



*The Corporation of the Municipality
Staff Report*

Office of the Treasurer
Manuela Batovanja

Prepared For: Mayor and Council	Report No.: MB 2023-05
Agenda Date: January 24, 2023	File No.: C11

Subject

To receive the Municipality of Wawa 10 Year Water Financial Plan

Background

This report is a follow-up to the December 13, 2022, Council presentation by Watson & Associates Economists Ltd. of the Municipality of Wawa Water and Wastewater Rate Study.

The report in its entirety was provided to Council for review on December 20, 2022, no question or comments have been received.

Watson and Associates were instructed to use the rate study to form the 10 Year Water Financial Plan.

The Water Rate Study and resulting Water 10 Year Financial Plan:

- satisfies the legislative requirement under O. Reg 453/07 pursuant to the Safe Drinking Water Act of the Municipality of Wawa Drinking Water utility. Where the plan is a pre-requisite to the drinking water license.
- achieves the Wawa Strategic Plan recommendation AF-08 of developing a water financial plan ensuring that asset life cycling is coordinated with financial strategies, mitigating rate increases through a planned approach to funding expenditures.
- satisfies the requirements of the modernization grant which partially funded this project.
- identifies methods by which to set funds aside for capital costs as outlined in the Municipality of Wawa Asset Management Plan

Respectfully Prepared and Submitted By:
Manuela Batovanja, Treasurer
Director of Finance

- informs and sets out recommendations for the water and wastewater rates and user fees from 2023 to 2032.

Recommendation

That Council receives and adopts the Municipality of Wawa Water and Wastewater Rate Study as prepared by Watson & Associates Economists Ltd. And;

That Council receives and adopts the Municipality of Wawa 10 Year Water Financial Plan as prepared by Watson & Associates Economists Ltd.

Attachments

- 1) Watson & Associates Economists Ltd. – Municipality of Wawa Water and Wastewater Rate Study – Council Presentation December 13, 2022
- 2) Watson & Associates Economists Ltd. – Municipality of Wawa Water and Wastewater Rate Study
- 3) Watson & Associates Economists Ltd. – Municipality of Wawa 10 Year Water Financial Plan



Municipality of Wawa Water & Wastewater Rate Study

Council Presentation
December 13, 2022

Areas of Discussion



- Study Purpose;
- Legislation of Water and Wastewater;
- Existing and Forecasted Customers and Volumes;
- Capital Needs and Financing;
- Operating Expenditures;
- Rates; and
- Next Steps.

Study Purpose



- Identify all current and future water and wastewater system capital needs
- Identify cost recovery options for capital
- Estimate future operating costs over the next 10 years
- Recommend new rates to recover the cost of the water and wastewater systems
- Based on the completion (and approval) of the rate study, the formal “Financial Plan” as part of O.Reg. 453/07 may be submitted to the Province as part of the Municipality’s licensing requirements

Legislation for Water and Wastewater



Since Walkerton, new legislation has been passed by the Province to enhance the provision of services. These include the following:

- Safe Drinking Water Act;
- Sustainable Water and Sewage Systems Act;
- O.Reg. 453/07 - Safe Drinking Water Act;
- Clean Water Act; and
- Water Opportunities Act.

Further Requirements:

- Municipal Infrastructure Strategy
- Infrastructure for Jobs and Prosperity Act, 2015

Current Rates (2022)



2022 - Water Billing Rates	
Base Charge (monthly)	
3/4"	38.00
1"	76.00
1 1/2"	114.00
2"	152.00
3"	190.00
Volume Charge	
\$	0.840 per m ³

2022 - Wastewater Billing Rates	
Base Charge (monthly)	
3/4"	21.50
1"	43.00
1 1/2"	64.50
2"	86.00
3"	107.50
Volume Charge	
\$	0.520 per m ³

Customer Profile



Metered	Water	Wastewater
3/4"	1,238	1,155
1"	12	8
1 1/2"	9	9
2"	23	19
3"	5	5
Total	1,287	1,196

Water and Wastewater Forecast Users and Billable Volumes



Assumed an average of 180 cu.m per customer for future flows.

- The customer growth forecast considers existing vacant properties that would connect to the Municipality’s system over the forecast period.

Water Customer Forecast	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Existing	1,287	1,287	1,287	1,287	1,287	1,287	1,287	1,287	1,287	1,287	1,287
New - Growth	6	14	17	19	21	21	22	22	22	22	22
Total	1,293	1,301	1,304	1,306	1,308	1,308	1,309	1,309	1,309	1,309	1,309

Water Volume Forecast (m³)	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Existing	315,000	315,000	315,000	315,000	315,000	315,000	315,000	315,000	315,000	315,000	315,000
New	1,080	2,520	3,060	3,420	3,780	3,780	3,960	3,960	3,960	3,960	3,960
Total	316,080	317,520	318,060	318,420	318,780	318,780	318,960	318,960	318,960	318,960	318,960

Wastewater Customer Forecast	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Existing	1,196	1,196	1,196	1,196	1,196	1,196	1,196	1,196	1,196	1,196	1,196
New - Growth	4	10	12	14	16	16	17	17	17	17	17
Total	1,200	1,206	1,208	1,210	1,212	1,212	1,213	1,213	1,213	1,213	1,213

Wastewater Flows Forecast (m³)	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Existing	292,727	292,727	292,727	292,727	292,727	292,727	292,727	292,727	292,727	292,727	292,727
New	720	1,800	2,160	2,520	2,880	2,880	3,060	3,060	3,060	3,060	3,060
Total	293,447	294,527	294,887	295,247	295,607	295,607	295,787	295,787	295,787	295,787	295,787

Note: Above flows are water flows on which the wastewater billing will be calculated

Capital Infrastructure



- Capital needs were identified based on the Municipality's capital forecast in addition to a review of the Municipality's asset replacement needs
- Capital works were identified by
 - Need;
 - Timing; and
 - Costs.
- A general provision for asset management related works is provided in the latter half of the forecast period. This provision represents the Municipality's step towards achieving their asset management requirements.

Capital System Needs 2022 to 2032

(Inflated \$)



Water:

Description	Total 2022-2032	Years Undertaken
Water Main and Hydrant - MRV	75,000	2022
Water and WW 10 yr Plan & Rate Study	24,500	2022
Hydrant Rehabilitation	190,000	2022-2025
Water Treatment Plant - Filters	564,000	2022-2024
Water Intake Valve	250,000	2022
Water & Wastewater Master Plan	105,000	2022
Water Intake	3,232,021	2022
Asset Management Works	1,308,000	2025-2032
Total Water	5,748,521	

Wastewater:

Description	Total 2022-2032	Years Undertaken
Water and WW 10 yr Plan & Rate Study	10,500	2022
Sewer Jet / Vacuum Trailer	97,000	2024
Water & Wastewater Master Plan	45,000	2022
Asset Management Works	556,000	2025-2032
Total Wastewater	708,500	

Capital Financing Options



- ✓ Reserves
- ✓ Operating Budget Transfers (Funding Reserves)
- ✓ Debt
- ✓ Grants
- Development Charges
- Municipal Act (Part 12)

Reserve Balances – As of December 31, 2021



Reserve	31-Dec-21
Water & Wastewater	
Equipment Reserve	722,051
General Capital	312,056
Rate Stabilization	130,150

- Note: the Municipality’s current water and wastewater reserves are combined. For the purposes of the rate study, these reserve balances have been separated to identify the required cost recovery for the water and wastewater systems
- Based on respective shares of costs, the above balances have been split 70% for water and 30% for wastewater

Proposed Capital Financing Programs 2022 to 2032

Inflated \$



Description	Water 2022-2032	Wastewater 2022-2032
Capital Financing		
Provincial/Federal Grants	2,657,021	45,000
OCIF	315,000	-
Debenture Requirements	680,000	-
Operating Contributions	662,500	32,500
Water/Wastewater Reserves	1,434,000	631,000
Total Capital Financing	5,748,521	708,500

Lifecycle Infrastructure Costs

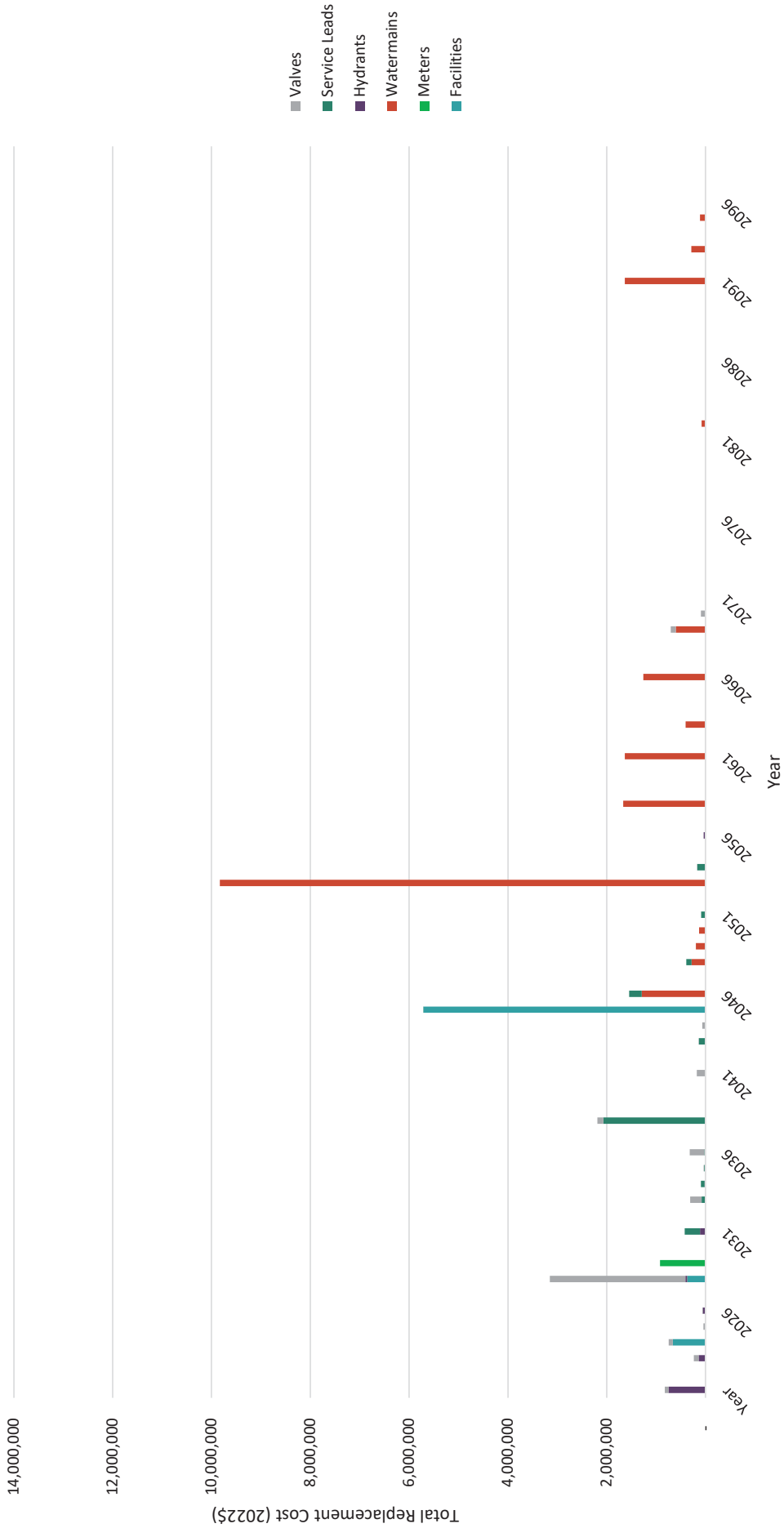


- The age of the water system dates back to the mid 1960’s;
- The age of the wastewater system dates back to the late 1980’s;
- The total value of existing water infrastructure is \$50.52 million;
- The total value of existing wastewater infrastructure is \$25.90 million;
- This provides for a “per customer” investment by the Municipality of \$39,257 for water and \$21,659 for wastewater.

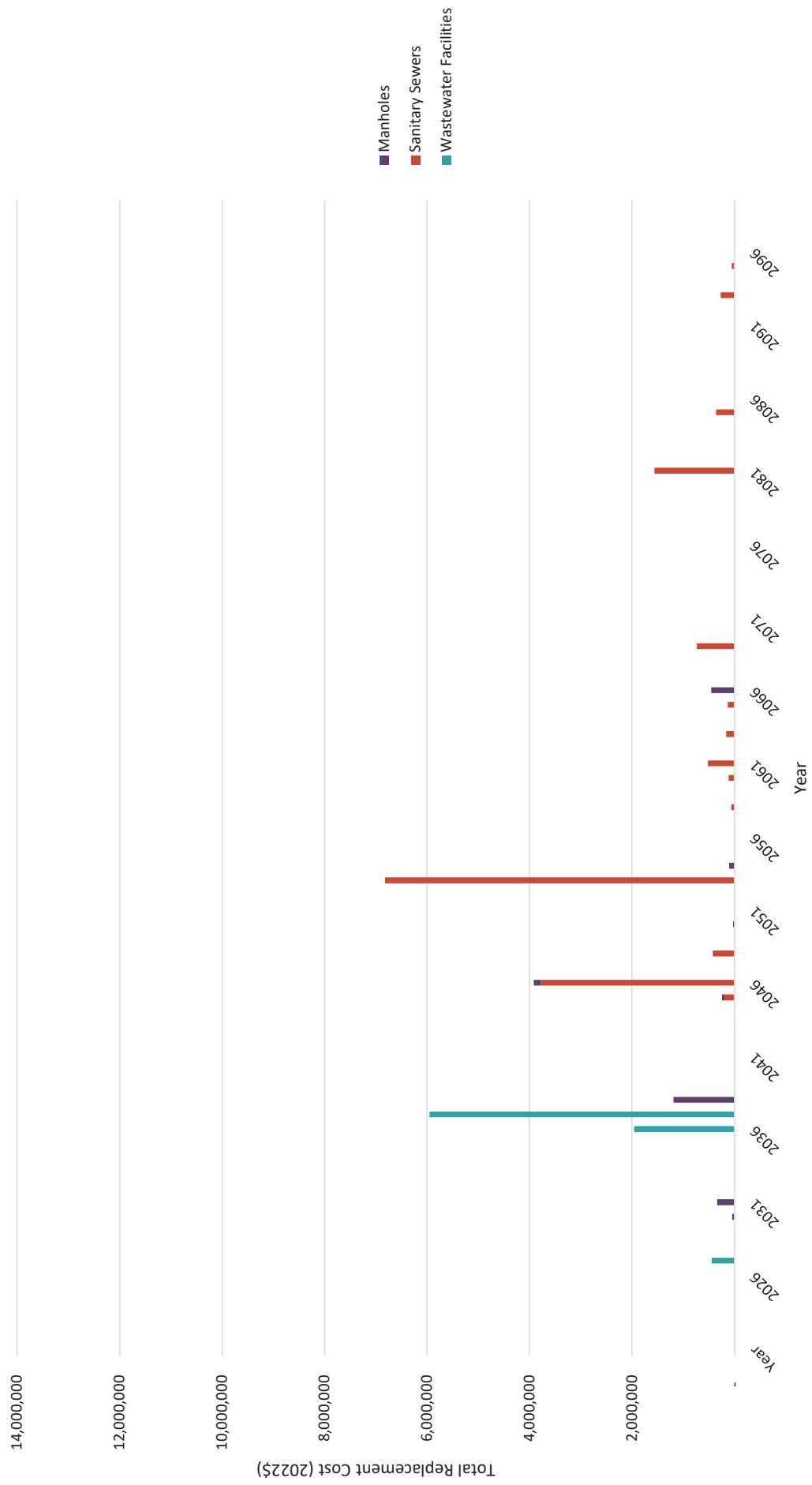
Area	Total Replacement Value	Amount included in 10-year forecast	Net Replacement for Future Lifecycle	Annual Lifecycle Replacement
Water				
Water Facilities	21,505,290	} 5,397,021	} 45,127,199	357,545
Water Meters	924,960			-
Hydrants	1,165,530			3,508
Service Leads	3,346,020			199,934
Valves	4,170,270			75,765
Watermains	19,412,150		770,860	
Total Water	50,524,220	5,397,021	45,127,199	1,407,611
Wastewater				
Wastewater Manholes	2,381,400	} 570,000	} 25,333,760	115,532
Facilities	8,362,050			591,028
Sanitary Sewers	15,160,310			636,945
Total Wastewater	25,903,760	570,000	25,333,760	1,343,505
Total	76,427,980	5,967,021	70,460,959	2,751,117

Investment per customer is \$39,257 for water and \$21,659 for wastewater

Replacement Forecast of Water Assets by Year (2022\$)



Replacement Forecast of Wastewater Assets by Year (2022\$)

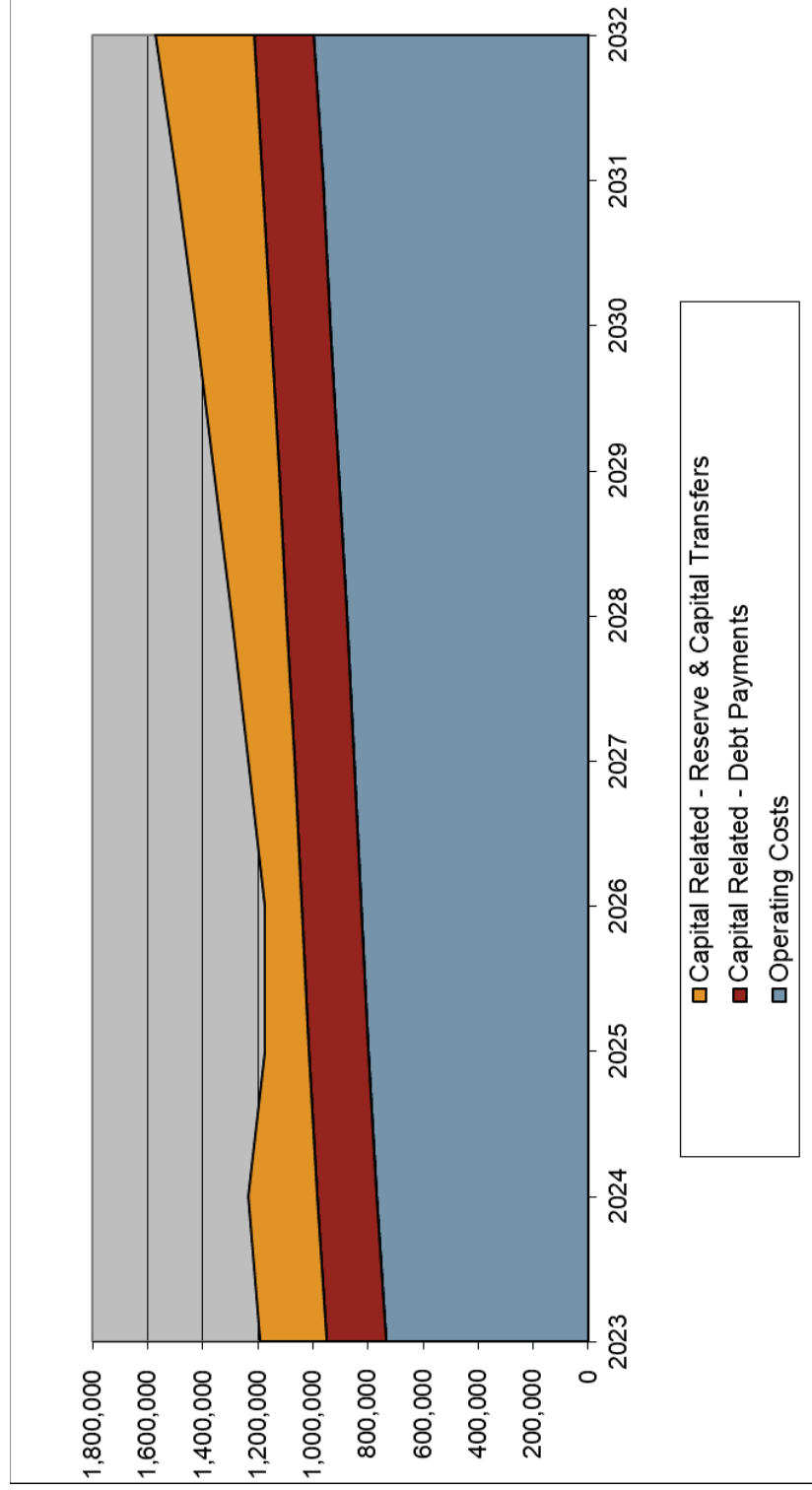


Operating Budgets



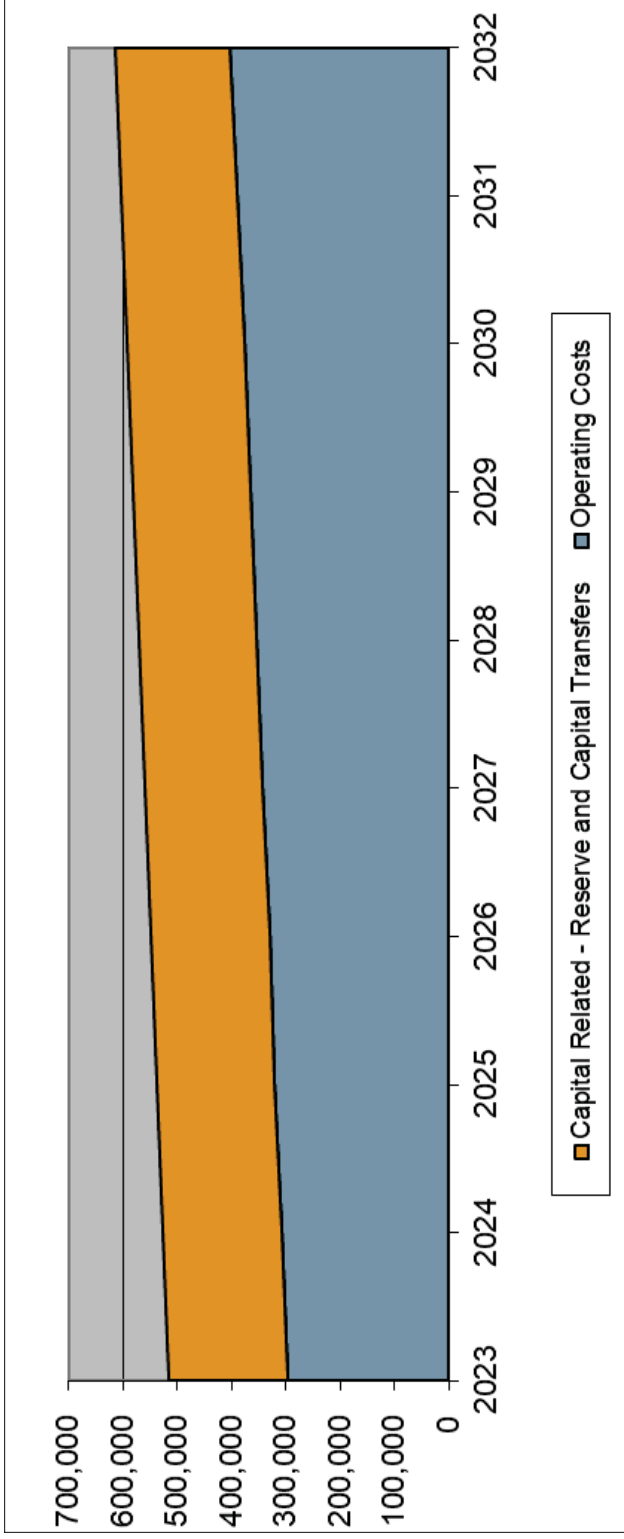
- The operating expenditures (for water and wastewater) presented in the rate study have been adjusted to recognize the current rates of inflation and interest rates. However, it is assumed that inflation rates could decrease over the longer-term. Therefore, the following adjustments to the operating forecast are assumed:
 - Wages – 3% annually from 2022 to 2032
 - Utilities and Chemicals:
 - 8% in 2022
 - 7% in 2023
 - 6% in 2024
 - 5% annually from 2025 to 2032
 - All other operating expenditures:
 - 5% in 2022
 - 4% in 2023
 - 3% in 2024
 - 2% annually from 2025 to 2032

Water Operating Budget



Description	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Operating Costs	1,192,176	1,234,437	1,173,943	1,174,323	1,233,647	1,295,809	1,359,268	1,424,908	1,496,049	1,569,615
Capital Related - Debt Payments	241,000	249,000	158,000	132,867	166,039	201,229	236,805	273,383	314,541	357,214
Capital Related - Reserve & Capital Transfers	734,625	768,886	799,392	824,904	851,056	878,028	905,911	934,974	964,957	995,850
Total	1,192,176	1,234,437	1,173,943	1,174,323	1,233,647	1,295,809	1,359,268	1,424,908	1,496,049	1,569,615

Wastewater Operating Budget



Description	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Operating Costs	295,504	308,043	319,811	330,492	341,474	352,759	364,445	376,532	389,020	401,919
Capital Related - Reserve and Capital Transfers	219,492	218,089	217,493	218,015	217,644	217,531	216,790	215,802	214,578	213,102
Total	514,996	526,132	537,304	548,507	559,118	570,290	581,235	592,334	603,598	615,021



Rate Summaries (Based on 180 cu.m. of Annual Volumes and 3/4" Meter)

Water:

Description	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Monthly Base Rate	\$38.00	\$41.80	\$45.14	\$47.85	\$50.25	\$52.76	\$55.40	\$58.17	\$61.07	\$64.13	\$67.33
Constant Rate	\$0.84	\$0.92	\$0.99	\$1.05	\$1.10	\$1.16	\$1.22	\$1.28	\$1.34	\$1.41	\$1.48
Annual Base Rate Bill	\$456.00	\$501.60	\$541.73	\$574.23	\$602.94	\$633.09	\$664.74	\$697.98	\$732.88	\$769.53	\$808.00
Volume	180	180	180	180	180	180	180	180	180	180	180
Annual Volume Bill	\$151.20	\$165.60	\$178.20	\$189.00	\$198.00	\$208.80	\$219.60	\$230.40	\$241.20	\$253.80	\$266.40
Total Annual Bill	\$607.20	\$667.20	\$719.93	\$763.23	\$800.94	\$841.89	\$884.34	\$928.38	\$974.08	\$1,023.33	\$1,074.40
% Increase - Base Rate		10%	8%	6%	5%	5%	5%	5%	5%	5%	5%
% Increase - Volume Rate		10%	8%	6%	5%	5%	5%	5%	5%	5%	5%
% Increase - Total Annual Bill		10%	8%	6%	5%	5%	5%	5%	5%	5%	5%
\$ Increase - Total Annual Bill		\$60.00	\$52.73	\$43.30	\$37.71	\$40.95	\$42.45	\$44.04	\$45.70	\$49.24	\$51.08

Wastewater:

Description	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Monthly Base Rate	\$21.50	\$21.93	\$22.37	\$22.82	\$23.27	\$23.74	\$24.21	\$24.70	\$25.19	\$25.69	\$26.21
Constant Rate	\$0.52	\$0.53	\$0.54	\$0.55	\$0.56	\$0.57	\$0.58	\$0.59	\$0.60	\$0.61	\$0.62
Annual Base Rate Bill	\$258.00	\$263.16	\$268.42	\$273.79	\$279.27	\$284.85	\$290.55	\$296.36	\$302.29	\$308.33	\$314.50
Volume	180	180	180	180	180	180	180	180	180	180	180
Annual Volume Bill	\$93.60	\$95.40	\$97.20	\$99.00	\$100.80	\$102.60	\$104.40	\$106.20	\$108.00	\$109.80	\$111.60
Total Annual Bill	\$351.60	\$358.56	\$365.62	\$372.79	\$380.07	\$387.45	\$394.95	\$402.56	\$410.29	\$418.13	\$426.10
% Increase - Base Rate		2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
% Increase - Volume Rate		2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
% Increase - Total Annual Bill		2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
\$ Increase - Total Annual Bill		\$6.96	\$7.06	\$7.17	\$7.28	\$7.39	\$7.50	\$7.61	\$7.73	\$7.85	\$7.97

Water and Wastewater Combined:

Constant Rate	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Combined Monthly Base Rate	\$59.50	\$63.73	\$67.51	\$70.67	\$73.52	\$76.50	\$79.61	\$82.86	\$86.26	\$89.82	\$93.54
Combined Constant Rate	\$1.36	\$1.45	\$1.53	\$1.60	\$1.66	\$1.73	\$1.80	\$1.87	\$1.94	\$2.02	\$2.10
Annual Base Rate Bill	\$714.00	\$764.76	\$810.15	\$848.02	\$882.21	\$917.94	\$955.29	\$994.34	\$1,035.17	\$1,077.86	\$1,122.50
Volume	180	180	180	180	180	180	180	180	180	180	180
Annual Combined Volume Bill	\$244.80	\$261.00	\$275.40	\$288.00	\$298.80	\$311.40	\$324.00	\$336.60	\$349.20	\$363.60	\$378.00
Total Annual Bill	\$958.80	\$1,025.76	\$1,085.55	\$1,136.02	\$1,181.01	\$1,229.34	\$1,279.29	\$1,330.94	\$1,384.37	\$1,441.46	\$1,500.50
% Increase - Total Annual Bill		7%	6%	5%	4%	4%	4%	4%	4%	4%	4%
\$ Increase - Total Annual Bill		\$66.96	\$59.79	\$50.47	\$44.99	\$48.33	\$49.95	\$51.65	\$53.43	\$57.09	\$59.04

Comparison of Residential Annual Water and Wastewater Combined Bills (based on 180 cu.m)



*Water only

Ontario Regulation 453/07 Water Financial Plan



- All municipalities providing water service are required to be licensed to operate the water system(s)
- Part of the licensing requirement is for the municipality to submit a Financial Plan to the Province

Summary of O.Reg. 453/07 Requirements



- The plan is considered a living document but will need to be undertaken at a minimum every five years
- The plans are generally consistent with the "Watson" Approach in forecasting the capital, operating and reserve fund positions, providing detailed inventories, forecasting future volumes and calculation of the rates.
- The additional requirements include the PSAB information for each year of the forecast (i.e. total non-financial assets, tangible capital assets acquisitions, tangible capital asset construction, betterments, write downs, disposals, total liabilities and net debt)
- The financial plans must be made available upon request to the public (without charge) and on the municipality's web site. The availability of this information must also be advertised

What Does All of This Mean?



- Reporting is mandatory for Water and encouraged for Wastewater services
- The intent of the legislation is for:
 1. municipalities to project future activities for capital (including inventory renewal), operating, reserves and customers (and usage) and then
 2. report it to the Province in PSAB 3150 financial statement format (projected into the future)
- The O. Reg. 453/07 Study must be approved but the forecasted rates (i.e. beyond 2021) do not have to be approved at this time (may be reviewed in detail during next budget cycle)
- The Rate study provides the basis projecting the financial information on which the O. Reg. report will be prepared

Rate Study vs. O.Reg 453.07 Reporting Format



Significant Revision Areas	Rate Study	O.Reg 453.07 Financial Plan
Approach	“Modified Cash Basis”	“Full Accrual Basis”
Capital Requirements	Capital Forecast	Tangible Capital Assets
Previously acquired assets	Lifecycle Cost Analysis (Future Replacement)	Tangible Capital Assets (Historical Cost)
Debt Payments	Principal & Interest Expense	Interest Expense Principal: Debt reduction
Amortization	Not Applicable	Included in Operating Expenses
Reserve Transfers	Included as an expense	Part of “Accumulated Surplus”
Development Charge Reserve Fund Balances	Reserve Fund Continuity Schedule	Deferred Revenue

Matters for Council's Consideration



1. Consider the Capital Program
2. Consider the Operating Program
3. Consider the Proposed Water Rates
4. Consider the Proposed Wastewater Rates
5. Finalize the Financial Plan based on the rates approved by Council



Water and Wastewater Rate Study

Municipality of Wawa

December 8, 2022

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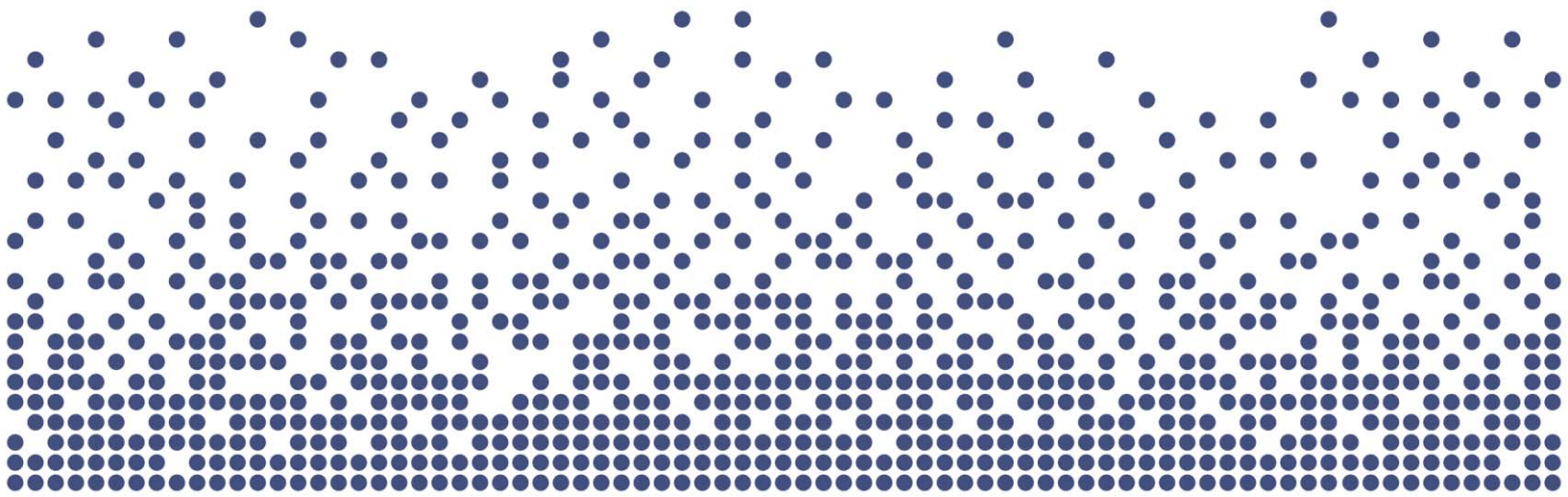
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List of Acronyms and Abbreviations

Acronym	Full Description of Acronym
A.M.O.	Association of Municipalities of Ontario
cu.m.	cubic metres
C.W.W.F.	Clean Water and Wastewater Fund
D.C.A.	Development Charges Act, 1997
F.I.R.	Financial Information Return
I.J.P.A.	Infrastructure for Jobs and Prosperity Act, 2015
I.O.	Infrastructure Ontario
M.O.E.	Ministry of Environment
O.C.I.F.	Ontario Community Infrastructure Fund
OLT	Ontario Land Tribunal
O. Reg.	Ontario Regulation
O.S.I.F.A.	Ontario Strategic Infrastructure Financing Authority
P.S.A.B.	Public Sector Accounting Board
P.T.I.F.	Public Transit Infrastructure Fund
S.W.S.S.A.	Sustainable Water and Sewage Systems Act, 2002



Executive Summary



Executive Summary

The Municipality of Wawa retained Watson & Associates Economists Ltd. (Watson) to undertake a water and wastewater rate study. This study aims to provide an analysis of current capital and operating forecasts, costing for lifecycle cost requirements, current volumes and customer profiles. The results of this analysis provide updated water and wastewater base charges and volume rates for customers within the Municipality of Wawa (the Municipality). The rate analysis contained herein provides fiscally responsible practices that are in line with current provincial legislation at a level of rate increases that are reasonable.

The analysis presented herein provides the following:

- The 2022 to 2032 capital spending program for water and wastewater is \$5.75 million and \$0.71 million (inflated), respectively;
 - Of this amount a provision has been included to address the water and wastewater infrastructure lifecycle requirements based on the Municipality's asset management plan. Additionally, reserve transfers have been provided over the forecast period to meet the asset management needs beyond 2032;
- The operating expenditures (for water and wastewater) presented herein have been adjusted to recognize the current rates of inflation and interest rates. However, it is assumed that inflation rates could decrease over the longer-term. Therefore, the following adjustments to the operating forecast are assumed:
 - Wages and benefits: 3% annual inflation between 2023 and 2032
 - Utilities and Chemicals annual inflation rate of:
 - 8% in 2023;
 - 7% in 2024;
 - 6% in 2025; and
 - 5% annually thereafter.
 - All other operating expenditures have an annual inflation rate of:
 - 5% in 2023;
 - 4% in 2024;
 - 3% in 2025; and
 - 2% annually thereafter.



- The present rate structure (base monthly charge and a constant volume rate) is continued;
- Existing water customers total 1,287; approximately 22 new customers will be added over the next 10-year period;
- Existing wastewater customers total 1,196; approximately 17 new customers will be added over the next 10-year period.

To meet these expenditure requirements, the following rate increases to water and wastewater are suggested:

- To meet the needs of the water forecast, an initial 10% increase is required for 2023. Subsequently, the annual increases will be 8% for 2024, 6% for 2025 and 5% annually thereafter. The volume rates and base charges are anticipated to increase at the same rates.
- To meet the needs of the wastewater forecast, an average annual increase of 2% per year on both the volume rate and base charge is provided.

Based on the above, the combined water/wastewater bill will increase by 7%, 6%, and 5% annually for 2023, 2024, and 2025, respectively, with a 4% annual increase thereafter. Over the forecast period, this represents an average annual increase of \$54 on the combined water and wastewater bill (based on 180 cu.m. of usage and a ¾" meter.)

Table ES-1 and ES-2 summarizes the recommended water and wastewater rates and average annual bill, respectively, (assuming an annual volume of 180 cu.m.) based on the analysis provided herein over the forecast period.

Table ES-3 provides a summary of the combined water and wastewater bills.



Table ES-1
Municipality of Wawa
Water Rate Summary
Customer Bill – Based on a ¾" Meter and Annual Volume of 180 cubic metres

Description	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Monthly Base Rate	\$38.00	\$41.80	\$45.14	\$47.85	\$50.25	\$52.76	\$55.40	\$58.17	\$61.07	\$64.13	\$67.33
Constant Rate	\$0.84	\$0.92	\$0.99	\$1.05	\$1.10	\$1.16	\$1.22	\$1.28	\$1.34	\$1.41	\$1.48
Annual Base Rate Bill	\$456.00	\$501.60	\$541.73	\$574.23	\$602.94	\$633.09	\$664.74	\$697.98	\$732.88	\$769.53	\$808.00
Volume	180	180	180	180	180	180	180	180	180	180	180
Annual Volume Bill	\$151.20	\$165.60	\$178.20	\$189.00	\$198.00	\$208.80	\$219.60	\$230.40	\$241.20	\$253.80	\$266.40
Total Annual Bill	\$607.20	\$667.20	\$719.93	\$763.23	\$800.94	\$841.89	\$884.34	\$928.38	\$974.08	\$1,023.33	\$1,074.40
% Increase - Base Rate		10%	8%	6%	5%	5%	5%	5%	5%	5%	5%
% Increase - Volume Rate		10%	8%	6%	5%	5%	5%	5%	5%	5%	5%
% Increase - Total Annual Bill		10%	8%	6%	5%	5%	5%	5%	5%	5%	5%

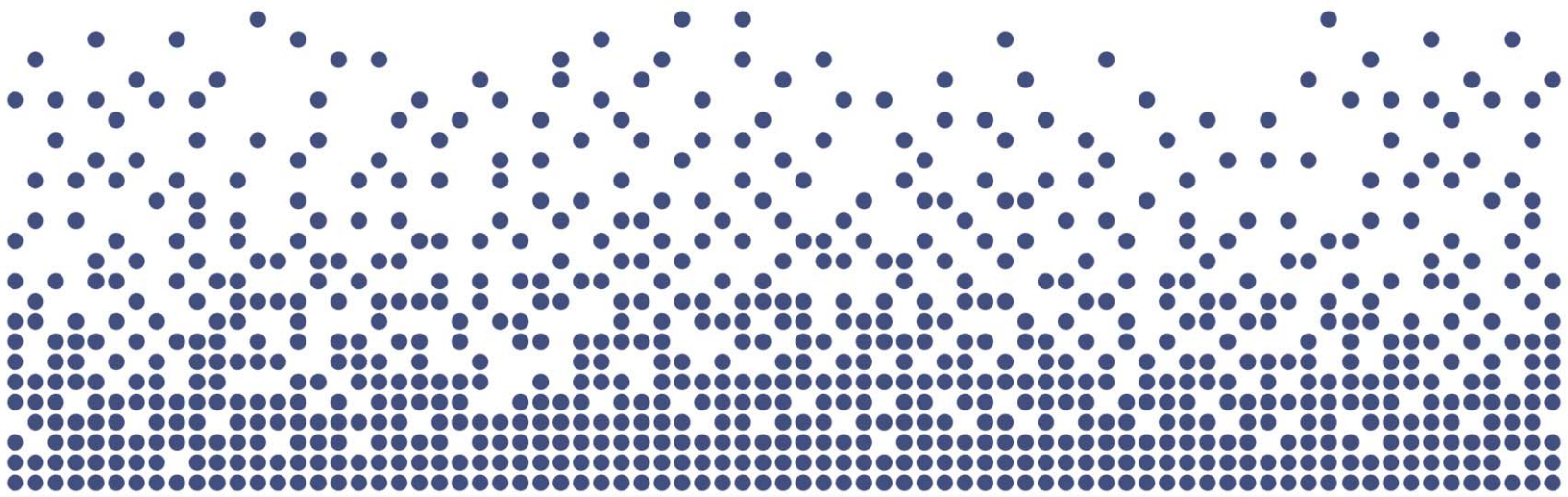
Table ES-2
Municipality of Wawa
Wastewater Rate Summary
Customer Bill – Based on a ¾" Meter and Annual Volume of 180 cubic metres

Description	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Monthly Base Rate	\$21.50	\$21.93	\$22.37	\$22.82	\$23.27	\$23.74	\$24.21	\$24.70	\$25.19	\$25.69	\$26.21
Constant Rate	\$0.52	\$0.53	\$0.54	\$0.55	\$0.56	\$0.57	\$0.58	\$0.59	\$0.60	\$0.61	\$0.62
Annual Base Rate Bill	\$258.00	\$263.16	\$268.42	\$273.79	\$279.27	\$284.85	\$290.55	\$296.36	\$302.29	\$308.33	\$314.50
Volume	180	180	180	180	180	180	180	180	180	180	180
Annual Volume Bill	\$93.60	\$95.40	\$97.20	\$99.00	\$100.80	\$102.60	\$104.40	\$106.20	\$108.00	\$109.80	\$111.60
Total Annual Bill	\$351.60	\$358.56	\$365.62	\$372.79	\$380.07	\$387.45	\$394.95	\$402.56	\$410.29	\$418.13	\$426.10
% Increase - Base Rate		2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
% Increase - Volume Rate		2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
% Increase - Total Annual Bill		2%	2%	2%	2%	2%	2%	2%	2%	2%	2%



Table ES-1
Municipality of Wawa
Water and Wastewater Rate Summary
Total Customer Bill – Based on a ¾” Meter and Annual Volume of 180 cubic metres

Constant Rate	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Combined Monthly Base Rate	\$59.50	\$63.73	\$67.51	\$70.67	\$73.52	\$76.50	\$79.61	\$82.86	\$86.26	\$89.82	\$93.54
Combined Constant Rate	\$1.36	\$1.45	\$1.53	\$1.60	\$1.66	\$1.73	\$1.80	\$1.87	\$1.94	\$2.02	\$2.10
Annual Base Rate Bill	\$714.00	\$764.76	\$810.15	\$848.02	\$882.21	\$917.94	\$955.29	\$994.34	\$1,035.17	\$1,077.86	\$1,122.50
Volume	180	180	180	180	180	180	180	180	180	180	180
Annual Combined Volume Bill	\$244.80	\$261.00	\$275.40	\$288.00	\$298.80	\$311.40	\$324.00	\$336.60	\$349.20	\$363.60	\$378.00
Total Annual Bill	\$958.80	\$1,025.76	\$1,085.55	\$1,136.02	\$1,181.01	\$1,229.34	\$1,279.29	\$1,330.94	\$1,384.37	\$1,441.46	\$1,500.50
% Increase - Total Annual Bill		7%	6%	5%	4%	4%	4%	4%	4%	4%	4%



Report



Chapter 1

Introduction



1. Introduction

1.1 Background

The Municipality of Wawa currently services 1,287 metered water customers and 1,196 metered wastewater customers.

The water source comes from Wawa Lake and is treated at the water treatment plant owned and operated by the Municipality of Wawa. The water treatment plant includes a low lift pumping station, membrane filtration system, disinfection system utilizing sodium hypochlorite, treated water storage, high lift pumping and a standby generator. The Municipality also owns and operates various hydrants, service leads, pumping stations, and 31 kilometres of watermains.

With respect to the wastewater system, the Municipality operates and maintains a wastewater collection system consisting primarily of gravity mains and a few force mains. The Wawa Sewage Treatment Plant is a Class 1 plant which consists of aeration and polishing ponds. Treated effluent is then discharged into the Magpie River.

The water and wastewater systems are metered and utilize rate structures with a monthly base charge as well as a volume charge on a per cubic metre basis. Table 1-1 provides the existing rates currently in effect.



Table 1-1
Municipality of Wawa
Water and Wastewater Rates – 2022

2022 - Water Billing Rates		2022 - Wastewater Billing Rates	
Base Charge		Base Charge	
¾"	38.00	¾"	21.50
1"	76.00	1"	43.00
1 ½"	114.00	1 ½"	64.50
2"	152.00	2"	86.00
3"	190.00	3"	107.50
Volume Charge		Volume Charge	
\$ 0.840	per m ³	\$ 0.520	per m ³

Since the Walkerton crisis, the Province has continued to make legislative changes for municipal water and wastewater systems. Noted below are the historical changes along with pending legislation anticipated to be implemented in the future. Watson & Associates Economists Ltd. (Watson) was retained by the Municipality of Wawa to assist in addressing these changes in a proactive manner as they relate to the water and wastewater systems. The assessment provided herein addresses changes recommended to the water and wastewater rates based on the most current information and forecasts the implications over the forecast period.

1.2 Study Process

The objectives of the study and the steps involved in carrying out this assignment are summarized below:

- Identify all current and future water and wastewater system capital needs to assess the immediate and longer-term implications;
- Identify potential methods of cost recovery from the capital needs listing. These recovery methods may include other statutory authorities (e.g. *Development Charges Act, 1997* (D.C.A.), *Municipal Act*, etc.) as an offset to recovery through the water and wastewater rates;
- Identify existing operating costs by component and estimate future operating costs over the next ten years. This assessment identifies fixed and variable costs in order to project those costs sensitive to changes to the existing



infrastructure inventory, as well as costs which may increase commensurate with growth; and

- Provide staff and Committee/Council the findings to assist in gaining approval of the rates for 2023 and future years.

1.3 Regulatory Changes in Ontario

Resulting from the water crisis in Walkerton, significant regulatory changes have been made in Ontario. These changes arise as a result of the Walkerton Commission and the 93 recommendations made by the Walkerton Inquiry Part II report. Areas of recommendation include:

- watershed management and source protection;
- quality management;
- preventative maintenance;
- research and development;
- new performance standards;
- sustainable asset management; and
- lifecycle costing.

The legislation which would have most impacted municipal water and wastewater rates was the *Sustainable Water and Sewage Systems Act* (S.W.S.S.A.) which would have required municipalities to implement full cost pricing. The legislation was enacted in 2002, however, it had not been implemented pending the approval of its regulations. The Act was repealed as of January 1, 2013. It is expected that the provisions of the *Water Opportunities Act* will implement the fundamental requirements of S.W.S.S.A. Furthermore, on December 27, 2017, O. Reg. 588/17 was released under the *Infrastructure for Jobs and Prosperity Act, 2015* (I.J.P.A.), which outlines the requirements for asset management for municipalities. The results of the asset management review under this Act will need to be considered in light of the recent investments undertaken by the Municipality and the capital spending plan provided herein. The following sections describe these various resulting changes.



1.4 Sustainable Water and Sewage Systems Act

As noted earlier, the S.W.S.S.A. was passed on December 13, 2002. The intent of the Act was to introduce the requirement for municipalities to undertake an assessment of the “full cost” of providing their water and wastewater services. It is noted, however, that this Act has been repealed. To provide broader context and understanding to other legislation discussed herein, a description of the Act is provided below.

Full costs for water service was defined in subsection 3(7) of the Act and included “...source protection costs, operating costs, financing costs, renewal and replacement costs and improvement costs associated with extracting, treating or distributing water to the public and such other costs which may be specified by regulation.” Similar provisions were made for wastewater services in subsection 4(7) with respect to “...collecting, treating or discharging waste water.”

The Act would have required the preparation of two reports for submission to the Ministry of the Environment (or such other member of the Executive Council as may be assigned the administration of this Act under the *Executive Council Act*). The first report was on the “full cost of services” and the second was the “cost recovery plan.” Once these reports were reviewed and approved by the Ministry, the municipality would have been required to implement the plans within a specified time period.

In regard to the **full cost of services** report, the municipality (deemed a regulated entity under the Act) would prepare and approve a report concerning the provision of water and sewage services. This report was to include an inventory of the infrastructure, a management plan providing for the long-term integrity of the systems, and would address the full cost of providing the services (other matters may be specified by the regulations) along with the revenue obtained to provide them. A professional engineer would certify the inventory and management plan portion of the report. The municipality’s auditor would be required to provide a written opinion on the report. The report was to be approved by the municipality and then be forwarded to the Ministry along with the engineer’s certification and the auditor’s opinion. The regulations would stipulate the timing for this report.

The second report was referred to as a **cost recovery plan** and would address how the municipality intended to pay for the full costs of providing the service. The regulations were to specify limitations on what sources of revenue the municipality may use. The



regulations may have also provided limits as to the level of increases any customer or class of customer may experience over any period of time. Provision was made for the municipality to implement increases above these limits; however, ministerial approval would be required first. Similar to the first report, the municipal auditor would provide a written opinion on the report prior to Council's adoption, and this opinion must accompany the report when submitted to the Province.

The Act provided the Minister the power to approve or not approve the plans. If the Minister was not satisfied with the report or if a municipality did not submit a plan, the Minister may have a plan prepared. The cost to the Crown for preparing the plan would be recovered from the municipality. As well, the Minister may direct two or more regulated municipalities to prepare a joint plan. This joint plan may be directed at the onset or be directed by the Minister after receiving the individual plans from the municipalities.

The Minister also had the power to order a municipality to generate revenue from a specific revenue source or in a specified manner. The Minister may have also ordered a regulated entity to do or refrain from doing such things as the Minister considered advisable to ensure that the entity pays the full cost of providing the services to the public.

Once the plans were approved and in place, the municipality would be required to submit progress reports. The timing of these reports and the information to be contained therein would be established by the regulations. A municipal auditor's opinion must be provided with the progress report. Municipalities would also revise the plans if they deem the estimate does not reflect the full cost of providing the services, as a result of a change in circumstances, regulatory or other changes that affect their plan, etc. The municipality would then revise its prior plan, provide an auditor's opinion, and submit the plan to the Minister.

