CITY OF BEXLEY

SERVICE DEPARTMENT

PRELIMINARY WATER & SEWER INFRASTRUCTURE REPLACEMENT STRATEGIC PLAN

DRAFT rev. 5/28/2013

www.bexley.org

Purpose of this Strategic Plan

The purpose of this analysis is to provide the Service Committee of Bexley City Council with an overview of the need for a coordinated plan to repair and replace, as indicated, the City of Bexley's water and sewer infrastructure, and to provide several scenarios as well as a preliminary recommendation for such a plan.

History & Background

As the City of Bexley developed in the early 1900's, water and sewer lines were installed on an as-needed basis as homes were constructed and streets were developed. Sixty percent of water lines were installed from 1910 to 1929. Those lines, with a projected life expectancy of 80 years, are now at the end of their projected life. Another 30% of our lines are 60 to 80 years old. The age of the City's sewer lines is similar.

While some work has been done to replace and/or repair these water and sewer lines in the past 20 years or so, it is estimated that less than 10% of our water and sewer lines are in good or excellent condition. The City has approximately 243,000 feet of water line, 250,000 feet of sanitary sewer line and 220,000 feet of storm water sewer line.

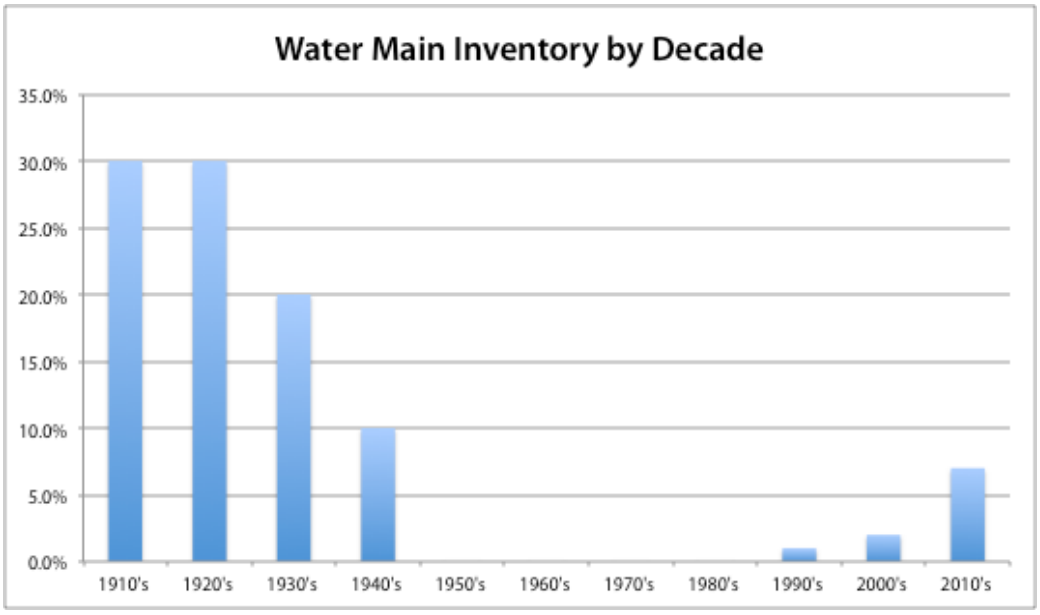
Repair & Replacement Costs

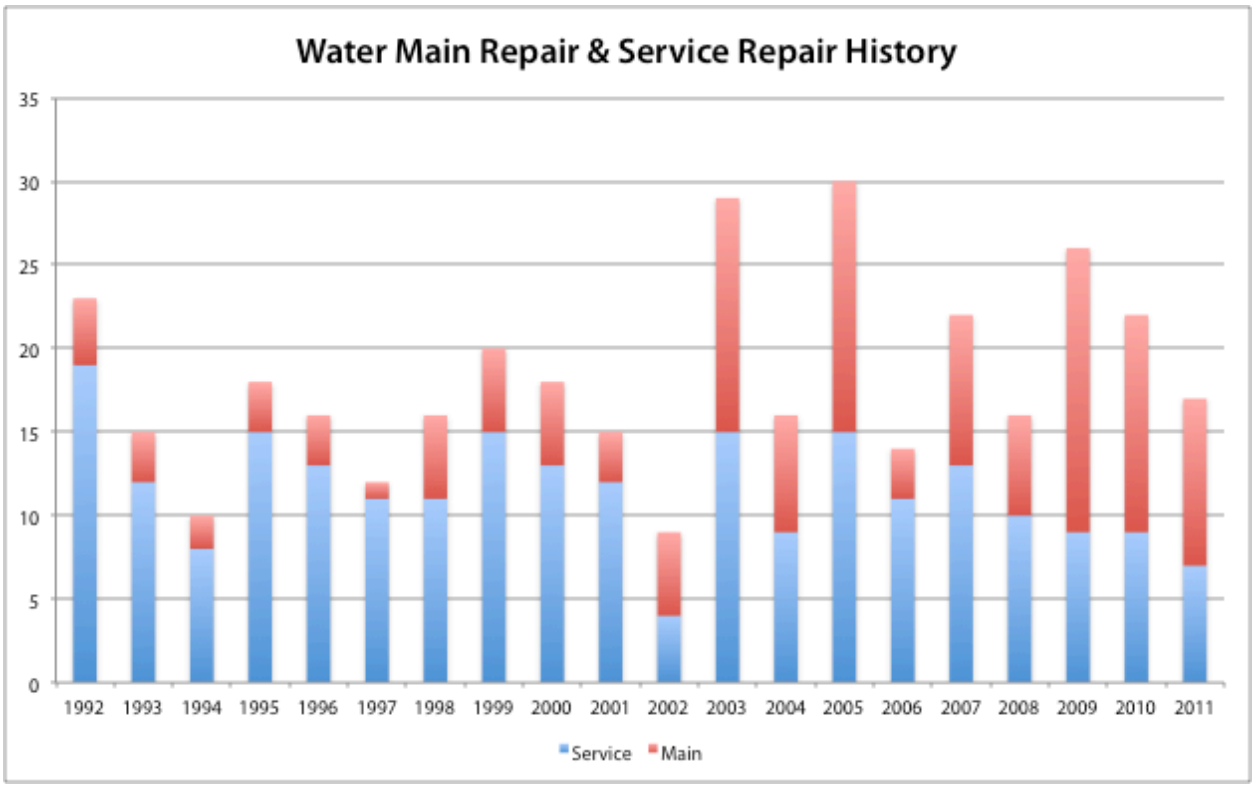
While it is difficult to estimate the costs to repair/replace these lines with great accuracy, we do have some reasonable estimates. Current best practices allow for repair of sewer lines rather than replacement in most cases. Water lines normally need to be replaced. For