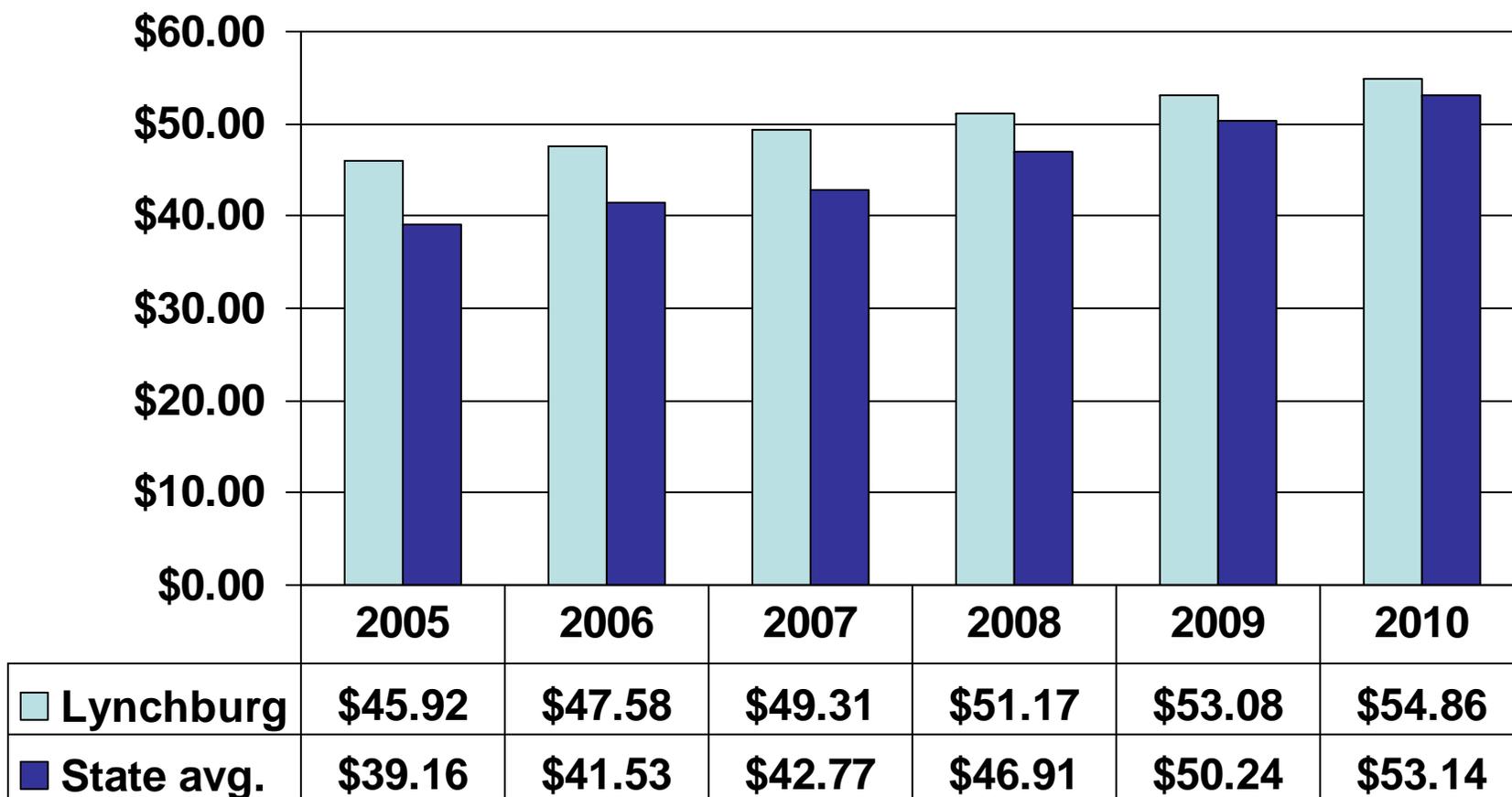
Water Bill Comparison @ 5,000 gallons / month