1.5 Financial Plans Regulation

On August 16, 2007, the M.O.E. passed O. Reg 453/07 which requires the preparation of financial plans for water (and wastewater) systems. The M.O.E. has also provided a Financial Plan Guidance Document to assist in preparing the plans. A brief summary of the key elements of the regulation is provided below:



- The financial plan will represent one of the key elements for the municipality to obtain its Drinking Water Licence;
- The financial plans shall be for a period of at least six years, but longer planning horizons are encouraged;
- As the regulation is under the *Safe Drinking Water Act, 2002*, the preparation of the plan is mandatory for water and encouraged for wastewater;
- The plan is considered a living document (i.e. will be updated as annual budgets are prepared) but will need to be undertaken, at a minimum, every five years;
- The plans generally require the forecasting of capital, operating and reserve fund positions, providing detailed inventories, forecasting future users and volume usage and corresponding calculation of rates. In addition, P.S.A.B. information on the system must be provided for each year of the forecast (i.e. total non-financial assets, tangible capital asset acquisitions, tangible capital asset construction, betterments, write-downs, disposals, total liabilities and net debt);
- The financial plans must be made available to the public (at no charge) upon request and be available on the municipality's website. The availability of this information must also be advertised; and
- The financial plans are to be approved by Resolution of the Council or governing body indicating that the drinking water system is financially viable.

In general, the financial principles of the draft regulations follow the intent of S.W.S.S.A. to move municipalities towards financial sustainability. Many of the prescriptive requirements, however, have been removed (e.g. preparation of two separate documents for provincial approval, auditor opinions, engineer certifications, etc.).

A Guideline ("Towards Financially Sustainable Drinking Shores – Water and Wastewater Systems") had been developed to assist municipalities in understanding the Province's direction and provided a detailed discussion on possible approaches to sustainability. The Province's Principles of Financially Sustainable Water and Wastewater Services are provided below:

Principle #1: Ongoing public engagement and transparency can build support for, and confidence in, financial plans and the system(s) to which they relate.

Principle #2: An integrated approach to planning among water, wastewater, and stormwater systems is desirable given the inherent relationship among these services.



Principle #3: Revenues collected for the provision of water and wastewater services should ultimately be used to meet the needs of those services.

Principle #4: Lifecycle planning with mid-course corrections is preferable to planning over the short term, or not planning at all.

Principle #5: An asset management plan is a key input to the development of a financial plan.

Principle #6: A sustainable level of revenue allows for reliable service that meets or exceeds environmental protection standards, while providing sufficient resources for future rehabilitation and replacement needs.

Principle #7: Ensuring users pay for the services they are provided leads to equitable outcomes and can improve conservation. In general, metering and the use of rates can help ensure users pay for services received.

Principle #8: Financial plans are “living” documents that require continuous improvement. Comparing the accuracy of financial projections with actual results can lead to improved planning in the future.

Principle #9: Financial plans benefit from the close collaboration of various groups, including engineers, accountants, auditors, utility staff, and municipal Council.

1.6 Water Opportunities Act, 2010

As noted earlier, since the passage of the *Safe Drinking Water Act, 2002*, continuing changes and refinements to the legislation have been introduced. Some of these Bills have found their way into law, while others have not been approved. Bill 72, the *Water Opportunities Act, 2010*, was introduced into legislation on May 18, 2010 and received Royal Assent on November 29, 2010.

The Act provides for the following elements:

- The fostering of innovative water, wastewater and stormwater technologies, services and practices in the private and public sectors;



- Preparation of water conservation plans to achieve water conservation targets established by the regulations; and
- Preparation of sustainability plans for municipal water services, municipal wastewater services and municipal stormwater services.

With regard to the sustainability plans:

- The Act extends from the water financial plans and requires a more detailed review of the water financial plan and requires a full plan for wastewater and stormwater services; and
- Regulations will provide performance targets for each service – these targets may vary based on the jurisdiction of the regulated entity or the class of entity.

The financial plan shall include:

- An asset management plan for the physical infrastructure;
- A financial plan;
- For water, a water conservation plan;
- An assessment of risks that may interfere with the future delivery of the municipal service, including, if required by the regulations, the risks posed by climate change and a plan to deal with those risks; and
- Strategies for maintaining and improving the municipal service, including strategies to ensure the municipal service can satisfy future demand, consider technologies, services and practices that promote the efficient use of water and reduce negative impacts on Ontario's water resources, and increase co-operation with other municipal service providers.

Performance indicators will be established by service, with the following considerations:

- May relate to the financing, operation or maintenance of a municipal service or to any other matter in respect of what information may be required to be included in a plan;
- May be different for different municipal service providers or for municipal services in different areas of the Province.

Regulations will prescribe:

- Timing;



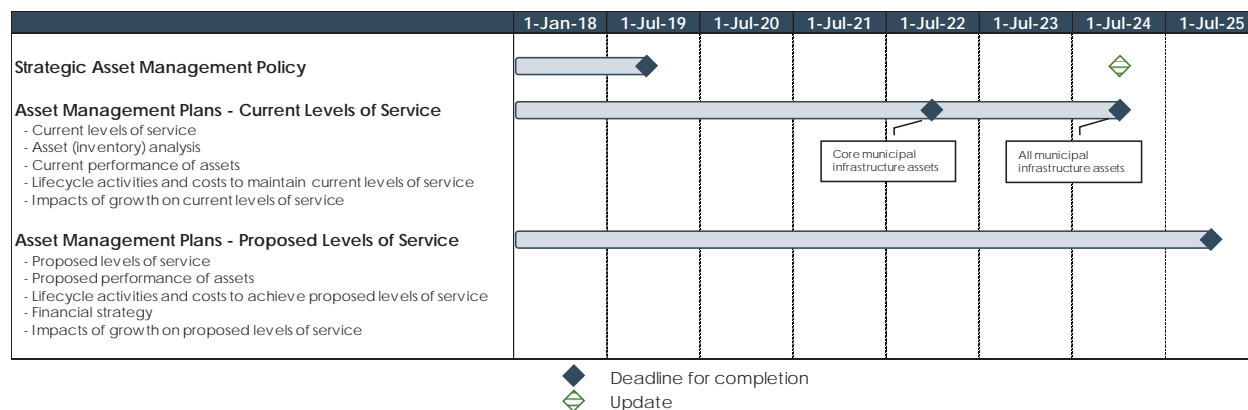
- Contents of the plans;
- Which identified portions of the plan will require certification;
- Public consultation process; and
- Limitations, updates, refinements, etc.

As noted earlier, it is expected that this Act will implement the principles of the S.W.S.S.A. once all regulations are put in place.

1.7 Infrastructure for Jobs and Prosperity Act, 2015 (I.J.P.A.)

On June 4, 2015, the Province of Ontario passed the I.J.P.A. which, over time, will require municipalities to undertake and implement asset management plans for all infrastructure they own. On December 27, 2017, the Province released Ontario Regulation 588/17 under the I.J.P.A. which has three phases that municipalities must meet:

Figure 1-1
Legislative Timelines set out by the Infrastructure for Jobs and Prosperity Act
Legislation related to Asset Management Plans



Note: on March 15, 2021, the Province filed Regulation 193/21 to extend all of the timelines of Regulation 588/17 by one year (reflected in the table above).

Every municipality in Ontario was to have prepared a strategic asset management policy by July 1, 2019. Municipalities will be required to review their strategic asset management policies at least every five years and make updates as necessary. The subsequent phases are as follows:



- Phase 1 – Asset Management Plan (by July 1, 2022):
 - For core assets, municipalities must have the following:
 - Inventory of assets;
 - Current levels of service measured by standard metrics; and
 - Costs to maintain levels of service.
- Phase 2 – Asset Management Plan (by July 1, 2024):
 - Same steps as Phase 1 but for all assets.
- Phase 3 – Asset Management Plan (by July 1, 2025):
 - Builds on Phase 1 and 2 by adding:
 - Proposed levels of service; and
 - Lifecycle management and financial strategy.

In relation to water and wastewater (which is considered a core asset), municipalities were to have an asset management plan that addresses the related infrastructure by July 1, 2022 (Phase 1). O. Reg. 588/17 specifies that the municipality's asset management plan must include the following for each asset category:

- The current levels of service being provided, determined in accordance with the following qualitative descriptions and technical metrics and based on data from at most the two calendar years prior to the year in which all information required under this section is included in the asset management plan;
- The current performance of each asset category, including:
 - a summary of the assets in the category;
 - the replacement cost of the assets in the category;
 - the average age of the assets in the category, determined by assessing the average age of the components of the assets;
 - the information available on the condition of the assets in the category;
 - a description of the municipality's approach to assessing the condition of the assets in the category, based on recognized and generally accepted good engineering practices where appropriate; and
- The lifecycle activities that would need to be undertaken to maintain the current levels of service.



1.8 Forecast Growth and Servicing Requirements

The Municipality of Wawa services 1,287 metered water customers and 1,196 wastewater customers. Information on the existing number of customers and existing billable volumes was obtained from the Municipality.

For future water and wastewater customers to be added to the systems, consideration has been given to the potential for existing unserved properties to hook into the Municipality's system over the forecast period between 2022 to 2032.

The forecast assumes the addition of 22 water customers and 17 additional wastewater customers over the forecast period. For operating revenue purposes, it would be undesirable to forecast too high as it could produce a potential operating deficit should the growth in the water and wastewater systems not materialize.

Based on historical information, the Municipality's volumes per customer is 180 m³ per year. For forecasting purposes, the assumed billable volumes per customer will be based on that figure.

Table 1-2 provides for the forecast of water users and volumes for Wawa, while Table 1-3 provides the forecast of wastewater users and volumes.



Table 1-2
Municipality of Wawa
2022 to 2032 Water System Forecast

<i>Water Users Forecast</i>												
Year	Total Users	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
2022	11	6	11	11	11	11	11	11	11	11	11	11
2023	5		3	5	5	5	5	5	5	5	5	5
2024	1			1	1	1	1	1	1	1	1	1
2025	3				2	3	3	3	3	3	3	3
2026	1					1	1	1	1	1	1	1
2027	0											
2028	1							1	1	1	1	1
2029	0											
2030	0											
2031	0											
2032	0											
Total	22	6	14	17	19	21	21	22	22	22	22	22
m ³ /User	180	180	180	180	180	180	180	180	180	180	180	180
Annual Flow	1,080	1,080	2,520	3,060	3,420	3,780	3,780	3,960	3,960	3,960	3,960	3,960

<i>Water Customer Forecast</i>						
	2022	2023	2024	2025	2026	2027
Existing	1,287	1,287	1,287	1,287	1,287	1,287
New - Growth	6	14	17	19	21	21
Total	1,293	1,301	1,304	1,306	1,308	1,308

<i>Water Volume Forecast (m³)</i>						
	2022	2023	2024	2025	2026	2027
Existing	315,000	315,000	315,000	315,000	315,000	315,000
New	1,080	2,520	3,060	3,420	3,780	3,780
Total	316,080	317,520	318,060	318,420	318,780	318,780

<i>Water Customer Forecast</i>						
	2022	2023	2024	2025	2026	2027
Existing	1,287	1,287	1,287	1,287	1,287	1,287
New - Growth	6	14	17	19	21	21
Total	1,293	1,301	1,304	1,306	1,308	1,308

<i>Water Volume Forecast (m³)</i>						
	2022	2023	2024	2025	2026	2027
Existing	315,000	315,000	315,000	315,000	315,000	315,000
New	1,080	2,520	3,060	3,420	3,780	3,780
Total	316,080	317,520	318,060	318,420	318,780	318,780



Table 1-3
Municipality of Wawa
2022 to 2032 Wastewater System Forecast

Wastewater Users Forecast												
Year	Total Users	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
2022	8	4	8	8	8	8	8	8	8	8	8	8
2023	3		2	3	3	3	3	3	3	3	3	3
2024	1			1	1	1	1	1	1	1	1	1
2025	3				2	3	3	3	3	3	3	3
2026	1					1	1	1	1	1	1	1
2027	0											
2028	1							1				
2029	0											
2030	0											
2031	0											
2032	0											
Total	17	4	10	12	14	16	16	17	17	17	17	17
m ³ /User	180	180	180	180	180	180	180	180	180	180	180	180
Annual Flow	720	720	1,800	2,160	2,520	2,880	2,880	3,060	3,060	3,060	3,060	3,060

Waste water Customer Forecast												
	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	
Existing	1,196	1,196	1,196	1,196	1,196	1,196	1,196	1,196	1,196	1,196	1,196	
New - Growth	4	10	12	14	16	16	17	17	17	17	17	
Total	1,200	1,206	1,208	1,210	1,212	1,212	1,213	1,213	1,213	1,213	1,213	

Wastewater Flows Forecast (m ³)												
	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	
Existing	292,727	292,727	292,727	292,727	292,727	292,727	292,727	292,727	292,727	292,727	292,727	
New	720	1,800	2,160	2,520	2,880	2,880	3,060	3,060	3,060	3,060	3,060	
Total	293,447	294,527	294,887	295,247	295,607	295,607	295,787	295,787	295,787	295,787	295,787	

Note: Above flows are water flows on which the wastewater billing will be calculated



Chapter 2

Capital Infrastructure Needs



2. Capital Infrastructure Needs

2.1 Capital Forecast

Capital forecasts have been provided for the water and wastewater systems and are presented in Tables 2-1 and 2-2 (note: the costs are in inflated dollars). The basis for these forecasts include the Municipality's capital requirements, as well as a provision for works related to their asset management plan for the water and wastewater systems.

For water, the capital costs over the forecast period totals \$5.7 million. For wastewater, the capital costs over the forecast period totals \$0.7 million.

Table 2-1
Municipality of Wawa
2022 to 2032 Water Capital Forecast Summary (Inflated \$)

Description	Total 2022-2032	Years Undertaken
Water Main and Hydrant - MRV	75,000	2022
Water and WW 10 yr Plan & Rate Study	24,500	2022
Hydrant Rehabilitation	190,000	2022-2025
Water Treatment Plant - Filters	564,000	2022-2024
Water Intake Valve	250,000	2022
Water & Wastewater Master Plan	105,000	2022
Water Intake	3,232,021	2022
Asset Management Works	1,308,000	2025-2032
Total Water	5,748,521	

Table 2-2
Municipality of Wawa
2022 to 2032 Wastewater Capital Forecast Summary (Inflated \$)

Description	Total 2022-2032	Years Undertaken
Water and WW 10 yr Plan & Rate Study	10,500	2022
Sewer Jet / Vacuum Trailer	97,000	2024
Water & Wastewater Master Plan	45,000	2022
Asset Management Works	556,000	2025-2032
Total Wastewater	708,500	



Chapter 3

Lifecycle Costing



3. Lifecycle Costing

3.1 Overview of Lifecycle Costing

3.1.1 Definition

For many years, lifecycle costing has been used in the field of maintenance engineering and to evaluate the advantages of using alternative materials in construction or production design. The method has gained wider acceptance and use in the areas of industrial decision-making and the management of physical assets.

By definition, lifecycle costs are all the costs which are incurred during the lifecycle of a physical asset, from the time its acquisition is first considered to the time it is taken out of service for disposal or redeployment. The stages which the asset goes through in its lifecycle are specification, design, manufacture (or build), install, commission, operate, maintain and disposal. Figure 3-1 depicts these stages in a schematic form.

3.1.2 Financing Costs

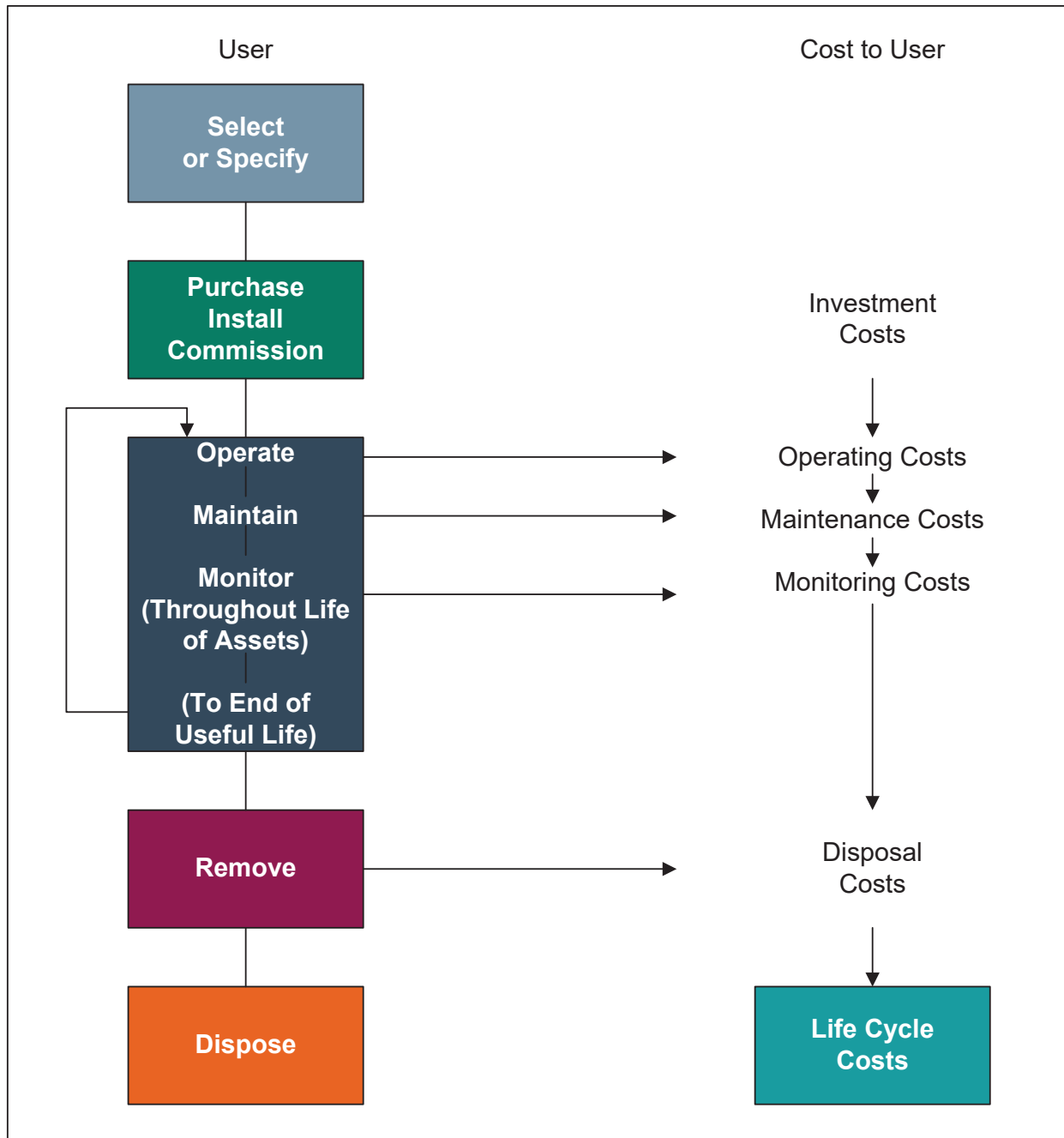
This section will focus on financing mechanisms in place to fund the costs incurred throughout the asset's life.

In a municipal context, services are provided to benefit tax/rate payers. Acquisition of assets is normally timed in relation to direct needs within the community. At times, economies of scale or technical efficiencies will lead to oversizing an asset to accommodate future growth within the Municipality. Over the past few decades, new financing techniques such as development charges have been employed based on the underlying principle of having tax/rate payers who benefit directly from the service paying for that service. Operating costs which reflect the cost of the service for that year are charged directly to all existing tax/rate payers who have received the benefit. Operating costs are normally charged through the tax base or user rates.

Capital expenditures are recouped through several methods, with operating budget contributions, development charges, reserves, developer contributions and debentures, being the most common.



Figure 3-1
Lifecycle Costing



New construction related to growth could produce development charges and developer contributions (e.g. works internal to a subdivision which are the responsibility of the developer to construct) to fund a significant portion of projects, where new assets are being acquired to allow growth within the Municipality to continue. As well, debentures



could be used to fund such works, with the debt charge carrying costs recouped from taxpayers in the future.

Capital construction to replace existing infrastructure, however, is largely not growth-related and will therefore not yield development charges or developer contributions to assist in financing these works. Hence, a municipality will be dependent upon debentures, reserves and contributions from the operating budget to fund these works.

Figure 3-2 depicts the costs of an asset from its initial conception through to replacement and then continues to follow the associated costs through to the next replacement.

As referred to earlier, growth-related financing methods such as development charges and developer contributions could be utilized to finance the growth-related component of the new asset. These revenues are collected (indirectly) from the new homeowner who benefits directly from the installation of this asset. Other financing methods may be used as well to finance the non-growth-related component of this project, such as reserves which have been collected from past tax/rate payers, operating budget contributions which are collected from existing tax/rate payers and debenturing which will be carried by future tax/rate payers. Ongoing costs for monitoring, operating and maintaining the asset will be charged annually to the existing tax/rate payer.

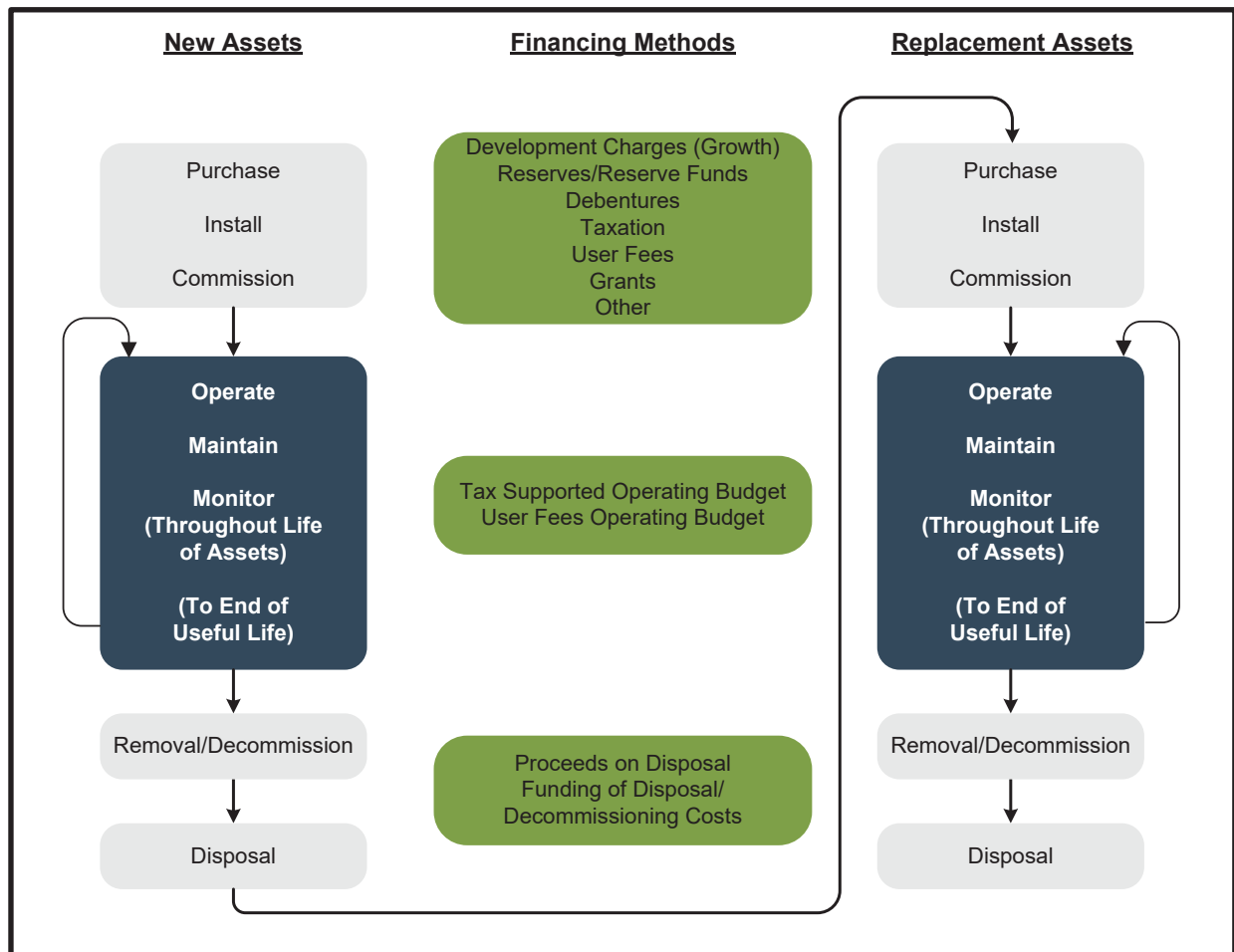
When the asset requires replacement, the sources of financing will be limited to reserves, debentures and contributions from the operating budget. At this point, the question is raised: "If the cost of replacement is to be assessed against the tax/rate payer who benefits from the replacement of the asset, should the past tax/rate payer pay for this cost or should future rate payers assume this cost?" If the position is taken that the past user has used up the asset, hence he should pay for the cost of replacement, then a charge should be assessed annually through the life of the asset, to have funds available to replace it when the time comes. If the position is taken that the future tax/rate payer should assume this cost, then debenturing and, possibly, a contribution from the operating budget should be used to fund this work.

Charging for the cost of using up an asset is the fundamental concept behind depreciation methods utilized by the private sector. This concept allows for expending the asset as it is used up in the production process. The tracking of these costs forms part of the product's selling price and, hence, end-users are charged for the asset's



depreciation. The same concept can be applied in a municipal setting to charge existing users for the asset's use and set those funds aside in a reserve to finance the cost of replacing the asset in the future.

Figure 3-2
Financing Lifecycle Costs



3.1.3 Costing Methods

There are two fundamental methods of calculating the cost of the usage of an asset and for the provision of the revenue required when the time comes to retire and replace it. The first method is the Depreciation Method. This method recognizes the reduction in the value of the asset through wear and tear and aging. There are two commonly used forms of depreciation: the straight-line method and the reducing balance method (shown graphically in Figure 3-3).