clarification, it should be noted that water and sewer lines are frequently located beneath existing streets. The cost estimates that are provided here do not include the cost of street replacement. For that reason, water line replacement is often coordinated with street repairs to minimize costs. It should be noted that these lines historically have not been replaced on a regular schedule. Rather, they have been replaced on an "as needed" basis; that is, when a line has several breaks in a short period of time, it is scheduled for replacement. The chart below demonstrates engineer estimated costs for repair and replacement, and provides a broad estimate of the current condition of Bexley's infrastructure.

Bexley Water/Sewer Repair and Replacement Cost Estimates and Infrastructure Assessment

Infrastructure Component	Replacement Cost	Repair Cost	Total Units*	Units/Physical Condition: Excellent	%	Good	%	Fair	%	Poor	%	Critical	%
Water Distribution	$33,250,000	$30,090,000	243	14	5.8%	0	0.0%	0	0.0%	229	94.2%	0	0.0%
Wastewater Collection	$63,500,000	$13,250,000	254	2	0.8%	3	1.2%	24	9.9%	225	92.6%	0	0.0%
Stormwater Collection	$33,300,000	$14,230,000	222	0	0.0%	2	0.8%	11	4.5%	209	86.0%	0	0.0%
Totals	**$130,050,000**	**$57,570,000**											

source: Koch Engineering
* Units are 1,000 linear feet





Replacement of aging infrastructure is not always indicated. In the case of sewers, repair is often just as effective and viable an alternative to replacement. Therefore, our cost to repair/replace our water and sewer infrastructure is calculated by adding the cost to replace water line infrastructure to the cost to repair sewer infrastructure.