Sewer Bill Comparison @ 5,000 gallons / month



Water & Sewer Bill Comparison @ 5,000 gallons / month



Contract Rates

	FY 2005	FY 2006	FY 2007	FY 2008	FY2009
Water Contract rates					(2)
Amherst	1.76	1.75	1.72	1.94	2.00
Bedford	1.67	1.66	1.67	1.90	1.98
CCUSA	1.76	1.75	1.65	1.79	1.80
Frito-Lay	0.84	0.87	0.90	0.97	1.086
Rock Tenn	0.91	0.93	0.95	0.97	1.086
Sewer Contract rates					
Amherst (1)	0.90	0.96	0.98	1.27	
Bedford (1)	0.90	0.92	0.98	1.27	
CCUSA (1)	0.85	0.96	0.98	1.27	
Frito-Lay	1.32	1.39	1.43	1.57	1.7279
Rock Tenn	1.52	1.52	1.53	1.56	1.7279

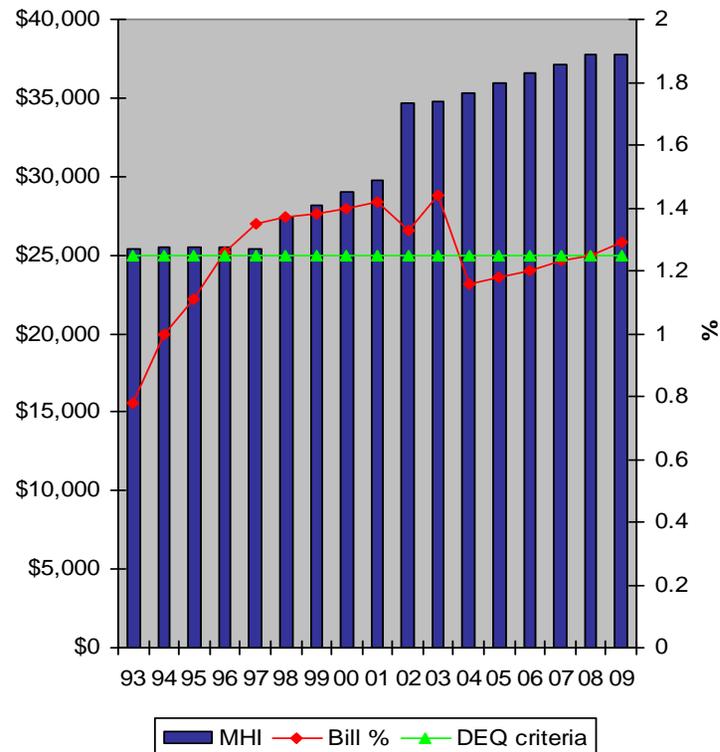
1. Volume rate only.
2. County rates are provisional for FY 2009.

Annual Sewer Bill as a % of MHI

Annual Sewer Bill

	Bill	MHI	%
1993	\$199.08	\$25,437	0.78%
1994	\$255.00	\$25,539	1.00%
1995	\$282.96	\$25,523	1.11%
1996	\$321.36	\$25,527	1.26%
1997	\$342.96	\$25,370	1.35%
1998	\$374.28	\$27,370	1.37%
1999	\$388.32	\$28,168	1.38%
2000	\$406.68	\$28,965	1.40%
2001	\$421.80	\$29,762	1.42%
2002	\$461.76	\$34,716	1.33%
2003	\$499.56	\$34,756	1.44%
2004	\$408.33	\$35,340	1.16%
2005	\$423.72	\$35,934	1.18%
2006	\$439.68	\$36,537	1.20%
2007	\$456.48	\$37,151	1.23%
2008	\$473.92	\$37,775	1.25%
2009	\$487.56	\$37,710	1.29%

Note - MHI based on 9 hcf of monthly use up to 2003; 7 hcf thereafter.



**“Sustainable Water Systems – Redefining
the US Infrastructure Challenge”**

Appendix III

Sustainable Water Systems

Redefining the US Infrastructure Challenge

US drinking water and wastewater systems face increasing challenges in maintaining and replacing their pipes, treatment plants, and other critical infrastructure. In 2008 and 2009, the Aspen Institute convened a multistakeholder dialogue to provide clarity and promote leadership on these issues. **BY DAVID MONSMA**

DURING THE LAST 150 years, a complex water infrastructure has been built throughout the United States to supply homes and businesses with clean water, collect and treat wastewater, and manage stormwater—and an equally complex regulatory system has evolved alongside it. But serious challenges still exist for the nation's freshwater resources, including insufficient progress in achieving water quality goals and looming developments associated with global climate change, such as droughts, heavy storm events, and flooding.

In addition, water and wastewater utilities are struggling with aged infrastructure that requires upgrades or replacement. Control of urban stormwater and rural runoff will require large new

investments. Appropriate sources of funding and affordable investments also require attention.