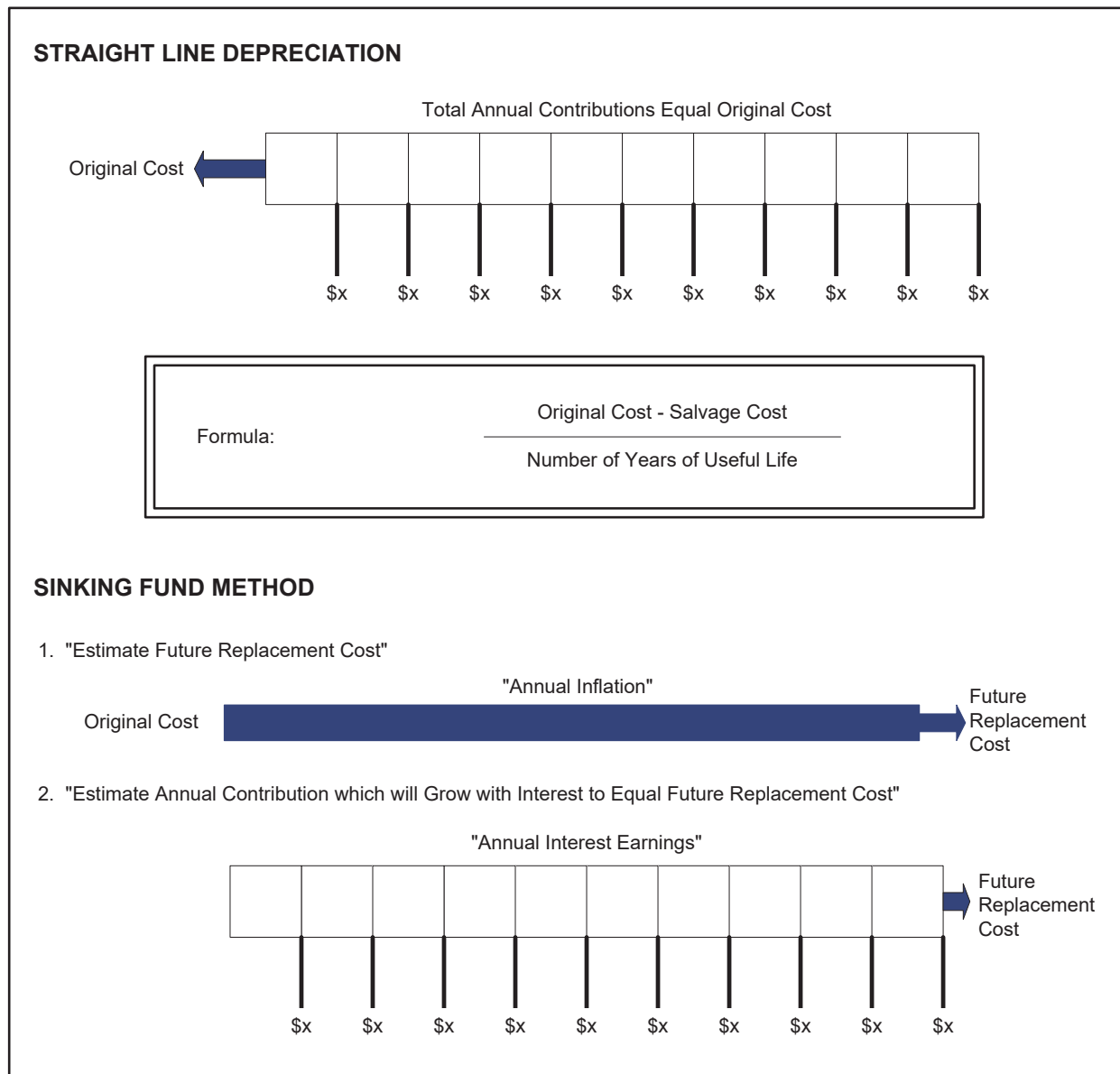
The straight-line method is calculated by taking the original cost of the asset, subtracting its estimated salvage value (estimated value of the asset at the time it is disposed of) and dividing this by the estimated number of years of useful life. The reducing balance method is calculated by utilizing a fixed percentage rate and this rate is applied annually to the undepreciated balance of the asset value.

The second method of lifecycle costing is the sinking fund method. This method first estimates the future value of the asset at the time of replacement. This is done by inflating the original cost of the asset at an assumed annual inflation rate. A calculation is then performed to determine annual contributions (equal or otherwise) which, when invested, will grow with interest to equal the future replacement cost.

The preferred method used herein for forecasting purposes is the sinking fund method of lifecycle costing.



Figure 3-3



3.2 Impact on Budgets

Detailed water and wastewater systems inventory information was obtained from the Municipality. The age of the water and wastewater systems dates back to the early 1970s. The total value of existing water infrastructure is \$50.52 million, and the value of existing wastewater infrastructure is \$25.90 million.



The detailed water and wastewater inventories are provided in Appendices A and B, respectively. As well, the lifecycle “sinking fund” contribution amounts for each piece of infrastructure have also been included. These calculations determine the level of investment the Municipality may wish to consider as part of its budgeting practices. This information is summarized in Figure 3-4.

Figure 3-4
Municipality of Wawa
Summary of Water and Wastewater Infrastructure

Area	Total Replacement Value	Amount included in 10-year forecast	Net Replacement for Future Lifecycle	Annual Lifecycle Replacement
Water				
Water Facilities	21,505,290	} 5,397,021	} 45,127,199	357,545
Water Meters	924,960			-
Hydrants	1,165,530			3,508
Service Leads	3,346,020			199,934
Valves	4,170,270			75,765
Watermains	19,412,150			770,860
Total Water	50,524,220	5,397,021	45,127,199	1,407,611
Wastewater				
Wastewater Manholes	2,381,400	} 570,000	} 25,333,760	115,532
Facilities	8,362,050			591,028
Sanitary Sewers	15,160,310			636,945
Total Wastewater	25,903,760	570,000	25,333,760	1,343,505
Total	76,427,980	5,967,021	70,460,959	2,751,117

Investment per customer is \$39,257 for water and \$21,659 for wastewater

The total value of the water and wastewater systems equate to an average investment per customer of \$39,257 and \$21,659 respectively.

With respect to lifecycle costing contained in the Appendices, the following information was taken into consideration:

- approximate age;
- material type;
- main lengths;
- diameter of the mains;
- estimated useful life; and
- estimated replacement costs.



Summaries of both water and wastewater assets are shown on Figures 3-5 and 3-6. These figures show when the assets are coming due and the cost of replacement in 2022 dollars.



Figure 3-5
Municipality of Wawa
Summary of Water Infrastructure Replacement Years (2022 \$)

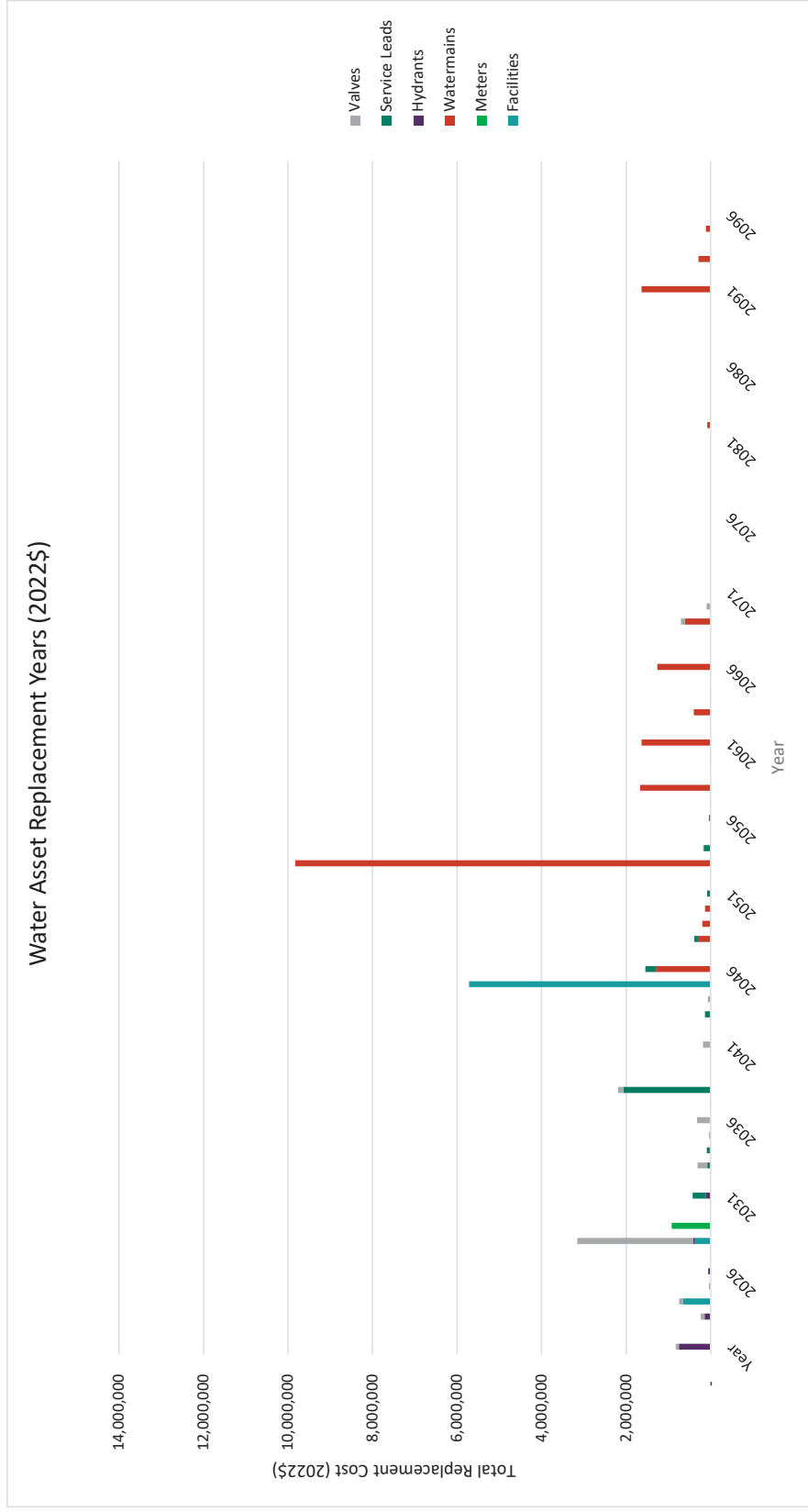
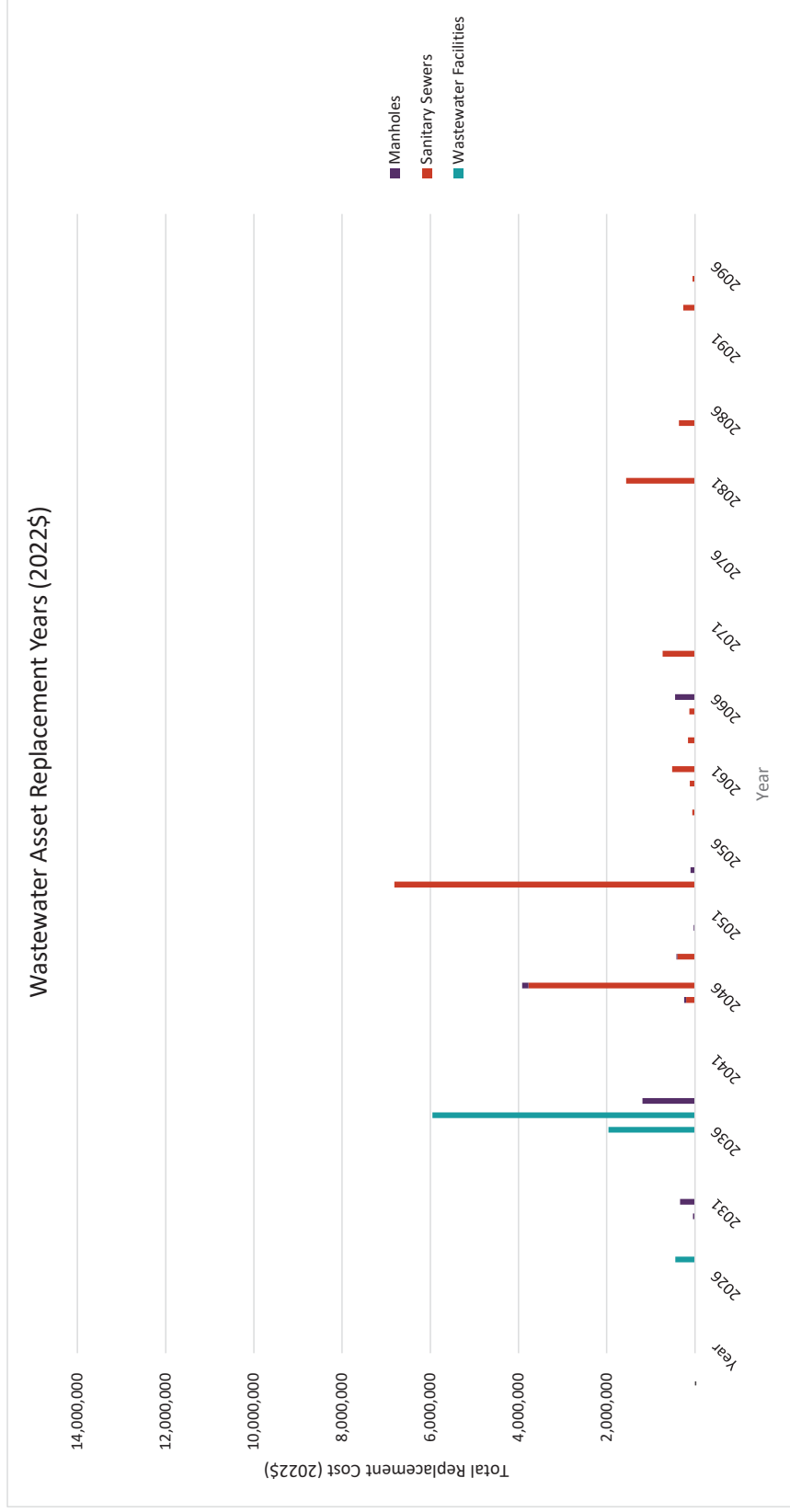




Figure 3-6
Municipality of Wawa
Summary of Wastewater Infrastructure Replacement Years (2022 \$)





Chapter 4

Capital Cost Financing Options



4. Capital Cost Financing Options

4.1 Summary of Capital Cost Financing Alternatives

Historically, the powers that municipalities had to raise alternative revenues to taxation to fund capital services have been restrictive. Over the past decade, legislative reforms have been introduced. Some of these have expanded municipal powers (e.g. Bill 26 introduced in 1996 to provide for expanded powers for imposing fees and charges), while others appear to restrict them (Bill 98 in 1997 providing amendments to the D.C.A. along with recently proposed changes through Bill 23, *More Homes Built Faster Act*, 2022).

The Province passed a new *Municipal Act* which came into force on January 1, 2003. Part XII of the Act and O. Reg. 584/06 govern a municipality's ability to impose fees and charges. In contrast to the previous *Municipal Act*, this Act provides municipalities with broadly defined powers and does not differentiate between fees for operating and capital purposes. It is anticipated that the powers to recover capital costs under the previous *Municipal Act* will continue within the new Statutes and Regulations, as indicated by s.9(2) and s.452 of the new *Municipal Act*.

Under s.484 of *Municipal Act, 2001*, the *Local Improvement Act* was repealed with the in-force date of the *Municipal Act* (January 1, 2003). The municipal powers granted under the *Local Improvement Act* now fall under the jurisdiction of the *Municipal Act*. To this end, on December 20, 2002, O. Reg. 390/02 was filed, which allowed for the *Local Improvement Act* to be deemed to remain in force until April 1, 2003. O. Reg. 119/03 was enacted on April 19, 2003, which restored many of the previous *Local Improvement Act* provisions; however, the authority is now provided under the *Municipal Act*.

The methods of capital cost recovery available to municipalities are provided as follows:

Recovery Methods	Section Reference
• <i>Development Charges Act, 1997</i>	4.2
• <i>Municipal Act</i>	4.3
○ Fees and Charges	
○ Sewer and Water Area Charges	
○ Connection Fees	



Recovery Methods	Section Reference
○ Local Improvements	
● Historical Grant Funding Availability	4.4
● Existing Reserves/Reserve Funds	4.5
● Debenture Financing	4.6
● Infrastructure Ontario	4.7

4.2 Development Charges Act, 1997

In November, 1996, the Ontario Government introduced Bill 98, a new *Development Charges Act*. The Province's stated intentions were to "create new construction jobs and make home ownership more affordable" by reducing the charges and to "make municipal Council decisions more accountable and more cost effective." The basis for this Act is to allow municipalities to recover the growth-related capital cost of infrastructure necessary to accommodate new growth within the municipality.

Generally, the Act provided the following changes to the former Act:

- Replace those sections of the 1989 Act that govern municipal development charges;
- Limit services which can be financed from development charges, specifically excluding parkland acquisition, administration buildings, and cultural, entertainment, tourism, solid waste management and hospital facilities;
- Ensure that the level of service used in the calculation of capital costs will not exceed the average level of service over the previous decade. Level of service is to be measured from both a quality and quantity perspective;
- Provide that uncommitted excess capacity available in existing municipal facilities and benefits to existing residents are removed from the calculation of the charge;
- Ensure that the development charge revenues collected by municipalities are spent only on those capital costs identified in the calculation of the development charge;
- Require municipalities to contribute funds (e.g. taxes, user charges or other non-development charge revenues) to the financing of certain projects primarily funded from development charges. The municipal contribution is 10 percent for services such as recreation, parkland development, libraries, etc.;



- Permit (but apparently not require) municipalities to grant developers credits for the direct provision of services identified in the development charge calculation and, when credits are granted, require the municipality to reimburse the developer for the costs the municipality would have incurred if the project had been financed from the development charge reserve fund;
- Set out provisions for front-end financing capital projects (limited to essential services) required to service new development; and
- Set out provisions for appeals and complaints.

In late 2015, the Province approved further amendments to the D.C.A. With respect to water and wastewater, the only changes are for the municipality to provide an asset management calculation for the growth-related works and for the Council to consider (but not necessarily approve) area-specific rates.

As of 2019, a number of amendments to the D.C.A. were made through the Bill 108 the More Homes, More Choice Act, 2019, Bill 138 the Plan to Build Ontario Together Act, 2019, Bill 197 the COVID-19 Economic Recovery Act, 2020, and Bill 213 the Better for People, Smarter for Business Act, 2020. With respect to water and wastewater, a few changes may impact D.C. revenue collections:

1. Timing of Collection:

- a. D.C. Rate Freeze - For developments proceeding through site plan or zoning by-law amendment, the D.C. rate is frozen at the time the application is submitted. The D.C. remains frozen for two years after the application is approved. Should the D.C. study be updated to increase water and wastewater D.C. rates during this period, the Municipality would not be able to collect for this increase.
 - b. D.C. Installment Payments - For rental housing and institutional development D.C.s are paid over 5 years and for non-profit housing, D.C.s are paid over 20 years. This provides a delay in receipt of D.C. revenues which will need to be cash-flowed by the Municipality.
2. Mandatory Exemption (additional units) – For existing dwellings, one additional dwelling unit could be constructed within the existing dwelling. This additional dwelling unit is exempt from D.C.s. With the changes to the Act, one additional dwelling unit may be constructed within a new residential dwelling, which would



be exempt from D.C.s. Further, one ancillary dwelling unit may be constructed on the same property as a new unit. This ancillary dwelling would be exempt from D.C.s. As these new additional units are exempt from D.C.s, no D.C. revenue may be collected for these units, however, each additional unit provides additional population which requires capacity in the water and wastewater treatment plants. As a result, consideration for these additional units should be made during the D.C. study process to ensure all capacity available to growth is allocated appropriately.

3. Mandatory Exemption (universities) – A new mandatory exemption has been introduced which exempts the payment of D.C.s for developments of land intended for use by a university that receives operating funds from the Government.

Most recently, the Province introduced Bill 23: *More Homes Built Faster Act*, on October 25, 2022, which subsequently received Royal Assent on November 28, 2022. The Bill amended several items within the D.C.A. and other legislation. These changes would impact a municipality's ability to recover D.C.s for growth-related water and wastewater capital costs.

However, the Municipality of Wawa does not impose D.C.s, and as such, these changes do not effect the calculation herein.

4.3 Municipal Act

Part XII of the *Municipal Act* provides municipalities with broad powers to impose fees and charges via passage of a by-law. These powers, as presented in s.391(1), include imposing fees or charges:

- “for services or activities provided or done by or on behalf of it;
- for costs payable by it for services or activities provided or done by or on behalf of any other municipality or local board; and
- for the use of its property including property under its control.”

Restrictions are provided to ensure that the form of the charge is not akin to a poll tax. Any charges not paid under this authority may be added to the tax roll and collected in a like manner. The fees and charges imposed under this part are not appealable to the



Ontario Land Tribunal (OLT, formerly known as Local Planning Appeal Tribunal (LPAT)).

Section 221 of the previous *Municipal Act* permitted municipalities to impose charges, by by-law, on owners or occupants of land who would or might derive benefit from the construction of sewage (storm and sanitary) or water works being authorized (in a specific benefit area). For a by-law imposed under this section of the previous Act:

- A variety of different means could be used to establish the rate and recovery of the costs and could be imposed by a number of methods at the discretion of Council (i.e. lot size, frontage, number of benefiting properties, etc.);
- Rates could be imposed with respect to costs of major capital works, even though an immediate benefit was not enjoyed;
- Non-abutting owners could be charged;
- Recovery was authorized against existing works, where a new water or sewer main was added to such works, "notwithstanding that the capital costs of existing works has in whole or in part been paid;"
- Charges on individual parcels could be deferred;
- Exemptions could be established;
- Repayment was secured; and
- OLT approval was not required.

While under the new *Municipal Act* no provisions are provided specific to the previous s.221, the intent to allow capital cost recovery through fees and charges is embraced within s.391. The new *Municipal Act* also maintains the ability of municipalities to impose capital charges for water and sewer services on landowners not receiving an immediate benefit from the works. Under s.391(2) of the Act, "a fee or charge imposed under subsection (1) for capital costs related to sewage or water services or activities may be imposed on persons not receiving an immediate benefit from the services or activities but who will receive a benefit at some later point in time." Also, capital charges imposed under s.391 are not appealable to the OLT on the grounds that the charges are "unfair or unjust."

Section 222 of the previous *Municipal Act* permitted municipalities to pass a by-law requiring buildings to connect to the municipality's sewer and water systems, charging the owner for the cost of constructing services from the mains to the property line. Under the new *Municipal Act*, this power still exists under Part II, General Municipal



Powers (s.9 (3) b of the *Municipal Act*). Enforcement and penalties for this use of power are contained in s.427 (1) of the *Municipal Act*.

Under the previous *Local Improvement Act*:

- A variety of different types of works could be undertaken, such as watermain, storm and sanitary sewer projects, supply of electrical light or power, bridge construction, sidewalks, road widening and paving;
- Council could pass a by-law for undertaking such work on petition of a majority of benefiting taxpayers, on a 2/3 vote of Council and on sanitary grounds, based on the recommendation of the Minister of Health. The by-law was required to go to the OLT, which might hold hearings and alter the by-law, particularly if there were objections;
- The entire cost of a work was assessed only upon the lots abutting directly on the work, according to the extent of their respective frontages, using an equal special rate per metre of frontage; and
- As noted, this Act was repealed as of April 1, 2003; however, O. Reg. 119/03 was enacted on April 19, 2003 which restores many of the previous *Local Improvement Act* provisions; however, the authority is now provided under the *Municipal Act*.

4.4 Grant Funding Availability

Federal Infrastructure Funding

Phase 1 (April 1, 2016 to March 31, 2018)

Funding was provided by the Government of Canada to expressly help municipalities with repair and rehabilitation projects. Funding was mainly provided through the Clean Water and Wastewater Fund (C.W.W.F.) and Public Transit Infrastructure Fund (P.T.I.F.) in Federal Phase 1 projects. The C.W.W.F. was announced in Ontario on September 15, 2016. The Fund is \$1.1 billion for water, wastewater, and storm water systems in Ontario. The federal government provided \$569 million and Ontario and municipal governments provided \$275 million each.

Over 1,300 water, wastewater, and storm water projects have been approved in Ontario through the C.W.W.F. In Ontario, P.T.I.F. accounted for nearly \$1.5 billion of the



national total of \$3.4 billion. The program was allocated by ridership numbers from the Canadian Urban Transit Association. The Association of Municipalities of Ontario (A.M.O.) understands that \$1 billion of Ontario's share has been approved.

Phase 2: Next Steps

The federal government announced Phase 2 of its infrastructure funding plan with a total of \$180 billion spent over 11 years. In addition to the balance of funding for previous green, social, and public transit infrastructure funds (\$20 billion each, including Phase 1), the government has added \$10.1 billion for trade and transportation infrastructure and \$2 billion for rural and northern communities. This funding must be implemented by agreements with each Province and Territory.

In Phase 2, Ontario will be eligible for \$11.8 billion including \$8.3 billion for transit, \$2.8 billion for green infrastructure, \$407 million for community, culture and recreation and \$250 million for rural and northern communities.

Federal Gas Tax

The federal Gas Tax is a permanent source of funding provided up front, twice-a-year, to Provinces and Territories, who in turn flow this funding to their municipalities to support local infrastructure priorities. Municipalities can pool, bank and borrow against this funding, providing significant financial flexibility. Every year, the federal Gas Tax provides over \$2 billion and supports approximately 2,500 projects in communities across Canada. Each municipality selects how best to direct the funds with the flexibility provided to make strategic investments across 18 different project categories, which include other water and wastewater servicing.

Ontario Government

The Province has taken steps to increase municipal infrastructure funding. The Ontario Community Infrastructure Fund (O.C.I.F.) was increased in 2016 with formula-based support growing to \$200 million, and application funding growing to \$100 million annually by 2022/2019. As well, \$15 million annually will go to the new Connecting Links program to help pay for the construction and repair costs of municipal roads that connect communities to provincial highways. This is on top of the Building Ontario Up investment of \$130 billion in public infrastructure over 10 years starting in 2015.



Grant Funding

For this study process, grant funding has been assumed for the Municipality in the amounts of \$2.8 million for water and \$45,000 for wastewater. However, if the status of the grant funding changes, the rate study may need to be amended to reflect the appropriate funding sources.