Our current cost estimates are:

Water line replacement	$33,250,000
Sanitary sewer repair	$13,250,000
Storm sewer repair	$14,230,000
Total:	**$60,730,000**

Repair & Replacement Costs

For the past several years, water lines have been replaced based on the following priorities:

- **Is Funding Available?**

  Depending on several criteria, funding from outside sources like the State of Ohio is available for water line repairs if made in conjunction with street repairs. Available funding is typically in the form of low interest loans for water line work and possibly even grants for street surface work which is often performed in conjunction with water line work.
- **Water Line Break History**

  At some point, it becomes cheaper to replace a line than to keep fixing it.
- **Anticipated Street Work**

  Since water lines are often under a street, consideration is given to repairing water lines when street repairs are also needed.

While it might seem logical to replace lines just because they are old or have a history of leaks, other issues impact the decision. For example, fire safety is an important factor, so if it is important to add new fire hydrants in an area, the affected lines might have a higher priority.

It should also be noted that, while this refers to water (and sewer) lines, when the "water system" is referenced, we are also referring to the lines, valves, meters, hydrants and other parts which comprise the water delivery system.

Funding Scenarios: Overview

We examined several scenarios for funding the replacement of Bexley's water and sewer infrastructure over a defined period of time. For the purpose of this analysis, we examined a scenario where a quarterly water and sewer capital fee is assessed to each household, and then increased annually at an even rate over the defined period of time. At the end of the of the defined period, the ending annual collection of the water/sewer capital fee is leveraged into a final bond issuance in order to calculate the maximum amount of funding able to be extracted from the water/sewer capital fee concept.

For the purpose of this analysis, we have assumed that 15% of the projected costs are covered by grants or other funding incentives. Therefore, the projected cost of approximately $60,000,000 is reduced to approximately $51,000,000.

An overview of the rates and increases provided for by the scenarios profiled is provided below, with detailed data provided in the following pages.

Scenario 1: Fully Funded Water/Sewer Replacement Over 30 Years

Water/Sewer Capital Fee as a % of Bexley Water/Sewer Rate:	**8.74%**
2013 Quarterly Water/Sewer Average Capital Fee per Household:	$20
Estimated Gross Proceeds Over 30 Years:	±$34,500,000

Scenario 2: Fully Funded Water/Sewer Replacement Over 40 Years

Water/Sewer Capital Fee as a % of Bexley Water/Sewer Rate:	**6.56%**
2013 Quarterly Water/Sewer Average Capital Fee per Household:	$15
Estimated Gross Proceeds Over 40 Years:	±$56,000,000

Scenario 3: Fully Funded Water/Sewer Replacement Over 40 Years

Water/Sewer Capital Fee as a % of Bexley Water/Sewer Rate:	**10.00%**
2013 Quarterly Water/Sewer Average Capital Fee per Household:	$23
Estimated Gross Proceeds Over 40 Years:	±$86,000,000

Funding Scenarios: Detail

Scenario 1: Fully Funded Water/Sewer Replacement Over 30 Years

Water/Sewer Capital Fee as a % of Bexley Water/Sewer Rate:	**8.74%**
2013 Quarterly Water/Sewer Average Capital Fee per Household:	$20
Estimated Gross Proceeds Over 30 Years:	±$34,500,000

Scenario 1: Impact Year One on Quarterly Water/Sewer Bill

Scenario One: Water/Sewer Replacement Over 30 Years

Quarterly Water/Sewer Combined Bill	# of Households	% of Households	Year 1 % Add-on	Year 1 Capital Surcharge, in $ Terms	
				Low	High
Less than or equal to $100	731	17.0%	8.74%	$0.00	$8.74
$101 to $150	846	19.7%	8.74%	$8.83	$13.11
$151 to $200	793	18.4%	8.74%	$13.20	$17.49
$201 to $250	660	15.4%	8.74%	$17.57	$21.86
$251 to $300	473	11.0%	8.74%	$21.94	$26.23
$301 to $400	446	10.4%	8.74%	$26.32	$34.97
$401 to $500	147	3.4%	8.74%	$35.06	$43.71
$501 to $750	123	2.9%	8.74%	$43.80	$65.57
Greater than $750	80	1.9%	8.74%	$65.66	
Totals:	**4,299**	**100.0%**			

Funding Scenarios: Detail

Scenario 2: Fully Funded Water/Sewer Replacement Over 40 Years

Water/Sewer Capital Fee as a % of Bexley Water/Sewer Rate:	**6.56%**
2013 Quarterly Water/Sewer Average Capital Fee per Household:	$15
Estimated Gross Proceeds Over 40 Years:	±$56,000,000