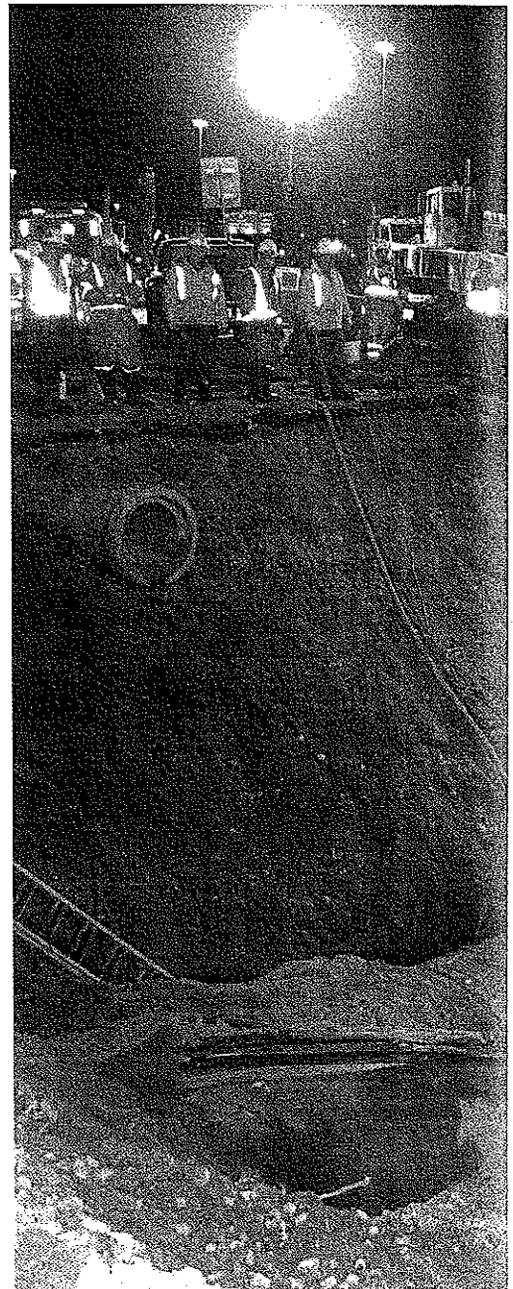
It was in this context that the Aspen Institute convened the Dialogue on Sustainable Water Infrastructure in the United States, bringing together distinguished leaders from the water utility industry; federal, state, and local government regulators; and nonprofit environmental groups to develop policy recommendations that address water infrastructure planning and management challenges for the coming decades. Although discussions focused mostly on larger urban settings, the topics are equally relevant to small systems (see *Following a Sustainable Path*, page 23).

Between May 2008 and March 2009, participants in the dialogue met four

times to discuss the common goals of ensuring clean and safe drinking water for all communities, protecting the natural environment, and making certain the nation's water infrastructure benefits from sustained investment. Keeping these shared values at the forefront of the dialogue was essential as the group examined the subordinate issues on which positions differed. In this case, the shared values and differing positions led to new thinking about an expanded definition of water infrastructure and what investments are needed to provide a more holistic approach to sustainable water infrastructure.

STATE OF THE INDUSTRY

Providing an adequate supply of clean water and sufficient wastewater and



David Monsma is executive director for the Aspen Institute Energy and Environment Program (www.aspeninstitute.org), Washington, D.C. This article was excerpted from a report of the institute's Dialogue on Sustainable Water Infrastructure in the United States. A complete copy of the report is available from the Aspen Institute Energy and Environment Program.

SMALL SYSTEMS

FOLLOWING A SUSTAINABLE PATH

Small communities and small systems face different challenges that require separate attention in devising infrastructure policy. Of approximately 53,000 community water suppliers, 45,000 are small systems (i.e., serving fewer than 1,000 customer connections). Half of these small systems are privately owned, serving fewer than 100 connections and operated by part-time employees. Of 17,000 wastewater treatment plants in the United States, at least 15,000 have capacities of less than 1 mgd, serving populations of less than 10,000.

In addition to extreme differences in types of organizations involved, there are also great differences in the nature of infrastructure issues involved. About half of all small systems are small rural communities, and about half are small suburban communities built by developers to serve small clusters of homes. Because small systems were often built over one or a few short periods of time when the area experienced an economic boom, replacement needs may be more temporally concentrated. Unexpected adversities (e.g., well contamination, loss of a large customer, etc.) often pose the greatest threats to small system sustainability because of a limited ability to absorb large financial shocks. Access to capital is a concern for many of these small systems.