4.5 Existing Reserves/Reserve Funds

The Municipality has established reserves and reserve funds for water and wastewater costs. Currently, their reserves are combined and the balances as of December 31, 2021 are presented in Table 4-1:

Table 4-1
Combined Water and Wastewater Reserves and Reserve Funds
As of December 31, 2021

Reserve	31-Dec-21
Water & Wastewater	
Equipment Reserve	722,051
General Capital	312,056
Rate Stabilization	130,150

For the purposes of the rate study, the reserve funds have been separated to assist in the rate calculations for the appropriate service category. Based on the Municipality's budgets, the reserves have been allocated using 70% water and 30% wastewater. Table 4-2 provides a summary of this breakdown:

Table 4-2
Separate Water and Wastewater Reserves and Reserve Funds
As of December 31, 2021

Reserve	31-Dec-21
Water	
Equipment Reserve	505,436
General Capital	218,439
Rate Stabilization	91,105
Wastewater	
Equipment Reserve	216,615
General Capital	93,617
Rate Stabilization	39,045



4.6 Debenture Financing

Although it is not a direct method of minimizing the overall cost to the ratepayer, debentures are used by municipalities to assist in cash flowing large capital expenditures.

The Ministry of Municipal Affairs regulates the level of debt incurred by Ontario municipalities, through its powers established under the *Municipal Act*. Ontario Regulation 403/02 provides the current rules respecting municipal debt and financial obligations. Through the rules established under these regulations, a municipality's debt capacity is capped at a level where no more than 25% of the municipality's own purpose revenue may be allotted for servicing the debt (i.e. debt charges). The Municipality of Wawa's calculation on Debt Capacity is shown on Schedule 81 of the Municipality's most recent Financial Information Return (F.I.R.). This calculates to the Municipality's estimated annual repayment limit of approximately \$2.3 million. Based upon 20-year financing at an assumed rate of 6%, the available debt for the Municipality is approximately \$26.9 million. Based on the calculations provided herein, it is assumed that the Municipality will require \$680,000 in debentures to finance the water capital program.

4.7 Infrastructure Ontario

Infrastructure Ontario (I.O.) is an arms-length crown corporation, which has been set up as a tool to offer low-cost and longer-term financing to assist municipalities in renewing their infrastructure (this corporation has merged the former O.S.I.F.A. into its operations). I.O. combines the infrastructure renewal needs of municipalities into an infrastructure investment "pool." I.O. will raise investment capital to finance loans to the public sector by selling a new investment product called Infrastructure Renewal Bonds to individual and institutional investors.

I.O. provides access to infrastructure capital that would not otherwise be available to smaller borrowers. Larger borrowers receive a longer term on their loans than they could obtain in the financial markets, and can also benefit from significant savings on transaction costs such as legal costs and underwriting commissions. Under the I.O. approach, all borrowers receive the same low interest rate. I.O. will enter into a



financial agreement with each municipality subject to technical and credit reviews, for a loan up to the maximum amount of the loan request.

The first round of the former O.S.I.F.A.'s 2004/2005 infrastructure renewal program was focused on municipal priorities of clean water infrastructure, sewage treatment facilities, municipal roads and bridges, public transit and waste management infrastructure. The focus of the program was expanded in 2005/2006 somewhat to include:

- clean water infrastructure;
- sewage infrastructure;
- waste management infrastructure;
- municipal roads and bridges;
- public transit;
- municipal long-term care homes;
- renewal of municipal social housing and culture; and
- tourism and recreation infrastructure.

With the merging of O.S.I.F.A. and I.O., the program was broadened in late 2006 to also include municipal administrative buildings, local police and fire stations, emergency vehicles and equipment, ferries, docks and municipal airports.

To be eligible to receive these loans, municipalities must submit a formal application along with pertinent financial information. Allotments are prioritized and distributed based upon the Province's assessment of need.

4.8 Recommended Capital Financing Approach

Of the various funding alternatives provided in this section, the following are recommended for further consideration by the Municipality of Wawa for the capital expenditures (inflated) provided in Chapter 2:



Table 4-2
Municipality of Wawa
Capital Forecasting Financing Sources
Inflated \$

Description	Water 2022-2032	Wastewater 2022-2032
Capital Financing		
Provincial/Federal Grants	2,657,021	45,000
OCIF	315,000	-
Debenture Requirements	680,000	-
Operating Contributions	662,500	32,500
Water/Wastewater Reserves	1,434,000	631,000
Total Capital Financing	5,748,521	708,500

Tables 4-3 and 4-4 provide for the full capital expenditure and funding program by year for water and wastewater, respectively.



Table 4-3
Municipality of Wawa
Capital Budget Forecast – Water (inflated \$)

Description	Budget 2022	Total	Forecast													
			2023	2024	2025	2026	2027	2028	2029	2030	2031	2032				
Capital Expenditures																
Water Main and Hydrant - MRV	75,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Water and WW 10 yr Plan & Rate Study	24,500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrant Rehabilitation	45,000	145,000	47,000	49,000	49,000	-	-	-	-	-	-	-	-	-	-	-
Water Treatment Plant - Filters	180,000	384,000	189,000	195,000	-	-	-	-	-	-	-	-	-	-	-	-
Water Intake Valve	250,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Water & Wastewater Master Plan	105,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Water Intake	3,232,021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Asset Management Works	-	1,308,000	-	-	153,000	156,000	159,000	162,000	162,000	165,000	168,000	168,000	171,000	174,000	174,000	174,000
Total Capital Expenditures	3,911,521	1,837,000	236,000	244,000	202,000	156,000	159,000	162,000	165,000	168,000	168,000	171,000	171,000	174,000	174,000	174,000
Capital Financing																
Provincial/Federal Grants	2,657,021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OCIF Reserve Fund	165,000	150,000	75,000	75,000	-	-	-	-	-	-	-	-	-	-	-	-
Debtenture Requirements	680,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operating Contributions	284,500	378,000	161,000	169,000	48,000	-	-	-	-	-	-	-	-	-	-	-
Rate Stabilization Reserve	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Water General Capital Reserve	-	669,000	-	-	74,000	76,000	79,000	82,000	85,000	88,000	88,000	91,000	94,000	94,000	94,000	94,000
Water Equipment Reserve	125,000	640,000	-	-	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000
Total Capital Financing	3,911,521	1,837,000	236,000	244,000	202,000	156,000	159,000	162,000	165,000	168,000	168,000	171,000	171,000	174,000	174,000	174,000



Table 4-4
Municipality of Wawa
Capital Budget Forecast – Wastewater (inflated \$)

Description	Budget 2022	Total	Forecast																			
			2023	2024	2025	2026	2027	2028	2029	2030	2031	2032										
Capital Expenditures																						
Water and WW 10-yr Plan & Rate Study	10,500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer Jet / Vacuum Trailer	-	97,000	-	97,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Water & Wastewater Master Plan	45,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Asset Management Works	-	556,000	-	-	66,000	67,000	68,000	68,000	68,000	69,000	70,000	70,000	71,000	71,000	72,000	72,000	73,000	73,000	73,000	73,000	73,000	73,000
Total Capital Expenditures	55,500	653,000	-	97,000	66,000	67,000	68,000	68,000	69,000	70,000	70,000	71,000	71,000	72,000	72,000	73,000	73,000	73,000	73,000	73,000	73,000	73,000
Capital Financing																						
Provincial/Federal Grants	45,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Debtenture Requirements	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operating Contributions	10,500	22,000	-	22,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rate Stabilization Reserve	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
General Capital Reserve	-	556,000	-	-	66,000	67,000	68,000	68,000	69,000	70,000	70,000	71,000	71,000	72,000	72,000	73,000	73,000	73,000	73,000	73,000	73,000	73,000
Equipment Reserve	-	75,000	-	75,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Capital Financing	55,500	653,000	-	97,000	66,000	67,000	68,000	68,000	69,000	70,000	70,000	71,000	71,000	72,000	72,000	73,000	73,000	73,000	73,000	73,000	73,000	73,000



Chapter 5

Overview of Expenditures and Revenues



5. Overview of Expenditures and Revenues

5.1 Water Operating Expenditures

In this report, the forecast water budget figures (2023 to 2032) are based on the 2022 operating budgets. The costs for each component of the operating budget have been reviewed with staff to establish forecast inflationary adjustments. As described earlier, the operating expenditures for water presented herein have been adjusted to recognize the current rates of inflation and interest rates. However, it is assumed that inflation rates could decrease over the longer-term. Therefore, the following provides for the inflation assumptions for the various categories operating expenditures on an annual basis:

- Wages and benefits: 3% annual inflation between 2023 and 2032
- Utilities and Chemicals: annual inflation rate of 8% in 2023, 7% in 2024, 6% in 2025, 5% annually thereafter; and
- All other operating expenditures: annual inflation rate of 5% in 2023, 4% in 2024, 3% in 2025, and 2% annually thereafter.

In addition, debenture payments and contributions to the water reserve funds have been included. The water reserve fund transfers are used to fund the water capital program identified in Chapter 2, as well as build-up the reserve balance for future lifecycle requirements.

5.2 Water Operating Revenues

The Municipality has base charges and miscellaneous revenue sources to help contribute towards operating expenditures. These miscellaneous revenues, include items such as fire hydrant rental revenue, reconnection fees, late payment penalties, etc. Miscellaneous revenues have been assumed to increase at a rate of 5% in 2023, 4% in 2024, 3% in 2025, and 2% annually thereafter.

The water base charges are further discussed in section 6.5 of this study.

Note that the operating revenue presented herein represents the fixed component of the total operating revenue. The shortfall of the fixed revenue from the operating



expenditures is what is used to calculate the recovery from the water volume rates, which is presented in Chapter 7. Table 5-1 provides for the water operating budget for the Municipality.



**Table 5-1
Municipality of Wawa
Operating Budget Forecast – Water (inflated \$)**

Description	Forecast											
	Budget 2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	
Expenditures												
Operating Costs	139,031	143,200	147,500	151,900	156,500	161,200	166,000	171,000	176,100	181,400	186,800	
W & S - Dist Wages - Regular	14,090	14,500	14,900	15,300	15,800	16,300	16,800	17,300	17,800	18,300	18,800	
Overtime - Full Time	39,870	41,100	42,300	43,600	44,900	46,200	47,600	49,000	50,500	52,000	53,600	
W & S - Employee Benefits	5,524	5,700	5,900	6,100	6,300	6,500	6,700	6,900	7,100	7,300	7,500	
W & S - Retiree Group Benefits	1,437	1,500	1,560	1,610	1,640	1,670	1,700	1,730	1,760	1,800	1,840	
Health Care Spending	765	800	830	850	870	890	910	930	950	970	990	
Clothing Allowance	5,100	5,400	5,620	5,790	5,910	6,030	6,150	6,270	6,400	6,530	6,660	
W & S - Seminars Wrkshps Training	2,400	2,500	2,600	2,680	2,730	2,780	2,840	2,900	2,960	3,020	3,080	
W & S - Travel & Entertainment	4,800	5,000	5,200	5,360	5,470	5,580	5,690	5,800	5,920	6,040	6,160	
W & S - Postage & Courier	150	200	210	220	220	220	220	220	220	220	220	
W & S - Office Supplies	23,400	24,600	25,580	26,350	26,880	27,420	27,970	28,530	29,100	29,680	30,270	
W & S - Consulting / Professional Fees	2,100	2,200	2,290	2,360	2,410	2,460	2,510	2,560	2,610	2,660	2,710	
W & S - Printing Ad. & Promo	6,843	7,200	7,490	7,710	7,860	8,020	8,180	8,340	8,510	8,680	8,850	
W & S - Insurance	3,744	3,900	4,060	4,180	4,260	4,350	4,440	4,530	4,620	4,710	4,800	
W & S - Transfers to Reserve - Pay	2,000	2,100	2,180	2,250	2,300	2,350	2,400	2,450	2,500	2,550	2,600	
MRV - Materials / Supplies	9,000	9,700	10,400	11,000	11,600	12,200	12,800	13,400	14,100	14,800	15,500	
MRV - Taxes	1,160	1,200	1,300	1,400	1,500	1,600	1,700	1,800	1,900	2,000	2,100	
MRV - Telephone	1,320	1,400	1,500	1,600	1,700	1,800	1,900	2,000	2,100	2,200	2,300	
MRV - Consulting / Professional Fees	5,000	5,300	5,600	5,900	6,200	6,500	6,800	7,100	7,500	7,900	8,300	
MRV - Insurance	426	400	420	430	440	450	460	470	480	490	500	
MRV - Maintenance & Repair	1,000	1,100	1,140	1,170	1,190	1,210	1,230	1,250	1,280	1,310	1,340	
PWD - Materials / Supplies	500	500	520	540	550	560	570	580	590	600	610	
PWD - Hydro	1,200	1,300	1,400	1,500	1,600	1,700	1,800	1,900	2,000	2,100	2,200	
PWD - Consulting / Professional Fees	1,000	1,100	1,140	1,170	1,190	1,210	1,230	1,250	1,280	1,310	1,340	
Purifi - Materials / Supplies	36,000	38,000	40,000	41,000	42,000	43,000	44,000	45,000	46,000	47,000	48,000	
Purifi - Small Equip Purchases	2,000	2,100	2,180	2,250	2,300	2,350	2,400	2,450	2,500	2,550	2,600	
Distrib - Materials / Supplies	20,000	21,000	22,000	23,000	23,000	23,000	23,000	23,000	23,000	23,000	23,000	
Distrib - Consulting	32,000	34,000	35,000	36,000	37,000	38,000	39,000	40,000	41,000	42,000	43,000	
Distrib - Insurance	35	37	38	39	40	41	42	43	44	45	46	
Distrib - Maintenance & Repair	20,000	21,000	22,000	23,000	23,000	23,000	23,000	23,000	23,000	23,000	23,000	
WTP - Materials/Supplies	32,000	34,000	35,000	36,000	37,000	38,000	39,000	40,000	41,000	42,000	43,000	
WTP - Hydro	188,700	203,800	218,100	231,200	242,800	254,900	267,600	281,000	295,100	309,900	325,400	
WTP - Taxes	46,000	48,000	50,000	52,000	53,000	54,000	55,000	56,000	57,000	58,000	59,000	
WTP - Telephone	2,111	2,200	2,290	2,360	2,410	2,460	2,510	2,560	2,610	2,660	2,710	
WTP - Consulting / Professional Fees	10,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000	
WTP - Insurance	7,289	7,600	7,900	8,140	8,300	8,470	8,640	8,810	8,990	9,170	9,350	
WTP - Building Maintenance	14,466	15,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	



Table 5-1 (Cont'd)

Description	Budget	Fore cast									
	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Pump -Materials / Supplies	2,500	2,600	2,700	2,780	2,840	2,900	2,960	3,020	3,080	3,140	3,200
Pump - Taxes	2,996	3,100	3,220	3,320	3,390	3,460	3,530	3,600	3,670	3,740	3,810
Pump - Consulting / Professional Fees	1,000	1,100	1,140	1,170	1,190	1,210	1,230	1,250	1,280	1,310	1,340
Pump - Insurance	233	245	255	263	268	273	278	284	290	296	302
18Chev - Gasoline / Diesel	2,700	2,900	3,100	3,300	3,500	3,700	3,900	4,100	4,300	4,500	4,700
18Chev - Insurance	487	500	520	540	550	560	570	580	590	600	610
18Chev - Licenses	72	76	79	81	83	85	87	89	91	93	95
18Chev - Maintenance & Repairs	300	300	310	320	330	340	350	360	370	380	390
08 F350 - Gasoline / Diesel	2,700	2,900	3,100	3,300	3,500	3,700	3,900	4,100	4,300	4,500	4,700
08 F350 - Insurance	487	500	520	540	550	560	570	580	590	600	610
08 F350 - Licenses	159	167	174	179	183	187	191	195	199	203	207
08 F350 - Maintenance & Repairs	600	600	620	640	650	660	670	680	690	700	710
Sub Total Operating	696,674	734,625	768,886	799,392	824,904	851,056	878,028	905,911	934,974	964,957	995,850
Capital-Related											
Existing Debt (Principal)	33,967	35,896	37,934	40,088	42,365	44,770	47,312	49,999	52,838	55,838	59,009
Existing Debt (Interest)	123,299	121,370	119,332	117,178	114,901	112,496	109,953	107,267	104,428	101,427	98,257
New Debt (Principal)		18,485	19,595	20,770	22,017	23,337	24,738	26,222	27,795	29,463	31,231
New Debt (Interest)		40,800	39,691	38,515	37,269	35,948	34,548	33,063	31,490	29,822	28,055
Transfer to Capital	284,500	161,000	169,000	48,000	-	-	-	-	-	-	-
Transfer to Rate Stabilization Reserve											
Transfer to Equipment Reserve	80,000	80,000	80,000	110,000	-	-	-	-	-	-	-
Transfer to Capital Reserve					132,867	166,039	201,229	236,805	273,383	314,541	357,214
Sub Total Capital Related	521,766	457,551	465,551	374,551	349,419	382,591	417,781	453,357	489,934	531,092	573,765
Total Expenditures	1,218,440	1,192,176	1,234,437	1,173,943	1,174,323	1,233,647	1,295,809	1,359,268	1,424,908	1,496,049	1,569,615
Revenues											
Base Charge	643,872	679,896	715,399	752,225	790,945	830,492	872,627	916,259	962,072	1,010,175	1,060,684
W & S - Fire Hydrant Rentals	11,125	11,700	12,170	12,540	12,790	13,050	13,310	13,580	13,850	14,130	14,410
W & S - Reconnection Fees	700	740	770	790	810	830	850	870	890	910	930
W & S - Penalty & Interest Other	4,550	4,800	4,990	5,140	5,240	5,340	5,450	5,560	5,670	5,780	5,900
W & S - Miscellaneous Revenues	4,550	4,800	4,990	5,140	5,240	5,340	5,450	5,560	5,670	5,780	5,900
WTP - Solar Energy Revenue	7,500	7,900	8,220	8,470	8,640	8,810	8,990	9,170	9,350	9,540	9,730
Contributions from Reserves / Reserve Funds	280,636	190,222	173,019	55,297	-	-	-	-	-	-	-
Total Operating Revenue	952,933	900,058	919,558	839,602	823,665	863,862	906,677	950,999	997,502	1,046,315	1,097,554
Water Billing Recovery - Total	265,507	292,118	314,879	334,341	350,658	369,785	389,131	408,269	427,406	449,734	472,061



5.3 Wastewater Operating Expenditures

Similar to water expenditures, the wastewater operating expenditures have been adjusted over the forecast period to reflect the current inflationary pressures in Ontario. The following inflationary factors are provided:

- Wages and benefits: 3% annual inflation between 2023 and 2032
- Utilities and Chemicals: annual inflation rate of 8% in 2023, 7% in 2024, 6% in 2025, 5% annually thereafter; and
- All other operating expenditures: annual inflation rate of 5% in 2023, 4% in 2024, 3% in 2025, and 2% annually thereafter.

In addition, contributions to the wastewater reserve funds have been included. The wastewater reserve fund transfers are used to fund the wastewater capital program identified in Chapter 2, as well as build-up the reserve balance for future lifecycle requirements.

5.4 Wastewater Operating Revenues

The Municipality's fixed revenue sources are generated primarily from base charges and miscellaneous sources, which includes sewage dumping fees, reconnection fees, and penalties. Similar to water, miscellaneous revenues have been assumed to increase at a rate of 5% in 2023, 4% in 2024, 3% in 2025, and 2% annually thereafter.

The base charges are further discussed in section 6.5 of this study.

As noted in the section above, the operating revenue presented herein represents the fixed component of the total operating revenue. The shortfall of the fixed revenue from the operating expenditures is what is used to calculate the recovery from the wastewater volume rates, which is presented in Chapter 7. Table 5-2 provides for the wastewater operating budget for the Municipality.



**Table 5-2
Municipality of Wawa
Operating Budget Forecast – Wastewater (inflated \$)**

Description	Forecast											
	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	
Expenditures												
Operating Costs	180	189	197	203	207	211	215	219	223	227	232	
Steamer - Propane	13	13	14	14	14	14	14	14	14	14	14	
Steamer - Insurance	150	158	164	169	172	175	179	183	187	191	195	
Steamer - Maintenance & Repairs	3,000	3,200	3,300	3,400	3,500	3,600	3,700	3,800	3,900	4,000	4,100	
Sewer - Materials & Supplies	3,000	3,200	3,300	3,400	3,500	3,600	3,700	3,800	3,900	4,000	4,100	
Sewer - Consulting / Professional	17,000	17,900	18,600	19,200	19,600	20,000	20,400	20,800	21,200	21,600	22,000	
Sewer - Maintenance & Repairs	33,000	35,600	38,100	40,400	42,400	44,500	46,700	49,000	51,500	54,100	56,800	
STP - Materials / Supplies	31,224	33,700	36,100	38,300	40,200	42,200	44,300	46,500	48,800	51,200	53,800	
STP - Hydro	2,950	3,100	3,200	3,300	3,400	3,500	3,600	3,700	3,800	3,900	4,000	
STP - Taxes	8,000	8,400	8,700	9,000	9,200	9,400	9,600	9,800	10,000	10,200	10,400	
STP - Consulting / Professional Fees	2,567	2,700	2,800	2,900	3,000	3,100	3,200	3,300	3,400	3,500	3,600	
STP - Insurance	4,000	4,200	4,400	4,500	4,600	4,700	4,800	4,900	5,000	5,100	5,200	
STP - Maintenance & Repairs	92,688	95,500	98,400	101,400	104,400	107,500	110,700	114,000	117,400	120,900	124,500	
W & S - Dist Wages - Regular	9,393	9,700	10,000	10,300	10,600	10,900	11,200	11,500	11,800	12,200	12,600	
Overtime - Full Time	26,580	27,400	28,200	29,000	29,900	30,800	31,700	32,700	33,700	34,700	35,700	
W & S - Employee Benefits	3,682	3,800	3,900	4,000	4,100	4,200	4,300	4,400	4,500	4,600	4,700	
W & S - Retiree Group Benefits	958	1,010	1,050	1,080	1,100	1,120	1,140	1,160	1,180	1,200	1,220	
Health Care Spending	510	536	557	574	585	597	609	621	633	646	659	
Clothing Allowance	3,400	3,600	3,700	3,800	3,900	4,000	4,100	4,200	4,300	4,400	4,500	
W & S - Seminars Workshops Training	1,600	1,680	1,750	1,800	1,840	1,880	1,920	1,960	2,000	2,040	2,080	
W & S - Travel & Entertainment	3,200	3,400	3,500	3,600	3,700	3,800	3,900	4,000	4,100	4,200	4,300	
W & S - Postage & Courier	100	105	109	112	114	116	118	120	122	124	126	
W & S - Office Supplies	15,600	16,400	17,100	17,600	18,000	18,400	18,800	19,200	19,600	20,000	20,400	
W & S - Consulting / Professional Fees	1,400	1,470	1,530	1,580	1,610	1,640	1,670	1,700	1,730	1,760	1,800	
W & S - Printing Ad. & Promo	4,562	4,800	5,000	5,200	5,300	5,400	5,500	5,600	5,700	5,800	5,900	
W & S - Insurance	2,496	2,600	2,700	2,800	2,900	3,000	3,100	3,200	3,300	3,400	3,500	
W & S - Transfers to Reserve - Pay	1,800	1,900	2,000	2,100	2,200	2,300	2,400	2,500	2,600	2,700	2,800	
18Chev - Gasoline / Diesel	324	341	355	366	373	380	388	396	404	412	420	
18Chev - Insurance	48	50	52	54	55	56	57	58	59	60	61	
18Chev - Licenses	200	210	218	225	230	235	240	245	250	255	260	
18Chev - Maintenance & Repairs	1,800	1,900	2,000	2,100	2,200	2,300	2,400	2,500	2,600	2,700	2,800	
08 F350 - Gasoline / Diesel	324	341	355	366	373	380	388	396	404	412	420	
08 F350 - Insurance	106	111	115	118	120	122	124	126	129	132	135	
08 F350 - Licenses	400	420	437	450	459	468	477	487	497	507	517	
08 F350 - Maintenance & Repairs	800	900	1,000	1,100	1,200	1,300	1,400	1,500	1,600	1,700	1,800	
Tanker - Gasoline / Diesel	1,688	1,770	1,840	1,900	1,940	1,980	2,020	2,060	2,100	2,140	2,180	
Tanker - Insurance	3,000	3,200	3,300	3,400	3,500	3,600	3,700	3,800	3,900	4,000	4,100	
Tanker - Maintenance & Repair												
Sub Total Operating	281,744	295,504	308,043	319,811	330,492	341,474	352,759	364,445	376,532	389,020	401,919	



Table 5-2 (Cont'd)
Operating Budget Forecast – Wastewater (inflated \$)

Description	Budget	Forecast										
	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	
Capital-Related												
Existing Debt (Principal)												
Existing Debt (Interest)												
New Debt (Principal)												
New Debt (Interest)												
Transfer to Capital	10,500											
Transfer to Rate Stabilization Reserve												
Transfer to Equipment Reserve	30,000											
Transfer to Capital Reserve	250,723	20,000	199,492	196,089	218,015	217,644	217,531	216,790	215,802	214,578	213,102	
Sub Total Capital Related	291,223	219,492	218,089	217,493	218,015	217,644	217,531	216,790	215,802	214,578	213,102	
Total Expenditures	572,967	514,996	526,132	537,304	548,507	559,118	570,290	581,235	592,334	603,598	615,021	
Revenues												
Base Charge	336,174	344,476	351,903	359,488	367,237	374,581	382,364	390,011	397,811	405,767	413,883	
W & S - Sewage Dumping Fees	80,000	10,000	10,400	10,710	10,920	11,140	11,360	11,590	11,820	12,060	12,300	
W & S - Reconnection Fees	300	320	330	340	350	360	370	380	390	400	410	
W & S - Penalty & Interest Other	1,950	2,050	2,130	2,190	2,230	2,270	2,320	2,370	2,420	2,470	2,520	
W & S - Miscellaneous Revenues	1,950	2,050	2,130	2,190	2,230	2,270	2,320	2,370	2,420	2,470	2,520	
Contributions from Rate Stabilization Reserve												
Contributions from Equipment Reserve												
Contributions from Capital Reserve												
Total Operating Revenue	420,374	358,896	366,893	374,918	382,967	390,621	398,734	406,721	414,861	423,167	431,633	
Wastewater Billing Recovery - Total	152,593	156,099	159,239	162,386	165,540	168,496	171,557	174,514	177,472	180,430	183,388	



Chapter 6

Pricing Structures

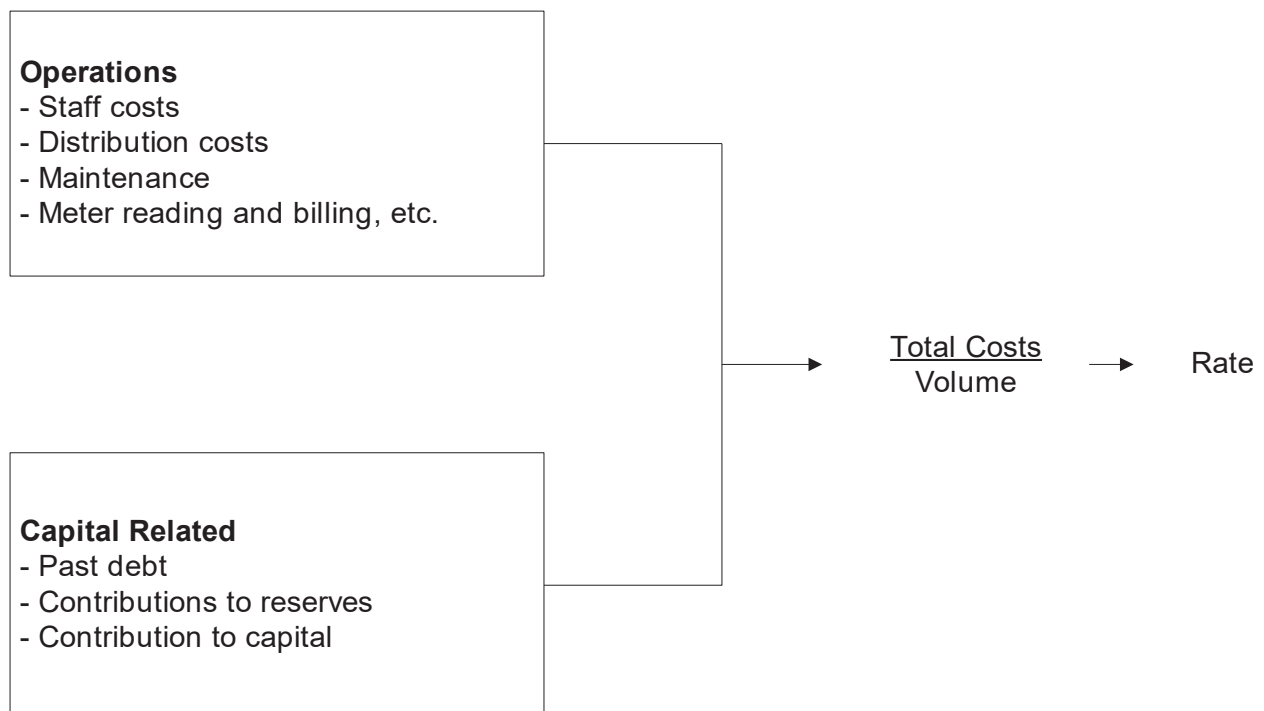


6. Pricing Structures

6.1 Introduction

Rates, in their simplest form, can be defined as total costs to maintain the utility function divided by the total expected volume to be generated for the period. Total costs are usually a combination of operating costs (e.g. staff costs, distribution costs, maintenance, administration, etc.) and capital-related costs (e.g. past debt to finance capital projects, transfers to reserves to finance future expenditures, etc.). The schematic below provides a simplified illustration of the rate calculation for water.