Scenario 2: Impact Year One on Quarterly Water/Sewer Bill

Scenario Two: Water/Sewer Replacement Over 40 Years

Quarterly Water/Sewer Combined Bill	# of Households	% of Households	Year 1 % Add-on	Year 1 Capital Surcharge, in $ Terms	
				Low	High
Less than or equal to $100	731	17.0%	6.56%	$0.00	$6.56
$101 to $150	846	19.7%	6.56%	$6.62	$9.84
$151 to $200	793	18.4%	6.56%	$9.90	$13.11
$201 to $250	660	15.4%	6.56%	$13.18	$16.39
$251 to $300	473	11.0%	6.56%	$16.46	$19.67
$301 to $400	446	10.4%	6.56%	$19.74	$26.23
$401 to $500	147	3.4%	6.56%	$26.29	$32.79
$501 to $750	123	2.9%	6.56%	$32.85	$49.18
Greater than $750	80	1.9%	6.56%	$49.24	
Totals:	**4,299**	**100.0%**			

Funding Scenarios: Detail

Scenario 3: Fully Funded Water/Sewer Replacement Over 40 Years

Water/Sewer Capital Fee as a % of Bexley Water/Sewer Rate:	**10.00%**
2013 Quarterly Water/Sewer Average Capital Fee per Household:	$23
Estimated Gross Proceeds Over 40 Years:	±$86,000,000

Scenario 3: Impact Year One on Quarterly Water/Sewer Bill

Scenario Three: Water/Sewer Replacement Over 40 Years @ 10%

Quarterly Water/Sewer Combined Bill	# of Households	% of Households	Year 1 % Add-on	Year 1 Capital Surcharge, in $ Terms	
				Low	High
Less than or equal to $100	731	17.0%	10.00%	$0.00	$10.00
$101 to $150	846	19.7%	10.00%	$10.10	$15.00
$151 to $200	793	18.4%	10.00%	$15.10	$20.00
$201 to $250	660	15.4%	10.00%	$20.10	$25.00
$251 to $300	473	11.0%	10.00%	$25.10	$30.00
$301 to $400	446	10.4%	10.00%	$30.10	$40.00
$401 to $500	147	3.4%	10.00%	$40.10	$50.00
$501 to $750	123	2.9%	10.00%	$50.10	$75.00
Greater than $750	80	1.9%	10.00%	$75.10	$0.00
Totals:	**4,299**	**100.0%**			

Funding Scenarios: What Are Other Cities Doing?

Bexley is not unique in the need to replace aging infrastructure. Many central Ohio communities are facing the exact same issue of aging infrastructure and inadequate replacement funding. The table below shows some other area municipalities that we researched that charge storm water utilities and/or capital fees.

City	Special Infrastructure Fee	Amount
Columbus	Storm water Utility; Clean River Surcharge; ERU Charge to Member Communities	Varies - can be in excess of 20% of the bill
Gahanna	Storm water Utility; Capital Improvements	$12 per quarter for storm water; $7.03 per 1,000 CF for capital
Reynoldsburg	Storm water Utility	$6 per quarter

Funding Scenarios: Recommendation

Based on the scenarios explored, it is the recommendation of the administration that the second scenario, involving a 40-year project to replace or repair the City's water and sewer infrastructure, be implemented. This allows for a lower starting fee, more graduated increases, and also allows the infrastructure replacement and repair to track along with street repair projects.

Recommended Scenario Overview: Scenario Two - 40 Year Plan

The recommended scenario is the "Scenario Two" 40 year scenario. This scenario involves an initial total quarterly water/sewer replacement fee averaging approximately $15.00 per household, representing an approximately 6.56% add-on to the water/sewer fee.

After the existing water and sewer infrastructure is fully replaced, the ongoing rate under this scenario is such that, depending upon circumstances and the anticipated life of the existing infrastructure at the time, it may be sensible to begin to decrease the rate, or at the very least the rate is anticipated to be such that it would be adequate to ensure the ongoing and continual replacement of Bexley's underground infrastructure into the future.

While it is impossible to accurately predict all of the variables that will impact this plan over the next 40 years and beyond, this seems to be the most balanced starting point for comprehensive repair and replacement strategy.