Small systems often have limited capacity to plan ahead and take advantage of available options. Most are concerned with daily operations and short-term survival rather than long-term sustainability. Planning and financial assistance will likely be required to map out a sustainable path for smaller water service providers.

Federal loan programs such as USEPA's State Revolving Fund programs, the US Department of Agriculture Rural Development Administration loan program, and the Community Development Block Grant program can help such systems. These programs are likely the first places to look for strategic direction.

Another long-standing solution for small systems is consolidation, or regionalization. By combining forces, small communities can take advantage of economies of scale in technical and financial matters and achieve more resilient and sustainable operations. Consolidation can be accomplished by physical interconnection among adjacent systems.

communities struggling to fund maintenance and replacement of their water infrastructure.

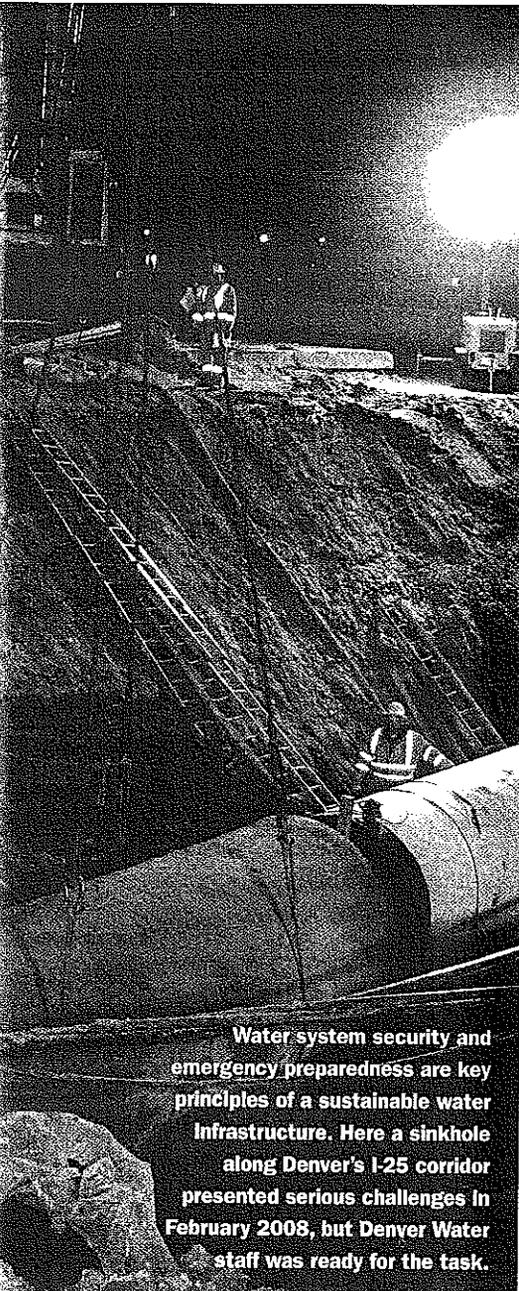
Additionally, despite a generation of progress under the Clean Water Act and the Safe Drinking Water Act, serious problems challenge US freshwater resources. Overuse, poor land-use planning, non-point sources of pollution such as agricultural runoff, and water inefficiency and waste have affected the overall condition of US water.

Among the ecosystems on Earth—freshwater, marine, and terrestrial—some experts believe freshwater ecosystems are the most vulnerable. According to water supply managers, as many as 36 states may experience water shortages in the next five years, even in the absence of drought.

The far-reaching effects of climate change—through changing precipitation patterns, more intense storms, and warmer temperatures that increase snowpack melt and add to droughts—pose many new and uncertain water supply and management challenges. To address these serious challenges, it is necessary to approach the problem with a clear understanding of the interdependence of the natural environment that produces clean water with the built infrastructure that manages, delivers, and treats water.

A NEW DEFINITION OF SUSTAINABILITY

The traditional 19th and 20th century definition of water infrastructure focused mainly on physical structures associated with drinking water supply and



Water system security and emergency preparedness are key principles of a sustainable water infrastructure. Here a sinkhole along Denver's I-25 corridor presented serious challenges in February 2008, but Denver Water staff was ready for the task.

stormwater treatment capacity in the United States is more challenging than ever. Some of the country's water, wastewater, and stormwater systems were constructed more than 100 years ago. Most were built during the last 50 years, prompted by the spread of suburbanization, largely unrestrained by sustainability concerns. Many of these facilities are at the end of their useful life and need to be renewed or replaced.