“Annual Costs”



These operating and capital expenditures will vary over time. Examples of factors that will affect the expenditures over time are provided below.

Operations

- Inflation;



- Increased maintenance as system ages; and
- Changes to provincial legislation.

Capital Related

- New capital will be built as areas expand;
- Replacement capital needed as system ages; and
- Financing of capital costs are a function of policy regarding reserves and direct financing from rates (pay as you go), debt and user pay methods (development charges, *Municipal Act*).

6.2 Alternative Pricing Structures

Throughout Ontario, and as well, Canada, the use of pricing mechanisms varies between municipalities. The use of a particular form of pricing depends upon numerous factors, including Council preference, administrative structure, surplus/deficit system capacities, economic/demographic conditions, to name a few.

Municipalities within Ontario have two basic forms of collecting revenues for water purposes, those being through incorporation of the costs within the tax rate charged on property assessment and/or through the establishment of a specific water rate billed to the customer. Within the rate methods, there are five basic rate structures employed along with other variations:

- Flat Rate (non-metered customers);
- Constant Rate;
- Declining Block Rate;
- Increasing (or Inverted) Block Rate;
- Hump Back Block Rate; and
- Base Charges.

The definitions and general application of the various methods are as follows:

Property Assessment: This method incorporates the total costs of providing water into the general requisition or the assessment base of the municipality. This form of collection is a "wealth tax," as payment increases directly with the value of property owned and bears no necessary relationship to actual consumption. This form is easy to



administer as the costs to be recovered are incorporated in the calculation for all general services, normally collected through property taxes.

Flat Rate: This rate is a constant charge applicable to all customers served. The charge is calculated by dividing the total number of user households and other entities (e.g. businesses) into the costs to be recovered. This method does not recognize differences in actual consumption but provides for a uniform spreading of costs across all users. Some municipalities define users into different classes of similar consumption patterns, that is, a commercial user, residential user and industrial user, and charge a flat rate by class. Each user is then billed on a periodic basis. No meters are required to facilitate this method, but an accurate estimate of the number of users is required. This method ensures set revenue for the collection period but is not sensitive to consumption, hence may cause a shortfall or surplus of revenues collected.

Constant Rate: This rate is a volume-based rate, in which the consumer pays the same price per unit consumed, regardless of the volume. The price per unit is calculated by dividing the total cost of the service by the total volume used by total consumers. The bill to the consumer climbs uniformly as the consumption increases. This form of rate requires the use of meters to record the volume consumed by each user. This method closely aligns the revenue recovery with consumption. Revenue collected varies directly with the consumption volume.

Declining Block Rates: This rate structure charges a successively lower price for set volumes, as consumption increases through a series of "blocks." That is to say that within set volume ranges, or blocks, the charge per unit is set at one rate. Within the next volume range, the charge per unit decreases to a lower rate, and so on. Typically, the first, or first and second blocks cover residential and light commercial uses. Subsequent blocks normally are used for heavier commercial and industrial uses. This rate structure requires the use of meters to record the volume consumed by each type of user. This method requires the collection and analysis of consumption patterns by user classification to establish rates at a level which does not over or under collect revenue from rate payers.

Increasing or Inverted Block Rates: The increasing block rate works essentially the same way as the declining block rate, except that the price of water in successive blocks increases rather than declines. Under this method the consumer's bill rises faster with higher volumes used. This rate structure also requires the use of meters to



record the volume consumed by each user. This method requires, as with the declining block structure, the collection and analysis of consumption patterns by user classification to establish rates at a level which does not over or under collect from rate payers.

The Hump Back Rate: The hump back rate is a combination of an increasing block rate and the declining block rate. Under this method the consumer's bill rises with higher volumes used up to a certain level and then begins to fall for volumes in excess of levels set for the increasing block rate.

6.3 Assessment of Alternative Pricing Structures

The adoption by a municipality or utility of any one particular pricing structure is normally a function of a variety of administrative, social, demographic and financial factors. The number of factors, and the weighting each particular factor receives, can vary between municipalities. The following is a review of some of the more prevalent factors.

Cost Recovery

Cost recovery is a prime factor in establishing a particular pricing structure. Costs can be loosely defined into different categories: operations, maintenance, capital, financing and administration. These costs often vary between municipalities and even within a municipality, based on consumption patterns, infrastructure age, economic growth, etc.

The pricing alternatives defined earlier can all achieve the cost recovery goal, but some do so more precisely than others. Fixed pricing structures, such as Property Assessment and Flat Rate, are established on the value of property or on the number of units present in the municipality, but do not adjust in accordance with consumption. Thus, if actual consumption for the year is greater than projected, the municipality incurs a higher cost of production, but the revenue base remains static (since it was determined at the beginning of the year), thus potentially providing a funding shortfall. Conversely, if the consumption level declines below projections, fixed pricing structures will produce more revenue than actual costs incurred.



The other pricing methods (declining block, constant rate, increasing block) are consumption-based and generally will generate revenues in proportion to actual consumption.

Administration

Administration is defined herein as the staffing, equipment and supplies required to support the undertaking of a particular pricing strategy. This factor not only addresses the physical tangible requirements to support the collection of the revenues, but also the intangible requirements, such as policy development.

The easiest pricing structure to support is the Property Assessment structure. As municipalities undertake the process of calculating property tax bills and the collection process for their general services, the incorporation of the water costs into this calculation would have virtually no impact on the administrative process and structure.

The Flat Rate pricing structure is relatively easy to administer as well. It is normally calculated to collect a set amount, either on a monthly, quarterly, semi-annual or annual basis, and is billed directly to the customer. The impact on administration centres mostly on the accounts receivable or billing area of the municipality, but normally requires minor additional staff or operating costs to undertake.

The three remaining methods, those being Increasing Block Rate, Constant Rate and Declining Block Rate, have a more dramatic effect on administration. These methods are dependent upon actual consumption and hence involve a major structure in place to administer. First, meters must be installed in all existing units in the municipality, and units to be subsequently built must be required to include these meters. Second, meter readings must be undertaken periodically. Hence staff must be available for this purpose or a service contract must be negotiated. Third, the billings process must be expanded to accommodate this process. Billing must be done per a defined period, requiring staff to produce the bills. Lastly, either through increased staffing or by service contract, an annual maintenance program must be set up to ensure meters are working effectively in recording consumed volumes.

The benefit derived from the installation of meters is that information on consumption patterns becomes available. This information provides benefit to administration in calculating rates which will ensure revenue recovery. Additionally, when planning what services are to be constructed in future years, the municipality or utility has documented



consumption patterns distinctive to its own situation, which can be used to project sizing of growth-related works.

Equity

Equity is always a consideration in the establishment of pricing structures but its definition can vary depending on a municipality's circumstances and based on the subjective interpretation of those involved. For example: is the price charged to a particular class of rate payer consistent with those of a similar class in surrounding municipalities; through the pricing structure does one class of rate payer pay more than another class; should one pay based on ability to pay, or on the basis that a unit of water costs the same to supply no matter who consumes it; etc.? There are many interpretations. Equity therefore must be viewed broadly in light of many factors as part of achieving what is best for the municipality as a whole.

Conservation

In today's society, conservation of natural resources is increasingly being more highly valued. Controversy continuously focuses on the preservation of non-renewable resources and on the proper management of renewable resources. Conservation is also a concept which applies to a municipality facing physical limitations in the amount of water which can be supplied to an area. As well, financial constraints can encourage conservation in a municipality where the cost of providing each additional unit is increasing.

Pricing structures such as property assessment and flat rate do not, in themselves, encourage conservation. In fact, depending on the price which is charged, they may even encourage resource "squandering," either because consumers, without the price discipline, consume water at will, or the customer wants to get his money's worth and hence adopts more liberal consumption patterns. The fundamental reason for this is that the price paid for the service bears no direct relationship to the volume consumed and hence is viewed as a "tax," instead of being viewed as the price of a purchased commodity.

The Declining Block Rate provides a decreasing incentive towards conservation. By creating awareness of volumes consumed, the consumer can reduce his total costs by restricting consumption; however, the incentive lessens as more water is consumed, because the marginal cost per unit declines as the consumer enters the next block



pricing range. Similarly, those whose consumption level is at the top end of a block have less incentive to reduce consumption.

The Constant Rate structure presents the customer with a linear relationship between consumption and the cost thereof. As the consumer pays a fixed cost per unit, his bill will vary directly with the amount consumed. This method presents tangible incentive for consumers to conserve water. As metering provides direct feedback as to usage patterns and the consumer has direct control over the total amount paid for the commodity, the consumer is encouraged to use only those volumes that are reasonably required.

The Inverted Block method presents the most effective pricing method for encouraging conservation. Through this method, the price per unit consumed increases as total volumes consumed grow. The consumer becomes aware of consumption through metering with the charges increasing dramatically with usage. Hence, there normally is awareness that exercising control over usage can produce significant savings. This method not only encourages conservation methods, but may also penalize legitimate high-volume users if not properly structured.

Figure 6-1 provides a schematic representation of the various rate structures (note property tax as a basis for revenue recovery has not been presented for comparison, as the proportion of taxes paid varies in direct proportion to the market value of the property). The graphs on the left-hand side of the figure present the cost per unit for each additional amount of water consumed. The right-hand side of the figure presents the impact on the customer's bill as the volume of water increases. Following the schematic is a table summarizing each rate structure.



Figure 6-1

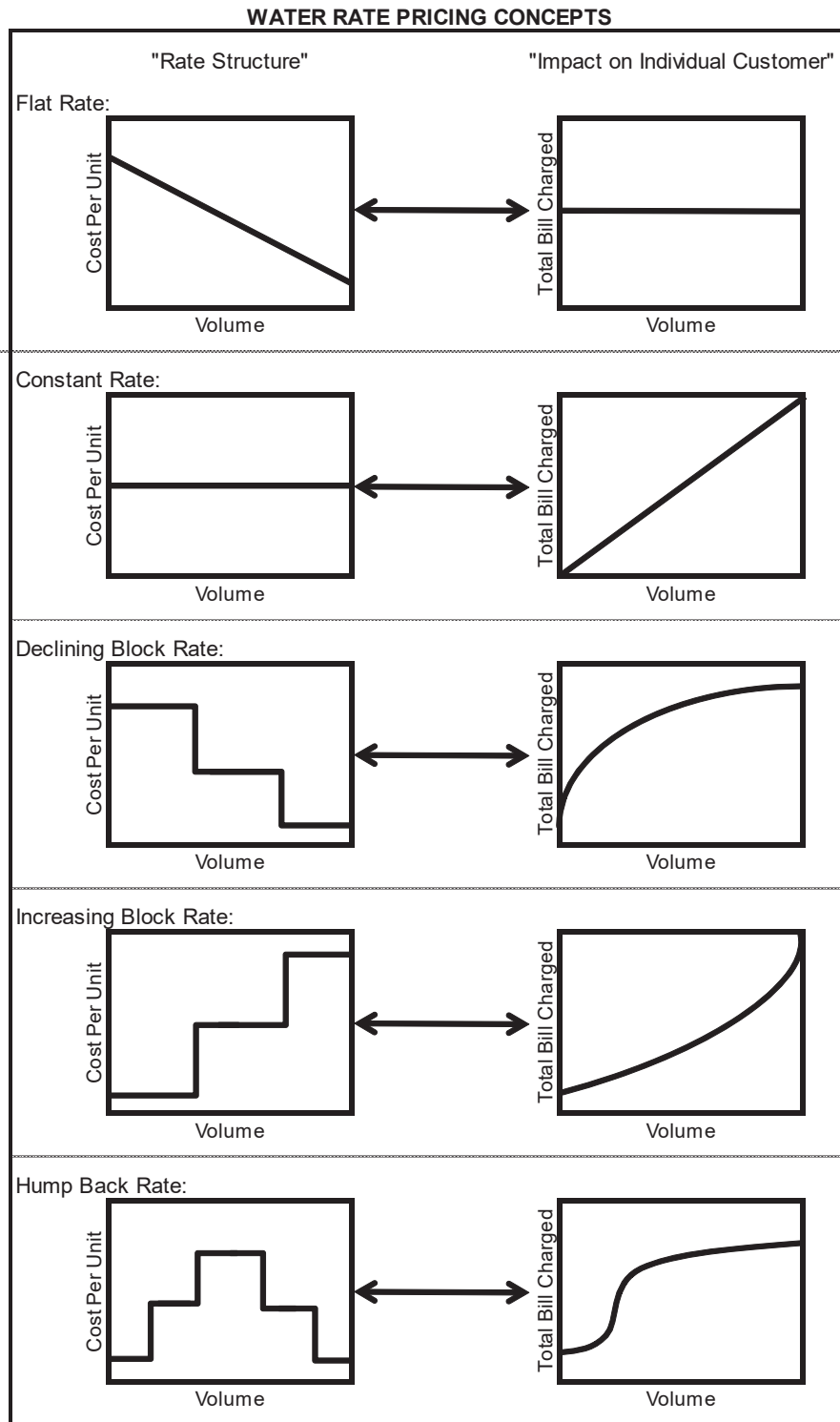




Figure 6-2
Summary of Various Rate Structures and their Impact on Customer Bills as Volume Usage Increases

Rate Structure	Cost Per Unit As Volume Increases	Impact On Customer Bill As Volume Increases
Flat Rate	Cost per unit decreases as more volume consumed	Bill remains the same no matter how much volume is consumed
Constant Rate	Cost per unit remains the same	Bill increases in direct proportion to consumption
Declining Block	Cost per unit decreases as threshold targets are achieved	Bill increases at a slower rate as volumes increase
Increasing Block	Cost per unit increases as threshold targets are achieved	Bill increases at a faster rate as volumes increase
Hump Back Rate	Combination of an increasing block at the lower consumption volumes and then converts to a declining block for the high consumption	Bill increases at a faster rate at the lower consumption amounts and then slows as volumes increase

6.4 Rate Structures in Ontario

In a past survey of over 170 municipalities (approximately half of the municipalities who provide water and/or sewer), all forms of rate structures are in use by Ontario municipalities. The most common rate structure is the constant rate (for metered municipalities). Most municipalities (approximately 92%) who have volume rate structures also impose a base monthly charge.

Historically, the development of a base charge often reflected either the recovery of meter reading/billing/collection costs, plus administration or those costs plus certain fixed costs (such as capital contributions or reserve contributions). More recently, many municipalities have started to establish base charges based on ensuring a secure



portion of the revenue stream which does not vary with volume consumption. Selection of the quantum of the base charge is a matter of policy selected by individual municipalities.

6.5 Recommended Rate Structures and Base Charges

The Municipality currently utilizes a base charge and volume rate for its water and wastewater customers. It is recommended that the same rate structures be continued in the future.

In order to provide for the Municipality's capital expenditures, future asset replacement needs, as well as the day-to-day operating expenditures, the water base charges are proposed to increase by 10% in 2023, 8% in 2024, 6% in 2025 and 5% annually thereafter. The water volume rates (discussed in Section 7.2), is proposed to increase by the same percentages as the base charges.

With respect to wastewater, the base charges are calculated to increase by 2% on an annual basis over the forecast period. The wastewater volume rate is also proposed to increase by 2% annually (discussed in Section 7.3).

The above increases in the base charges are recommended to ensure that the Municipality can fund the capital and operating costs while minimizing the need for debentures.

The forecasted base charges and corresponding revenues are provided in Tables 6-1 and 6-2.



**Table 6-1
Municipality of Wawa
Base Charge Forecast – Water**

Water	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Existing	1,287	1,287	1,287	1,287	1,287	1,287	1,287	1,287	1,287	1,287	1,287
New	6	14	17	19	21	21	22	22	22	22	22
Total Customers	1,293	1,301	1,304	1,306	1,308	1,308	1,309	1,309	1,309	1,309	1,309
Total Annual Revenue	\$643,872	\$712,272	\$770,879	\$818,280	\$860,400	\$903,420	\$949,256	\$996,719	\$1,046,555	\$1,098,882	\$1,153,826
¾" Meter Size	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Existing	1,238	1,238	1,238	1,238	1,238	1,238	1,238	1,238	1,238	1,238	1,238
New	6	14	17	19	21	21	22	22	22	22	22
Subtotal Customers	1,244	1,252	1,255	1,257	1,259	1,259	1,260	1,260	1,260	1,260	1,260
Monthly Base Charge	\$38.00	\$41.80	\$45.14	\$47.85	\$50.25	\$52.76	\$55.40	\$58.17	\$61.07	\$64.13	\$67.33
Annual Base Charge	\$456.00	\$501.60	\$541.73	\$574.23	\$602.94	\$633.09	\$664.74	\$697.98	\$732.88	\$769.53	\$808.00
Total Annual Revenue	\$567,264	\$628,003	\$679,869	\$721,809	\$759,106	\$797,061	\$837,579	\$879,458	\$923,430	\$969,602	\$1,018,082
1" Meter Size	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Existing	12	12	12	12	12	12	12	12	12	12	12
New											
Subtotal Customers	12	12	12	12	12	12	12	12	12	12	12
Monthly Base Charge	\$76.00	\$83.60	\$90.29	\$95.71	\$100.49	\$105.52	\$110.79	\$116.33	\$122.15	\$128.25	\$134.67
Annual Base Charge	\$912.00	\$1,003.20	\$1,083.46	\$1,148.46	\$1,205.89	\$1,266.18	\$1,329.49	\$1,395.96	\$1,465.76	\$1,539.05	\$1,616.00
Total Annual Revenue	\$10,944	\$12,038	\$13,001	\$13,782	\$14,471	\$15,194	\$15,954	\$16,752	\$17,589	\$18,469	\$19,392
1 ½" Meter Size	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Existing	9	9	9	9	9	9	9	9	9	9	9
New											
Subtotal Customers	9	9	9	9	9	9	9	9	9	9	9
Monthly Base Charge	\$114.00	\$125.40	\$135.43	\$143.56	\$150.74	\$158.27	\$166.19	\$174.50	\$183.22	\$192.38	\$202.00
Annual Base Charge	\$1,368.00	\$1,504.80	\$1,625.18	\$1,722.70	\$1,808.83	\$1,899.27	\$1,994.23	\$2,093.95	\$2,198.64	\$2,308.58	\$2,424.00
Total Annual Revenue	\$12,312	\$13,543	\$14,627	\$15,504	\$16,279	\$17,093	\$17,948	\$18,846	\$19,788	\$20,777	\$21,816
2" Meter Size	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Existing	23	23	23	23	23	23	23	23	23	23	23
New											
Subtotal Customers	23	23	23	23	23	23	23	23	23	23	23
Monthly Base Charge	\$152.00	\$167.20	\$180.58	\$191.41	\$200.98	\$211.03	\$221.58	\$232.66	\$244.29	\$256.51	\$269.33
Annual Base Charge	\$1,824.00	\$2,006.40	\$2,166.91	\$2,296.93	\$2,411.77	\$2,532.36	\$2,658.98	\$2,791.93	\$2,931.53	\$3,078.10	\$3,232.01
Total Annual Revenue	\$41,952	\$46,147	\$49,839	\$52,829	\$55,471	\$58,244	\$61,157	\$64,214	\$67,425	\$70,796	\$74,336
3" Meter Size	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Existing	5	5	5	5	5	5	5	5	5	5	5
New											
Subtotal Customers	5	5	5	5	5	5	5	5	5	5	5
Monthly Base Charge	\$190.00	\$209.00	\$225.72	\$239.26	\$251.23	\$263.79	\$276.98	\$290.83	\$305.37	\$320.64	\$336.67
Annual Base Charge	\$2,280.00	\$2,508.00	\$2,708.64	\$2,871.16	\$3,014.72	\$3,165.45	\$3,323.72	\$3,489.91	\$3,664.41	\$3,847.63	\$4,040.01
Total Annual Revenue	\$11,400	\$12,540	\$13,543	\$14,356	\$15,074	\$15,827	\$16,619	\$17,450	\$18,322	\$19,238	\$20,200



Table 6-2
Municipality of Wawa
Base Charge Forecast – Wastewater

Wastewater	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Existing	1,196	1,196	1,196	1,196	1,196	1,196	1,196	1,196	1,196	1,196	1,196
New	4	10	12	14	16	16	17	17	17	17	17
Subtotal Customers	1,200	1,206	1,208	1,210	1,212	1,212	1,213	1,213	1,213	1,213	1,213
Total Annual Revenue	\$336,174	\$344,476	\$351,903	\$359,488	\$367,237	\$374,581	\$382,364	\$390,011	\$397,811	\$405,767	\$413,883
¾" Meter Size	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Existing	1,155	1,155	1,155	1,155	1,155	1,155	1,155	1,155	1,155	1,155	1,155
New	4	10	12	14	16	16	17	17	17	17	17
Subtotal Customers	1,159	1,165	1,167	1,169	1,171	1,171	1,172	1,172	1,172	1,172	1,172
Monthly Base Charge	\$21.50	\$21.93	\$22.37	\$22.82	\$23.27	\$23.74	\$24.21	\$24.70	\$25.19	\$25.69	\$26.21
Annual Base Charge	\$258.00	\$263.16	\$268.42	\$273.79	\$279.27	\$284.85	\$290.55	\$296.36	\$302.29	\$308.33	\$314.50
Total Annual Revenue	\$299,022	\$306,581	\$313,250	\$320,062	\$327,022	\$333,563	\$340,524	\$347,335	\$354,282	\$361,367	\$368,595
1" Meter Size	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Existing	8	8	8	8	8	8	8	8	8	8	8
New											
Subtotal Customers	8	8	8	8	8	8	8	8	8	8	8
Monthly Base Charge	\$43.00	\$43.86	\$44.74	\$45.63	\$46.54	\$47.48	\$48.42	\$49.39	\$50.38	\$51.39	\$52.42
Annual Base Charge	\$516.00	\$526.32	\$536.85	\$547.58	\$558.53	\$569.71	\$581.10	\$592.72	\$604.58	\$616.67	\$629.00
Total Annual Revenue	\$4,128	\$4,211	\$4,295	\$4,381	\$4,468	\$4,558	\$4,649	\$4,742	\$4,837	\$4,933	\$5,032
1 ½" Meter Size	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Existing	9	9	9	9	9	9	9	9	9	9	9
New											
Subtotal Customers	9	9	9	9	9	9	9	9	9	9	9
Monthly Base Charge	\$64.50	\$65.79	\$67.11	\$68.45	\$69.82	\$71.21	\$72.64	\$74.09	\$75.57	\$77.08	\$78.63
Annual Base Charge	\$774.00	\$789.48	\$805.27	\$821.37	\$837.80	\$854.56	\$871.65	\$889.08	\$906.86	\$925.00	\$943.50
Total Annual Revenue	\$6,966	\$7,105	\$7,247	\$7,392	\$7,540	\$7,691	\$7,845	\$8,002	\$8,162	\$8,325	\$8,492
2" Meter Size	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Existing	19	19	19	19	19	19	19	19	19	19	19
New											
Subtotal Customers	19	19	19	19	19	19	19	19	19	19	19
Monthly Base Charge	\$86.00	\$87.72	\$89.47	\$91.26	\$93.09	\$94.95	\$96.85	\$98.79	\$100.76	\$102.78	\$104.83
Annual Base Charge	\$1,032.00	\$1,052.64	\$1,073.69	\$1,095.17	\$1,117.07	\$1,139.41	\$1,162.20	\$1,185.44	\$1,209.15	\$1,233.34	\$1,258.00
Total Annual Revenue	\$19,608	\$20,000	\$20,400	\$20,808	\$21,224	\$21,649	\$22,082	\$22,523	\$22,974	\$23,433	\$23,902
3" Meter Size	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Existing	5	5	5	5	5	5	5	5	5	5	5
New											
Subtotal Customers	5	5	5	5	5	5	5	5	5	5	5
Monthly Base Charge	\$107.50	\$109.65	\$111.84	\$114.08	\$116.36	\$118.69	\$121.06	\$123.48	\$125.95	\$128.47	\$131.04
Annual Base Charge	\$1,290.00	\$1,315.80	\$1,342.12	\$1,368.96	\$1,396.34	\$1,424.26	\$1,452.75	\$1,481.80	\$1,511.44	\$1,541.67	\$1,572.50
Total Annual Revenue	\$6,450	\$6,579	\$6,711	\$6,845	\$6,982	\$7,121	\$7,264	\$7,409	\$7,557	\$7,708	\$7,863



Chapter 7

Analysis of Water and Wastewater Rates and Policy Matters



7. Analysis of Water and Wastewater Rates and Policy Matters

7.1 Introduction

To summarize the analysis undertaken thus far, Chapter 2 reviewed capital-related issues and responds to the provincial directives to maintain and upgrade infrastructure to required levels. Chapter 4 provided a review of capital financing options to which water and wastewater reserve contributions will be the predominant basis for financing future capital replacement. Chapter 5 established the 10-year operating forecast of expenditures including an annual capital reserve contribution. The base charge revenues identified in Chapter 6 are to ensure that fixed costs are recovered regardless of the amount of volume used by customers. This chapter will provide for the calculation of the volume rates over the forecast period. These calculations will be based on the net operating expenditures (the variable costs) provided in Chapter 5, divided by the water consumption forecast and wastewater volumes provided in section 1.8.

7.2 Water Rates

Based on the discussion of rate structures provided in section 6.5 and the recommendation to continue with the present structures, the rates are calculated by taking the net recoverable amounts from Table 5-1 (the product of total expenditures less non-rate revenues and deduct the base charge amounts provided in section 6.5) and completes the calculation by dividing them by the volumes resulting in the forecasted rates. The volume rates are anticipated to increase by:

- 10% in 2023;
- 8% in 2024;
- 6% in 2025; and
- 5% per year from 2026 to 2032.

These increases are required in order to fund the operating and capital expenditure forecast, while providing reserve fund transfers to prepare for the future lifecycle requirements. Detailed calculations of the volume rates are provided in Appendix C. A



summary of the recommended base charge and volume rates along with the total annual bill for an average residential user who consumes 180 cubic meters per year are presented in Table 7-1.

Table 7-1
Annual Customer Water Bill
 Based on 180 cubic metres of usage and ¾” Water Meter

Description	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Monthly Base Rate	\$38.00	\$41.80	\$45.14	\$47.85	\$50.25	\$52.76	\$55.40	\$58.17	\$61.07	\$64.13	\$67.33
Constant Rate	\$0.84	\$0.92	\$0.99	\$1.05	\$1.10	\$1.16	\$1.22	\$1.28	\$1.34	\$1.41	\$1.48
Annual Base Rate Bill	\$456.00	\$501.60	\$541.73	\$574.23	\$602.94	\$633.09	\$664.74	\$697.98	\$732.88	\$769.53	\$808.00
Volume	180	180	180	180	180	180	180	180	180	180	180
Annual Volume Bill	\$151.20	\$165.60	\$178.20	\$189.00	\$198.00	\$208.80	\$219.60	\$230.40	\$241.20	\$253.80	\$266.40
Total Annual Bill	\$607.20	\$667.20	\$719.93	\$763.23	\$800.94	\$841.89	\$884.34	\$928.38	\$974.08	\$1,023.33	\$1,074.40
% Increase - Base Rate		10%	8%	6%	5%	5%	5%	5%	5%	5%	5%
% Increase - Volume Rate		10%	8%	6%	5%	5%	5%	5%	5%	5%	5%
% Increase - Total Annual Bill		10%	8%	6%	5%	5%	5%	5%	5%	5%	5%

7.3 Wastewater Rates

Similar to water, the calculation of the wastewater rates takes the net recoverable amounts from Table 5-2 and completes the calculation by dividing them by the volumes, resulting in the forecast rates. Detailed calculations are provided in Appendix D.

Based on the capital and operating needs over the forecast period, the wastewater volume rate rates are anticipated to increase by 2% annually over the entire forecast period (2023 to 2032).

Table 7-2 summarizes the recommended rates for wastewater and provides the average annual bill for a residential customer who uses 180 cubic meters per year:



Table 7-2
Annual Customer Wastewater Bill
 Based on 180 cubic metres of usage and ¾" Water Meter

Description	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Monthly Base Rate	\$21.50	\$21.93	\$22.37	\$22.82	\$23.27	\$23.74	\$24.21	\$24.70	\$25.19	\$25.69	\$26.21
Constant Rate	\$0.52	\$0.53	\$0.54	\$0.55	\$0.56	\$0.57	\$0.58	\$0.59	\$0.60	\$0.61	\$0.62
Annual Base Rate Bill	\$258.00	\$263.16	\$268.42	\$273.79	\$279.27	\$284.85	\$290.55	\$296.36	\$302.29	\$308.33	\$314.50
Volume	180	180	180	180	180	180	180	180	180	180	180
Annual Volume Bill	\$93.60	\$95.40	\$97.20	\$99.00	\$100.80	\$102.60	\$104.40	\$106.20	\$108.00	\$109.80	\$111.60
Total Annual Bill	\$351.60	\$358.56	\$365.62	\$372.79	\$380.07	\$387.45	\$394.95	\$402.56	\$410.29	\$418.13	\$426.10
% Increase - Base Rate		2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
% Increase - Volume Rate		2%	2%	2%	2%	2%	2%	2%	2%	2%	2%

7.4 Forecast of Combined Water and Wastewater Impact for the Average Residential Customer

Based on the foregoing information, the combined impact of the water and wastewater base charge and volume rate charges equates to a 7% increase in 2023, a 6% increase in 2024, a 5% increase in 2025, and a 4% increase thereafter. Table 7-3 presents the forecast combined annual bill for customers with a ¾" meter and 180 cubic metres of annual usage.

Table 7-3
Municipality of Wawa
 Annual Customer Bill – Based on a ¾" Meter and Annual Volume of 180 cubic metres

Constant Rate	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Combined Monthly Base Rate	\$59.50	\$63.73	\$67.51	\$70.67	\$73.52	\$76.50	\$79.61	\$82.86	\$86.26	\$89.82	\$93.54
Combined Constant Rate	\$1.36	\$1.45	\$1.53	\$1.60	\$1.66	\$1.73	\$1.80	\$1.87	\$1.94	\$2.02	\$2.10
Annual Base Rate Bill	\$714.00	\$764.76	\$810.15	\$848.02	\$882.21	\$917.94	\$955.29	\$994.34	\$1,035.17	\$1,077.86	\$1,122.50
Volume	180	180	180	180	180	180	180	180	180	180	180
Annual Combined Volume Bill	\$244.80	\$261.00	\$275.40	\$288.00	\$298.80	\$311.40	\$324.00	\$336.60	\$349.20	\$363.60	\$378.00
Total Annual Bill	\$958.80	\$1,025.76	\$1,085.55	\$1,136.02	\$1,181.01	\$1,229.34	\$1,279.29	\$1,330.94	\$1,384.37	\$1,441.46	\$1,500.50
% Increase - Base Rate		7%	6%	5%	4%	4%	4%	4%	4%	4%	4%
% Increase - Volume Rate		7%	6%	5%	4%	4%	4%	4%	4%	4%	4%
% Increase - Total Annual Bill		7%	6%	5%	4%	4%	4%	4%	4%	4%	4%



Chapter 8

Recommendations

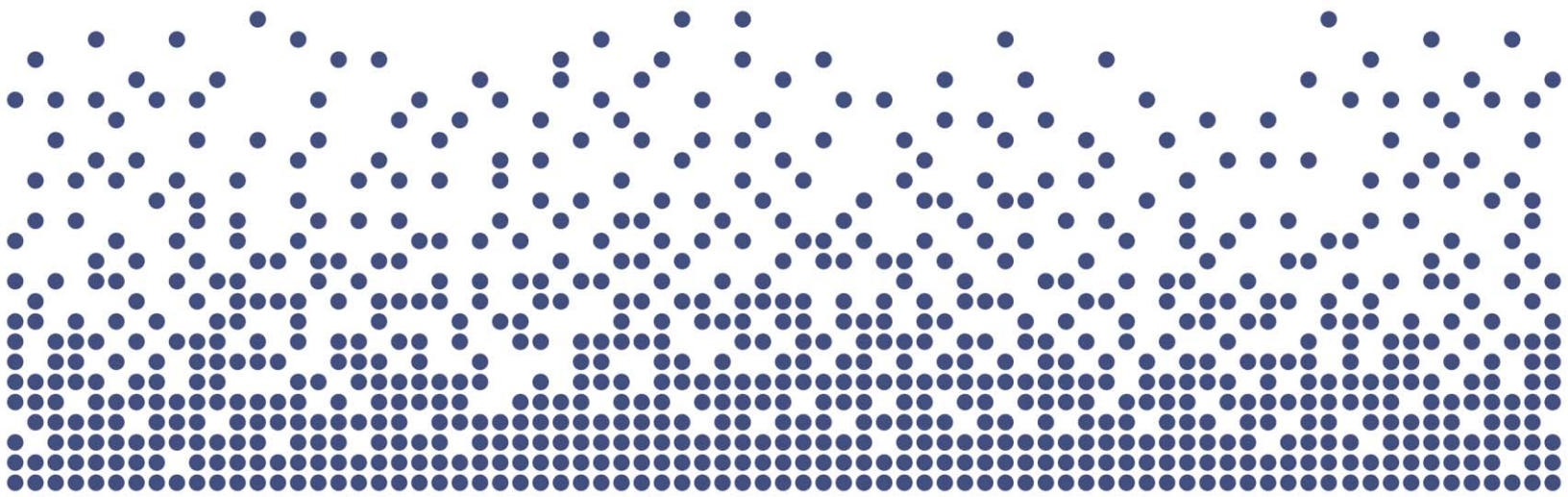


8. Recommendations

As presented within this report, capital and operating expenditures have been identified and forecast over a ten-year period for water and wastewater services.

Based upon the foregoing, the following recommendations are identified for consideration by Municipal Council:

1. That Council provide for the recovery of all water and wastewater costs through full cost recovery rates.
2. That Council consider the Capital Plan for water and wastewater as provided in Tables 2-1 and 2-2 and the associated Capital Financing Plan as set out in Tables 4-3 and 4-4.
3. That Council consider the base charges provided in Table 6-1 for water and Table 6-2 for wastewater.
4. That Council consider the volume rates for water and wastewater as provided in Tables 7-1, 7-2 and 7-3 respectively.



Appendices



Appendix A

Water System Inventory Data



Appendix A: Water System Inventory Data

Table A-1
Municipality of Wawa
Water Facilities Inventory

Item	Year Installed	Estimated Life	Replacement Year	Replacement Cost	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
Water Treatment Plant Building	2006	40	2046	5,709,330	24	301,859	-
Water Treatment Plant - LED Exterior Lighting	2017	20	2037	10,490	15	816	-
Water Booster Station 1	1989	40	2029	365,900	7	suggested for 10 year capital forecast	365,900
Water Booster Station 2	1985	40	2025	662,780	3	suggested for 10 year capital forecast	662,780
Water Pumphouse	1966	40	2022	333,800	0	suggested for 10 year capital forecast	333,800
Village Water Connection	2007	20	2027	702,500	5	suggested for 10 year capital forecast	702,500
Chlorine Analyzer	2005	10	2022	12,700	0	suggested for 10 year capital forecast	12,700
Water Treatment Plant Equipment	2006	20	2026	9,427,330	4	suggested for 10 year capital forecast	9,427,330
Water Pumphouse Equipment	1966	20	2022	393,120	0	suggested for 10 year capital forecast	393,120



Table A-1 (Cont'd)

Item	Year Installed	Estimated Life	Replacement Year	Replacement Cost	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
Intake at Water Pumphouse	1966	20	2022	111,270	0	suggested for 10 year capital forecast	111,270
Elevated Water Storage Tank	1985	20	2022	1,043,610	0	suggested for 10 year capital forecast	1,043,610
Chlorine Trim System	2007	20	2027	47,590	5	suggested for 10 year capital forecast	47,590
PRV Pinewood Dr. Booster Pump	2015	20	2035	12,480	13	1,100	-
MRV Reservoir Circulation	2016	20	2036	31,930	14	2,637	-
MRV Elevated Water Tank - Betterment	2017	20	2037	160,010	15	12,453	-
MRV Elevated Water Tank - Betterment 2	2018	20	2038	307,510	16	22,648	-
PRV Pinewood Dr. Booster Pumps-BETTER	2016	19	2035	16,250	13	1,432	-
WTP Air Compressors	2021	10	2031	17,820	9	suggested for 10 year capital forecast	17,820
WTP SCADA Computers	2021	5	2026	89,000	4	suggested for 10 year capital forecast	89,000
STANDBY GENERATOR EQUIPMENT	2006	20	2026	1,827,650	4	suggested for 10 year capital forecast	1,827,650
WTP Security Cameras	2021	5	2026	2,790	4	suggested for 10 year capital forecast	2,790
Water Treatment Plant Equipment (for THM)	2020	20	2040	206,860	18	13,798	-
Water Valve Exercising Equipment	2021	20	2041	12,570	19	802	-
Total				21,505,290		357,545	15,037,860



Table A-2
Municipality of Wawa
Water Meters Inventory

Item	Year Installed	Estimated Life	Replacement Year	Replacement Cost	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
Water Meters - 2015 Pooled	2015	15	2030	920,770	8	suggested for 10 year capital forecast	920,770
Water Meters - 2015 Pooled - Betterment	2015	14	2029	4,190	7	suggested for 10 year capital forecast	4,190
Total				924,960		0	924,960



Table A-3
Municipality of Wawa
Watermain Inventory

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4916	150	UNKN	1972	75	2047	7,660	25	392	-
4939	150	UNKN	1972	75	2047	730	25	37	-
4940	150	UNKN	1972	75	2047	46,080	25	2,360	-
5350	200	UNKN	1972	75	2047	3,280	25	168	-
5351	150	UNKN	1972	75	2047	4,070	25	208	-
5456	250	UNKN	1972	75	2047	13,740	25	704	-
5458	150	UNKN	1972	75	2047	5,150	25	264	-
5496	150	UNKN	1972	75	2047	610	25	31	-
5497	150	UNKN	1972	75	2047	350	25	18	-
5498	150	UNKN	1972	75	2047	2,490	25	128	-
5499	150	UNKN	1972	75	2047	290	25	15	-
5500	150	UNKN	1972	75	2047	8,060	25	413	-
5501	150	UNKN	1972	75	2047	52,630	25	2,696	-
5502	150	UNKN	1972	75	2047	3,440	25	176	-
5503	150	UNKN	1972	75	2047	2,350	25	120	-
5504	200	UNKN	1972	75	2047	12,540	25	642	-
5505	150	UNKN	1972	75	2047	13,340	25	683	-
5506	150	UNKN	1972	75	2047	490	25	25	-
5507	150	UNKN	1972	75	2047	460	25	24	-
5513	150	UNKN	1972	75	2047	48,650	25	2,492	-
5514	150	UNKN	1972	75	2047	390	25	20	-
5523	150	UNKN	1972	75	2047	770	25	39	-



Table A-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
5524	150	UNKN	1972	75	2047	14,070	25	721	-
5525	150	UNKN	1972	75	2047	2,320	25	119	-
5526	150	UNKN	1972	75	2047	64,540	25	3,306	-
5530	150	UNKN	1972	75	2047	4,170	25	214	-
5531	150	UNKN	1972	75	2047	4,250	25	218	-
5562	150	UNKN	1972	75	2047	240	25	12	-
5563	150	UNKN	1972	75	2047	1,580	25	81	-
5564	150	UNKN	1972	75	2047	1,380	25	71	-
5565	150	UNKN	1972	75	2047	1,190	25	61	-
5566	150	UNKN	1972	75	2047	58,950	25	3,019	-
5567	250	UNKN	1972	75	2047	41,050	25	2,103	-
5568	150	UNKN	1972	75	2047	3,480	25	178	-
5569	150	UNKN	1972	75	2047	3,840	25	197	-
5573	150	UNKN	1972	75	2047	9,050	25	464	-
5574	150	UNKN	1972	75	2047	5,910	25	303	-
5575	150	UNKN	1972	75	2047	11,230	25	575	-
5576	150	UNKN	1972	75	2047	170	25	9	-
5577	150	UNKN	1972	75	2047	280	25	14	-
5578	150	UNKN	1972	75	2047	290	25	15	-
5579	150	UNKN	1972	75	2047	290	25	15	-
5580	150	UNKN	1972	75	2047	330	25	17	-
5581	150	UNKN	1972	75	2047	470	25	24	-
5582	150	UNKN	1972	75	2047	140	25	7	-
5583	150	UNKN	1972	75	2047	9,730	25	498	-



Table A-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
5584	150	UNKN	1972	75	2047	22,790	25	1,167	-
5585	150	UNKN	1972	75	2047	3,270	25	167	-
5586	150	UNKN	1972	75	2047	4,360	25	223	-
5589	150	UNKN	1972	75	2047	11,290	25	578	-
5590	150	UNKN	1972	75	2047	1,010	25	52	-
5591	150	UNKN	1972	75	2047	28,710	25	1,471	-
5592	150	UNKN	1972	75	2047	1,580	25	81	-
5593	150	UNKN	1972	75	2047	26,200	25	1,342	-
5594	150	UNKN	1972	75	2047	58,290	25	2,986	-
5600	150	UNKN	1972	75	2047	9,520	25	488	-
5601	150	UNKN	1972	75	2047	53,730	25	2,752	-
5602	150	UNKN	1972	75	2047	280	25	14	-
5603	150	UNKN	1972	75	2047	580	25	30	-
5604	150	UNKN	1972	75	2047	280	25	14	-
5605	150	UNKN	1972	75	2047	720	25	37	-
5606	150	UNKN	1972	75	2047	3,830	25	196	-
5607	150	UNKN	1972	75	2047	98,800	25	5,061	-
5608	150	UNKN	1972	75	2047	1,360	25	70	-
5609	150	UNKN	1972	75	2047	50,000	25	2,561	-
5610	150	UNKN	1972	75	2047	9,750	25	499	-
5611	150	UNKN	1972	75	2047	15,940	25	816	-
5612	150	UNKN	1972	75	2047	1,410	25	72	-
5613	150	UNKN	1972	75	2047	630	25	32	-
5614	150	UNKN	1972	75	2047	69,290	25	3,549	-



Table A-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
5616	150	UNKN	1972	75	2047	5,890	25	302	-
5617	200	UNKN	1972	75	2047	52,840	25	2,706	-
5618	150	UNKN	1972	75	2047	9,500	25	487	-
5623	150	UNKN	1972	75	2047	1,180	25	60	-
5624	150	UNKN	1972	75	2047	150	25	8	-
5625	150	UNKN	1972	75	2047	57,280	25	2,934	-
5626	150	UNKN	1972	75	2047	41,610	25	2,131	-
5628	150	UNKN	1972	75	2047	16,410	25	841	-
5629	150	UNKN	1972	75	2047	46,380	25	2,376	-
5630	150	UNKN	1972	75	2047	1,530	25	78	-
5631	150	UNKN	1972	75	2047	11,680	25	598	-
5651	150	UNKN	1972	75	2047	82,810	25	4,242	-
5652	150	UNKN	1972	75	2047	1,050	25	54	-
5653	150	UNKN	1972	75	2047	400	25	20	-
5654	150	UNKN	1972	75	2047	16,840	25	863	-
5725	150	UNKN	1972	75	2047	1,020	25	52	-
5726	150	UNKN	1972	75	2047	2,520	25	129	-
5727	150	UNKN	1972	75	2047	170	25	9	-
5728	150	UNKN	1972	75	2047	2,940	25	151	-
4930	150	AC	1974	75	2049	920	27	44	-
5174	150	AC	1974	75	2049	10,680	27	516	-
5184	150	AC	1974	75	2049	12,910	27	623	-
5186	150	AC	1974	75	2049	68,870	27	3,326	-
5224	150	AC	1974	75	2049	36,820	27	1,778	-



Table A-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
5225	150	AC	1974	75	2049	4,090	27	198	-
5226	150	AC	1974	75	2049	32,730	27	1,581	-
5228	150	AC	1974	75	2049	6,660	27	322	-
5242	50	AC	1974	75	2049	18,030	27	871	-
5243	150	AC	1974	75	2049	2,620	27	127	-
5244	50	AC	1974	75	2049	13,700	27	662	-
5245	50	AC	1974	75	2049	3,990	27	193	-
5246	150	AC	1974	75	2049	2,350	27	113	-
5247	150	AC	1974	75	2049	950	27	46	-
5409	50	GALV	1974	75	2049	8,510	27	411	-
5414	150	AC	1974	75	2049	23,770	27	1,148	-
5415	150	AC	1974	75	2049	570	27	28	-
5416	150	AC	1974	75	2049	36,320	27	1,754	-
4824	150	AC	1975	75	2050	2,800	28	132	-
5173	150	AC	1975	75	2050	2,240	28	105	-
5180	150	AC	1975	75	2050	43,680	28	2,053	-
5181	150	AC	1975	75	2050	23,860	28	1,121	-
5185	150	AC	1975	75	2050	770	28	36	-
5191	150	AC	1975	75	2050	10,850	28	510	-
5192	150	AC	1975	75	2050	56,860	28	2,672	-
5193	150	AC	1975	75	2050	1,600	28	75	-
5194	150	AC	1975	75	2050	380	28	18	-
5196	150	AC	1975	75	2050	320	28	15	-
5197	150	AC	1975	75	2050	31,110	28	1,462	-



Table A-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
5198	150	AC	1975	75	2050	17,940	28	843	-
5199	150	AC	1975	75	2050	500	28	23	-
5200	150	AC	1975	75	2050	600	28	28	-
5201	150	AC	1975	75	2050	760	28	36	-
4828	150	AC	1976	75	2051	38,500	29	1,762	-
5168	150	AC	1976	75	2051	59,080	29	2,705	-
5204	150	AC	1976	75	2051	4,350	29	199	-
5205	150	AC	1976	75	2051	1,280	29	59	-
5206	150	AC	1976	75	2051	1,080	29	49	-
5207	150	AC	1976	75	2051	1,090	29	50	-
5208	150	AC	1976	75	2051	20,050	29	918	-
5209	150	AC	1976	75	2051	7,610	29	348	-
4803	150	UNKN	1979	75	2054	1,870	32	80	-
4804	200	UNKN	1979	75	2054	35,520	32	1,514	-
4805	150	UNKN	1979	75	2054	11,270	32	480	-
4826	200	PVC	1979	75	2054	63,700	32	2,714	-
4835	150	UNKN	1979	75	2054	29,250	32	1,246	-
4836	150	UNKN	1979	75	2054	44,300	32	1,888	-
4837	150	UNKN	1979	75	2054	1,100	32	47	-
4838	150	PVC	1979	75	2054	14,560	32	620	-
4839	150	AC	1979	75	2054	65,400	32	2,787	-
4840	150	AC	1979	75	2054	27,920	32	1,190	-
4905	50	PVC	1979	75	2054	31,660	32	1,349	-
4906	150	AC	1979	75	2054	57,870	32	2,466	-



Table A-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4907	150	AC	1979	75	2054	11,280	32	481	-
4908	150	UNKN	1979	75	2054	2,340	32	100	-
4909	200	AC	1979	75	2054	990	32	42	-
4910	200	AC	1979	75	2054	990	32	42	-
4911	200	AC	1979	75	2054	8,580	32	366	-
4912	200	AC	1979	75	2054	1,970	32	84	-
4913	150	AC	1979	75	2054	57,880	32	2,466	-
4914	150	AC	1979	75	2054	42,070	32	1,793	-
4917	150	UNKN	1979	75	2054	930	32	40	-
4918	150	UNKN	1979	75	2054	920	32	39	-
4919	150	UNKN	1979	75	2054	8,630	32	368	-
4920	150	UNKN	1979	75	2054	7,060	32	301	-
4921	150	UNKN	1979	75	2054	12,920	32	551	-
4922	150	UNKN	1979	75	2054	1,220	32	52	-
4923	37	UNKN	1979	75	2054	430	32	18	-
4924	100	STL	1979	75	2054	1,080	32	46	-
4925	100	STL	1979	75	2054	1,280	32	55	-
4926	150	UNKN	1979	75	2054	4,550	32	194	-
4927	150	UNKN	1979	75	2054	15,490	32	660	-
4928	150	UNKN	1979	75	2054	47,990	32	2,045	-
4929	150	STL	1979	75	2054	60	32	3	-
4931	150	AC	1979	75	2054	1,900	32	81	-
4932	150	UNKN	1979	75	2054	14,180	32	604	-
4933	150	UNKN	1979	75	2054	14,710	32	627	-