Meanwhile, changes in federal clean water and drinking water programs require upgrades in plants, technology, and practices that require various forms of investment. In addition, periods of economic distress, taxpayer or ratepayer revolt, rapid increases or decreases in service population, and instability in municipal bond markets have left many

Sustainable Water Systems

distribution, as well as collection and disposal of wastewater and stormwater. Aspen Dialogue participants suggest that this definition, which stops at a pipe's end, is too narrow.

The 21st century definition of sustainable water infrastructure includes traditional man-made or built infrastructure components *and* the natural infrastructure, such as rivers, lakes, streams, groundwater aquifers, floodplains, floodways, wetlands, and watersheds that serve or are affected by water and wastewater systems. A sustainable water infrastructure integrates traditional components with protecting and restoring natural systems, conservation and efficiency, reuse and reclamation, and active incorporation of new decentralized technologies, green infrastructure, and low-impact development to ensure long-term reliability and resilience of water resources. Sound practice will enhance the triple bottomline

of economic, social, and environmental sustainability.

Adopting the 21st century definition of sustainable water infrastructure will require several adjustments in planning, managing, and funding water, wastewater, and stormwater systems in the United States. For example, it's necessary to reframe the current understanding of the water infrastructure funding gap away from a crisis-driven approach that's inconsistent with long-term sustainability goals.

Instead, a holistic approach that aligns resources with sustainable water infrastructure elements is needed. A new framework, the Sustainable Path, defines the ideal situation in which all financial and natural resource costs of providing safe and reliable water services are transparent and costs are managed optimally to produce the greatest benefits (see Sustainable Path Elements for a 21st Century

Water Infrastructure, below). Also, leadership necessary to promote adoption of sustainable water infrastructure in the United States will be a shared role among federal, state, and local governments; public and private utilities; private investment firms; and citizen groups responsible for assuring water infrastructure sustainability.

A SUSTAINABLE PATH

Water and wastewater infrastructure replacement needs in the United States were documented in a 2002 US Environmental Protection Agency report, The Clean Water and Drinking Water Infrastructure Gap Analysis, often referred to as the "gap analysis." The USEPA analysis presented a fairly narrow review of replacement investment needs for what is considered traditional water and wastewater infrastructure, such as drinking water pipelines, sewer collection systems, and

ASPEN DIALOGUE RECOMMENDATIONS

SUSTAINABLE PATH ELEMENTS FOR A 21ST CENTURY WATER INFRASTRUCTURE

The Sustainable Path follows principles that urban utilities or stormwater agencies should strive to achieve in each of 20 areas deemed critical to financial and environmental sustainability.

Transparency. The source and use of funds deployed by water and wastewater utilities and stormwater agencies should be regularly reported in sufficient and consistent detail.

Good Governance. Governing boards, city councils, and utility special district boards with oversight of water and wastewater utilities and stormwater agencies should have the authority—and accept the responsibility—to expand their focus beyond cost control to encompass concerns for sustainability.

Development Costs. New development should be charged the full capital, operating, and replacement costs of water, wastewater, and stormwater capacity through connection or other impact fees. New development and redevelopment should employ low-impact development techniques, conservation, and reuse strategies.

Security and Emergency Preparedness. Economic security and preparedness measures appropriate to water and wastewater utilities and stormwater agencies should be deployed to assure overall system reliability and resiliency.

Stewardship. Utilities and stormwater agencies should adopt a leadership role to promote sustainability of the natural infrastructure

of rivers, lakes, streams, groundwater aquifers, floodplains, floodways, wetlands, forests, and watersheds.

Public Outreach and Stakeholder Involvement. Public, customer, and stakeholder involvement in defining sustainable water infrastructure services, as well as associated funding strategies, should be highly developed and continuous. The public should also be involved in ensuring sustainability objectives are achieved.

Full Cost Pricing. The price of sustainable water, wastewater, and stormwater services should fairly impose the total cost of meeting the requirements of sustainability on ratepayers/customers.

Asset Management. Best practices in asset management should be applied to identify the best life-cycle cost combinations of repair/rehabilitation/replacement expenditures. New rehabilitation and replacement technologies, as well as innovative management approaches, should be used to produce even greater cost savings and better resource management.

Conservation and Water Efficiency. Utilities should encourage water-use conservation and efficiency to reduce long-term system costs and produce additional societal benefits.

Energy Management. Utilities and stormwater agencies should maintain adaptive strategies to deal with increasingly complex choices presented by the need to minimize energy use and greenhouse gas

Integrated water resource planning is a useful tool to examine assumptions concerning supply, demand, and alternative methods of meeting otherwise unmet future demand.

treatment facilities. However, the report failed to consider broader water resource needs, including taking into account the effects of urbanization on waterways.

Gap analysis is useful, but limited, for understanding the scope of the infrastructure problem. The expanded definition of sustainable water infrastructure mentioned previously will help ensure water utility asset investment and cost-recovery decisions are consistent with long-term sustainability goals.

Following from the expanded definition of the 21st century sustainable water infrastructure, Aspen Dialogue participants formulated a sustainable path to guide water management and funding at all scales. The Sustainable Path defines the ideal situation in which all financial and natural resource costs for providing safe and reliable water services are available to all and are managed optimally to produce the greatest benefits.

This ideal model can be used as a benchmark of comparison by utility management staff, members of governing boards, all stakeholders, customers, and the public to compare current and sustainable practices. The comparison may reveal obstacles that merit policy consideration at local, state, or federal levels, and may even provide a more productive focus for public discourse and media attention. A critical examination of obstacles is also helpful in drawing conclusions for national policy and industry standards to promote sustainable water infrastructure.

Integrated water resource planning is a useful tool to examine assumptions concerning supply, demand, and alternative methods of meeting otherwise unmet future demand. In this context, utilities should examine how best to use, convey, treat, store, and reuse water efficiently at all scales. And the regulatory

process should enable implementation of integrated water resource planning at appropriate scales. Construction and management of the man-made element must consider and accommodate the short- and long-term health of associated natural infrastructure.

Water management entities must recognize that their mission is shifting toward the Sustainable Path. These entities must take a more thoughtful approach to make the built and natural systems function in a more holistic and integrated fashion to achieve the goal of a sustainable water infrastructure for the 21st century. The future infrastructure must work reliably and on demand and will require the proper level of funding to achieve the mission. A vital key to success along the way is recognizing when to shift investment from the old approach to new, innovative methods that achieve a higher level of sustainable service.

emissions while ensuring system reliability and striving for continual improvement in water resource management.

Climate Change Mitigation and Adaptation. As water and wastewater utilities and stormwater agencies build and rebuild their infrastructure, they should consider what type of infrastructure is right for the future, balancing needs for system reliability, needs for mitigation of embedded carbon and greenhouse gas emissions, and needs for adaptation to climate change in areas such as water resource management, source water protection, and stormwater management.

Modernized Plant Operations. Utilities should employ modern management practices to continually improve treatment plant operations.

Watershed and Regional Optimization. Water and wastewater utilities and stormwater agencies should collaborate and partner to maximize positive environmental and public health outcomes at watershed and regional scales.

Regulatory Optimization. Utilities and stormwater management agencies should work with regulators, stakeholders, and each other to pursue cost savings and other benefits that could be derived from closer integration of regulatory program implementation and innovative compliance strategies.

Affordability. Water and wastewater utilities and stormwater agencies should provide service at the most efficient cost, but also

employ a wide selection of best practices to assist low-income customers.

Advanced Procurement and Project Delivery Methods. Utilities should strive to attain cost advantages through alternative forms of procurement for such things as bulk chemicals. Design/build and design/build/operate approaches to construction project delivery and other forms of public-private partnerships should be considered as alternative strategies to deliver major capital projects when they may offer cost advantages.

Environmental Impacts. Water and wastewater utilities should evaluate and implement alternative approaches that minimize adverse hydrological and environmental effects on their operations.

Network Optimization. As water and wastewater utilities and stormwater agencies build and rebuild infrastructure, they should collaborate with each other and with state and municipal road and highway agencies to obtain significant cost savings and environmental benefits.

Workforce Management. A highly capable, flexible workforce armed with modern information technology, as well as modern labor relations approaches, is necessary to attain and sustain optimal performance.

Research and Technological, Managerial Innovation. Utilities should invest in research and innovation particularly focused in technology and management to improve efficiency, quality of service, and environmental protection and restoration.