Table A-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4934	37	UNKN	1979	75	2054	4,450	32	190	-
4935	150	UNKN	1979	75	2054	60	32	3	-
4936	37	GALV	1979	75	2054	2,630	32	112	-
4937	200	AC	1979	75	2054	27,200	32	1,159	-
4938	150	AC	1979	75	2054	54,460	32	2,321	-
4941	100	UNKN	1979	75	2054	32,670	32	1,392	-
4942	150	AC	1979	75	2054	30,870	32	1,315	-
4943	150	PVC	1979	75	2054	1,120	32	48	-
4953	150	UNKN	1979	75	2054	430	32	18	-
4954	19	UNKN	1979	75	2054	3,360	32	143	-
4955	150	AC	1979	75	2054	56,160	32	2,393	-
5002	150	PVC	1979	75	2054	3,960	32	169	-
5026	200	PVC	1979	75	2054	40,140	32	1,710	-
5027	150	PVC	1979	75	2054	920	32	39	-
5028	200	PVC	1979	75	2054	23,310	32	993	-
5029	200	PVC	1979	75	2054	14,080	32	600	-
5030	150	PVC	1979	75	2054	1,530	32	65	-
5031	200	PVC	1979	75	2054	16,190	32	690	-
5032	200	PVC	1979	75	2054	1,290	32	55	-
5033	150	PVC	1979	75	2054	1,840	32	78	-
5034	150	PVC	1979	75	2054	20,840	32	888	-
5035	150	PVC	1979	75	2054	24,530	32	1,045	-
5036	200	PVC	1979	75	2054	11,330	32	483	-
5037	200	PVC	1979	75	2054	1,290	32	55	-



Table A-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
5038	150	PVC	1979	75	2054	4,910	32	209	-
5039	150	PVC	1979	75	2054	48,770	32	2,078	-
5040	150	PVC	1979	75	2054	4,900	32	209	-
5060	200	PVC	1979	75	2054	5,180	32	221	-
5081	150	AC	1979	75	2054	36,600	32	1,560	-
5082	150	AC	1979	75	2054	660	32	28	-
5091	150	AC	1979	75	2054	34,690	32	1,478	-
5111	250	PVC	1979	75	2054	790	32	34	-
5112	250	PVC	1979	75	2054	22,120	32	943	-
5113	250	PVC	1979	75	2054	57,930	32	2,468	-
5114	250	PVC	1979	75	2054	49,300	32	2,101	-
5117	200	UNKN	1979	75	2054	47,680	32	2,032	-
5118	200	UNKN	1979	75	2054	3,180	32	136	-
5119	200	UNKN	1979	75	2054	270	32	12	-
5120	200	UNKN	1979	75	2054	5,740	32	245	-
5121	200	UNKN	1979	75	2054	66,400	32	2,829	-
5122	200	UNKN	1979	75	2054	1,520	32	65	-
5124	150	UNKN	1979	75	2054	1,780	32	76	-
5125	150	UNKN	1979	75	2054	2,500	32	107	-
5126	100	CI	1979	75	2054	16,080	32	685	-
5127	150	UNKN	1979	75	2054	179,820	32	7,662	-
5128	150	UNKN	1979	75	2054	5,990	32	255	-
5129	150	UNKN	1979	75	2054	50,400	32	2,148	-
5130	150	UNKN	1979	75	2054	1,790	32	76	-



Table A-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
5131	150	UNKN	1979	75	2054	21,550	32	918	-
5132	150	UNKN	1979	75	2054	13,360	32	569	-
5133	150	UNKN	1979	75	2054	4,190	32	179	-
5134	150	UNKN	1979	75	2054	9,160	32	390	-
5135	150	AC	1979	75	2054	82,830	32	3,529	-
5136	150	AC	1979	75	2054	3,250	32	138	-
5137	150	AC	1979	75	2054	1,390	32	59	-
5138	150	AC	1979	75	2054	6,080	32	259	-
5144	200	UNKN	1979	75	2054	2,630	32	112	-
5145	150	PVC	1979	75	2054	18,500	32	788	-
5146	150	PVC	1979	75	2054	43,050	32	1,834	-
5147	150	PVC	1979	75	2054	130	32	6	-
5148	150	PVC	1979	75	2054	3,230	32	138	-
5149	150	UNKN	1979	75	2054	1,660	32	71	-
5150	150	UNKN	1979	75	2054	24,600	32	1,048	-
5151	150	UNKN	1979	75	2054	73,330	32	3,125	-
5152	150	UNKN	1979	75	2054	38,630	32	1,646	-
5153	200	AC	1979	75	2054	1,240	32	53	-
5154	150	UNKN	1979	75	2054	64,350	32	2,742	-
5155	150	UNKN	1979	75	2054	28,610	32	1,219	-
5156	150	UNKN	1979	75	2054	47,330	32	2,017	-
5157	150	UNKN	1979	75	2054	27,190	32	1,159	-
5161	50	UNKN	1979	75	2054	1,850	32	79	-
5163	150	UNKN	1979	75	2054	15,260	32	650	-



Table A-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
5164	150	UNKN	1979	75	2054	15,440	32	658	-
5165	150	UNKN	1979	75	2054	27,490	32	1,171	-
5166	150	UNKN	1979	75	2054	8,110	32	346	-
5167	150	UNKN	1979	75	2054	2,150	32	92	-
5182	200	PVC	1979	75	2054	12,200	32	520	-
5183	150	AC	1979	75	2054	5,550	32	236	-
5195	150	AC	1979	75	2054	1,580	32	67	-
5218	200	PVC	1979	75	2054	31,930	32	1,361	-
5227	150	AC	1979	75	2054	30,100	32	1,283	-
5229	150	AC	1979	75	2054	3,050	32	130	-
5230	150	AC	1979	75	2054	260	32	11	-
5234	150	UNKN	1979	75	2054	620	32	26	-
5235	150	UNKN	1979	75	2054	6,570	32	280	-
5236	150	UNKN	1979	75	2054	23,620	32	1,006	-
5237	150	UNKN	1979	75	2054	6,370	32	271	-
5238	150	UNKN	1979	75	2054	18,080	32	770	-
5239	150	UNKN	1979	75	2054	16,910	32	721	-
5240	150	UNKN	1979	75	2054	8,770	32	374	-
5241	150	UNKN	1979	75	2054	18,570	32	791	-
5255	150	UNKN	1979	75	2054	24,970	32	1,064	-
5256	150	UNKN	1979	75	2054	3,310	32	141	-
5257	150	UNKN	1979	75	2054	930	32	40	-
5258	150	UNKN	1979	75	2054	200	32	9	-
5261	19	AC	1979	75	2054	830	32	35	-



Table A-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
5262	150	AC	1979	75	2054	5,370	32	229	-
5263	150	AC	1979	75	2054	2,190	32	93	-
5264	150	AC	1979	75	2054	730	32	31	-
5265	150	AC	1979	75	2054	680	32	29	-
5266	150	AC	1979	75	2054	1,810	32	77	-
5267	150	AC	1979	75	2054	40,470	32	1,724	-
5268	150	AC	1979	75	2054	49,610	32	2,114	-
5269	150	AC	1979	75	2054	29,550	32	1,259	-
5270	150	AC	1979	75	2054	1,300	32	55	-
5271	150	AC	1979	75	2054	34,800	32	1,483	-
5273	150	AC	1979	75	2054	8,600	32	366	-
5274	150	PVC	1979	75	2054	540	32	23	-
5275	150	AC	1979	75	2054	5,570	32	237	-
5276	150	AC	1979	75	2054	2,600	32	111	-
5277	150	AC	1979	75	2054	3,940	32	168	-
5278	150	AC	1979	75	2054	57,400	32	2,446	-
5279	150	AC	1979	75	2054	51,530	32	2,196	-
5280	150	AC	1979	75	2054	8,460	32	360	-
5281	150	AC	1979	75	2054	27,990	32	1,193	-
5282	150	AC	1979	75	2054	360	32	15	-
5283	150	AC	1979	75	2054	9,280	32	395	-
5284	150	AC	1979	75	2054	17,110	32	729	-
5285	150	AC	1979	75	2054	52,320	32	2,229	-
5286	150	AC	1979	75	2054	3,240	32	138	-



Table A-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
5287	150	AC	1979	75	2054	1,310	32	56	-
5288	150	AC	1979	75	2054	570	32	24	-
5289	150	AC	1979	75	2054	103,090	32	4,393	-
5290	150	AC	1979	75	2054	900	32	38	-
5291	150	AC	1979	75	2054	1,040	32	44	-
5292	150	AC	1979	75	2054	770	32	33	-
5293	200	PVC	1979	75	2054	16,580	32	706	-
5294	150	UNKN	1979	75	2054	3,510	32	150	-
5295	150	UNKN	1979	75	2054	2,470	32	105	-
5296	150	UNKN	1979	75	2054	9,910	32	422	-
5297	150	AC	1979	75	2054	99,940	32	4,259	-
5298	150	AC	1979	75	2054	22,750	32	969	-
5299	250	PVC	1979	75	2054	1,750	32	75	-
5300	250	PVC	1979	75	2054	23,160	32	987	-
5301	250	PVC	1979	75	2054	85,180	32	3,630	-
5302	250	PVC	1979	75	2054	23,980	32	1,022	-
5303	150	AC	1979	75	2054	19,960	32	851	-
5304	150	AC	1979	75	2054	22,410	32	955	-
5305	150	AC	1979	75	2054	21,300	32	908	-
5306	150	AC	1979	75	2054	1,010	32	43	-
5307	150	AC	1979	75	2054	37,690	32	1,606	-
5308	150	AC	1979	75	2054	6,100	32	260	-
5309	150	AC	1979	75	2054	960	32	41	-
5310	150	AC	1979	75	2054	45,790	32	1,951	-



Table A-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
5311	150	AC	1979	75	2054	2,750	32	117	-
5313	37	PVC	1979	75	2054	97,110	32	4,138	-
5314	37	PVC	1979	75	2054	50,360	32	2,146	-
5315	150	UNKN	1979	75	2054	650	32	28	-
5316	250	UNKN	1979	75	2054	73,770	32	3,143	-
5317	150	UNKN	1979	75	2054	68,560	32	2,921	-
5318	150	UNKN	1979	75	2054	820	32	35	-
5319	150	UNKN	1979	75	2054	8,470	32	361	-
5320	150	UNKN	1979	75	2054	58,580	32	2,496	-
5321	150	UNKN	1979	75	2054	1,260	32	54	-
5322	150	UNKN	1979	75	2054	480	32	20	-
5323	150	UNKN	1979	75	2054	61,830	32	2,635	-
5324	150	UNKN	1979	75	2054	9,720	32	414	-
5325	150	AC	1979	75	2054	33,000	32	1,406	-
5326	150	AC	1979	75	2054	1,110	32	47	-
5327	150	UNKN	1979	75	2054	550	32	23	-
5328	150	AC	1979	75	2054	92,300	32	3,933	-
5329	150	AC	1979	75	2054	10,060	32	429	-
5330	150	AC	1979	75	2054	1,370	32	58	-
5331	150	AC	1979	75	2054	640	32	27	-
5332	150	AC	1979	75	2054	6,480	32	276	-
5333	150	AC	1979	75	2054	24,160	32	1,029	-
5334	150	AC	1979	75	2054	78,620	32	3,350	-
5335	150	AC	1979	75	2054	500	32	21	-



Table A-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
5336	150	AC	1979	75	2054	550	32	23	-
5337	150	AC	1979	75	2054	1,280	32	55	-
5338	150	AC	1979	75	2054	50,820	32	2,165	-
5339	200	AC	1979	75	2054	930	32	40	-
5340	200	AC	1979	75	2054	135,870	32	5,790	-
5341	200	AC	1979	75	2054	9,300	32	396	-
5342	200	AC	1979	75	2054	3,140	32	134	-
5343	200	AC	1979	75	2054	47,270	32	2,014	-
5344	200	AC	1979	75	2054	90	32	4	-
5345	200	AC	1979	75	2054	4,990	32	213	-
5346	150	AC	1979	75	2054	2,640	32	112	-
5347	150	AC	1979	75	2054	2,280	32	97	-
5348	150	AC	1979	75	2054	190	32	8	-
5349	150	AC	1979	75	2054	90,050	32	3,837	-
5352	200	AC	1979	75	2054	790	32	34	-
5353	200	AC	1979	75	2054	1,570	32	67	-
5354	200	AC	1979	75	2054	9,050	32	386	-
5356	200	AC	1979	75	2054	36,350	32	1,549	-
5357	200	AC	1979	75	2054	2,220	32	95	-
5358	200	AC	1979	75	2054	640	32	27	-
5359	200	AC	1979	75	2054	38,990	32	1,661	-
5360	200	AC	1979	75	2054	13,570	32	578	-
5361	200	AC	1979	75	2054	42,670	32	1,818	-
5362	200	AC	1979	75	2054	51,520	32	2,195	-



Table A-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
5363	150	AC	1979	75	2054	8,050	32	343	-
5364	150	AC	1979	75	2054	4,960	32	211	-
5365	150	AC	1979	75	2054	520	32	22	-
5366	150	AC	1979	75	2054	111,790	32	4,763	-
5367	150	AC	1979	75	2054	2,350	32	100	-
5368	150	AC	1979	75	2054	4,490	32	191	-
5369	150	AC	1979	75	2054	290	32	12	-
5370	150	AC	1979	75	2054	1,560	32	66	-
5371	150	AC	1979	75	2054	1,870	32	80	-
5372	150	AC	1979	75	2054	49,020	32	2,089	-
5373	150	UNKN	1979	75	2054	15,700	32	669	-
5374	150	UNKN	1979	75	2054	290	32	12	-
5375	150	UNKN	1979	75	2054	220	32	9	-
5376	150	UNKN	1979	75	2054	450	32	19	-
5377	150	UNKN	1979	75	2054	190	32	8	-
5378	150	UNKN	1979	75	2054	1,720	32	73	-
5379	150	UNKN	1979	75	2054	3,270	32	139	-
5380	150	UNKN	1979	75	2054	42,400	32	1,807	-
5381	150	UNKN	1979	75	2054	49,640	32	2,115	-
5382	150	UNKN	1979	75	2054	2,080	32	89	-
5383	150	UNKN	1979	75	2054	1,870	32	80	-
5384	150	UNKN	1979	75	2054	40,540	32	1,727	-
5385	150	UNKN	1979	75	2054	76,500	32	3,260	-
5386	150	AC	1979	75	2054	35,260	32	1,502	-



Table A-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
5387	150	AC	1979	75	2054	4,410	32	188	-
5388	150	AC	1979	75	2054	880	32	37	-
5389	150	AC	1979	75	2054	145,920	32	6,218	-
5390	150	AC	1979	75	2054	36,930	32	1,574	-
5391	150	AC	1979	75	2054	4,380	32	187	-
5392	150	AC	1979	75	2054	670	32	29	-
5393	150	UNKN	1979	75	2054	26,400	32	1,125	-
5394	150	UNKN	1979	75	2054	570	32	24	-
5395	150	UNKN	1979	75	2054	55,630	32	2,370	-
5396	150	UNKN	1979	75	2054	52,100	32	2,220	-
5397	150	UNKN	1979	75	2054	1,350	32	58	-
5398	150	UNKN	1979	75	2054	360	32	15	-
5399	150	UNKN	1979	75	2054	66,670	32	2,841	-
5400	150	UNKN	1979	75	2054	34,700	32	1,479	-
5401	150	UNKN	1979	75	2054	1,920	32	82	-
5402	150	UNKN	1979	75	2054	520	32	22	-
5403	200	AC	1979	75	2054	28,440	32	1,212	-
5404	200	AC	1979	75	2054	2,920	32	124	-
5405	200	AC	1979	75	2054	820	32	35	-
5406	200	AC	1979	75	2054	1,080	32	46	-
5407	150	AC	1979	75	2054	4,140	32	176	-
5408	150	UNKN	1979	75	2054	13,050	32	556	-
5411	200	AC	1979	75	2054	54,240	32	2,311	-
5412	200	AC	1979	75	2054	33,150	32	1,413	-



Table A-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
5413	150	PVC	1979	75	2054	7,390	32	315	-
5417	150	AC	1979	75	2054	27,090	32	1,154	-
5418	150	UNKN	1979	75	2054	8,100	32	345	-
5419	150	UNKN	1979	75	2054	89,550	32	3,816	-
5420	150	UNKN	1979	75	2054	1,690	32	72	-
5421	150	UNKN	1979	75	2054	3,460	32	147	-
5422	150	UNKN	1979	75	2054	1,460	32	62	-
5423	150	UNKN	1979	75	2054	230	32	10	-
5424	150	UNKN	1979	75	2054	150	32	6	-
5426	150	UNKN	1979	75	2054	120	32	5	-
5427	150	UNKN	1979	75	2054	1,250	32	53	-
5428	150	UNKN	1979	75	2054	300	32	13	-
5429	150	UNKN	1979	75	2054	2,240	32	95	-
5431	150	UNKN	1979	75	2054	10,770	32	459	-
5432	150	UNKN	1979	75	2054	5,920	32	252	-
5433	150	UNKN	1979	75	2054	71,760	32	3,058	-
5434	150	UNKN	1979	75	2054	250	32	11	-
5435	150	UNKN	1979	75	2054	3,330	32	142	-
5438	150	UNKN	1979	75	2054	13,130	32	559	-
5439	150	UNKN	1979	75	2054	50,220	32	2,140	-
5441	150	UNKN	1979	75	2054	57,960	32	2,470	-
5443	150	UNKN	1979	75	2054	2,510	32	107	-
5444	150	UNKN	1979	75	2054	23,240	32	990	-
5445	150	UNKN	1979	75	2054	2,760	32	118	-



Table A-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
5446	150	UNKN	1979	75	2054	4,550	32	194	-
5447	150	UNKN	1979	75	2054	37,580	32	1,601	-
5448	150	UNKN	1979	75	2054	920	32	39	-
5449	150	UNKN	1979	75	2054	19,230	32	819	-
5450	150	UNKN	1979	75	2054	9,590	32	409	-
5451	150	UNKN	1979	75	2054	75,940	32	3,236	-
5454	150	UNKN	1979	75	2054	20,330	32	866	-
5455	150	UNKN	1979	75	2054	24,310	32	1,036	-
5457	150	UNKN	1979	75	2054	13,570	32	578	-
5459	200	UNKN	1979	75	2054	4,270	32	182	-
5460	150	UNKN	1979	75	2054	5,830	32	248	-
5461	200	UNKN	1979	75	2054	24,530	32	1,045	-
5462	150	UNKN	1979	75	2054	6,070	32	259	-
5463	150	UNKN	1979	75	2054	2,940	32	125	-
5464	150	AC	1979	75	2054	3,670	32	156	-
5465	150	UNKN	1979	75	2054	22,130	32	943	-
5470	150	UNKN	1979	75	2054	1,260	32	54	-
5471	150	UNKN	1979	75	2054	12,560	32	535	-
5472	150	UNKN	1979	75	2054	23,700	32	1,010	-
5473	150	UNKN	1979	75	2054	12,050	32	513	-
5474	300	UNKN	1979	75	2054	61,080	32	2,603	-
5475	150	UNKN	1979	75	2054	30,430	32	1,297	-
5476	150	UNKN	1979	75	2054	1,660	32	71	-
5477	37	UNKN	1979	75	2054	14,910	32	635	-



Table A-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
5478	37	UNKN	1979	75	2054	4,840	32	206	-
5479	37	PVC	1979	75	2054	2,790	32	119	-
5480	150	UNKN	1979	75	2054	1,700	32	72	-
5481	150	UNKN	1979	75	2054	12,300	32	524	-
5482	150	UNKN	1979	75	2054	960	32	41	-
5483	150	UNKN	1979	75	2054	500	32	21	-
5484	150	UNKN	1979	75	2054	18,700	32	797	-
5485	150	UNKN	1979	75	2054	63,790	32	2,718	-
5486	150	UNKN	1979	75	2054	1,760	32	75	-
5487	150	UNKN	1979	75	2054	410	32	17	-
5488	150	UNKN	1979	75	2054	91,170	32	3,885	-
5489	150	UNKN	1979	75	2054	17,370	32	740	-
5490	150	UNKN	1979	75	2054	1,170	32	50	-
5491	150	UNKN	1979	75	2054	350	32	15	-
5492	150	UNKN	1979	75	2054	10,340	32	441	-
5493	150	UNKN	1979	75	2054	1,960	32	84	-
5494	150	UNKN	1979	75	2054	11,830	32	504	-
5495	150	UNKN	1979	75	2054	1,830	32	78	-
5508	150	UNKN	1979	75	2054	75,620	32	3,222	-
5509	150	UNKN	1979	75	2054	87,380	32	3,723	-
5510	150	UNKN	1979	75	2054	57,010	32	2,429	-
5511	150	UNKN	1979	75	2054	570	32	24	-
5512	150	UNKN	1979	75	2054	270	32	12	-
5515	150	UNKN	1979	75	2054	20,950	32	893	-



Table A-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
5516	150	UNKN	1979	75	2054	36,060	32	1,537	-
5517	150	AC	1979	75	2054	38,330	32	1,633	-
5521	200	UNKN	1979	75	2054	2,570	32	110	-
5522	150	PVC	1979	75	2054	1,260	32	54	-
5527	150	UNKN	1979	75	2054	6,690	32	285	-
5528	150	UNKN	1979	75	2054	49,180	32	2,096	-
5529	150	UNKN	1979	75	2054	1,830	32	78	-
5533	150	UNKN	1979	75	2054	63,300	32	2,697	-
5534	150	UNKN	1979	75	2054	21,640	32	922	-
5535	37	UNKN	1979	75	2054	4,320	32	184	-
5536	250	UNKN	1979	75	2054	9,570	32	408	-
5537	150	UNKN	1979	75	2054	9,450	32	403	-
5538	150	UNKN	1979	75	2054	38,140	32	1,625	-
5539	150	UNKN	1979	75	2054	9,700	32	413	-
5540	150	UNKN	1979	75	2054	2,990	32	127	-
5541	150	UNKN	1979	75	2054	1,580	32	67	-
5542	150	UNKN	1979	75	2054	390	32	17	-
5543	300	UNKN	1979	75	2054	4,870	32	208	-
5544	300	UNKN	1979	75	2054	10,610	32	452	-
5545	200	UNKN	1979	75	2054	56,130	32	2,392	-
5546	150	UNKN	1979	75	2054	3,420	32	146	-
5547	200	UNKN	1979	75	2054	3,530	32	150	-
5548	200	UNKN	1979	75	2054	4,040	32	172	-
5549	200	UNKN	1979	75	2054	3,450	32	147	-



Table A-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
5550	200	UNKN	1979	75	2054	1,530	32	65	-
5551	200	UNKN	1979	75	2054	1,560	32	66	-
5552	150	GALV	1979	75	2054	58,920	32	2,511	-
5553	150	GALV	1979	75	2054	3,340	32	142	-
5554	150	GALV	1979	75	2054	1,050	32	45	-
5555	150	UNKN	1979	75	2054	3,770	32	161	-
5556	150	UNKN	1979	75	2054	2,340	32	100	-
5557	150	UNKN	1979	75	2054	160	32	7	-
5558	150	UNKN	1979	75	2054	250	32	11	-
5559	200	UNKN	1979	75	2054	40,170	32	1,712	-
5560	150	UNKN	1979	75	2054	2,130	32	91	-
5561	150	UNKN	1979	75	2054	4,700	32	200	-
5570	150	UNKN	1979	75	2054	490	32	21	-
5571	150	UNKN	1979	75	2054	59,330	32	2,528	-
5572	150	UNKN	1979	75	2054	46,310	32	1,973	-
5595	150	UNKN	1979	75	2054	970	32	41	-
5596	150	UNKN	1979	75	2054	560	32	24	-
5597	150	UNKN	1979	75	2054	1,020	32	43	-
5598	150	UNKN	1979	75	2054	5,400	32	230	-
5599	150	UNKN	1979	75	2054	2,070	32	88	-
5615	150	PVC	1979	75	2054	72,780	32	3,101	-
5619	200	UNKN	1979	75	2054	2,600	32	111	-
5620	200	UNKN	1979	75	2054	480	32	20	-
5621	200	UNKN	1979	75	2054	46,320	32	1,974	-



Table A-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
5622	200	UNKN	1979	75	2054	26,490	32	1,129	-
5627	150	UNKN	1979	75	2054	32,480	32	1,384	-
5632	150	UNKN	1979	75	2054	38,300	32	1,632	-
5633	150	UNKN	1979	75	2054	27,340	32	1,165	-
5634	150	UNKN	1979	75	2054	760	32	32	-
5635	150	UNKN	1979	75	2054	35,940	32	1,531	-
5636	150	UNKN	1979	75	2054	49,460	32	2,108	-
5637	150	UNKN	1979	75	2054	830	32	35	-
5638	150	UNKN	1979	75	2054	890	32	38	-
5639	150	UNKN	1979	75	2054	320	32	14	-
5641	150	UNKN	1979	75	2054	74,660	32	3,181	-
5642	150	UNKN	1979	75	2054	47,860	32	2,039	-
5643	150	UNKN	1979	75	2054	26,070	32	1,111	-
5644	150	UNKN	1979	75	2054	77,350	32	3,296	-
5645	150	UNKN	1979	75	2054	1,610	32	69	-
5646	150	UNKN	1979	75	2054	190	32	8	-
5647	150	UNKN	1979	75	2054	1,620	32	69	-
5648	150	UNKN	1979	75	2054	250	32	11	-
5649	150	UNKN	1979	75	2054	77,920	32	3,320	-
5650	150	UNKN	1979	75	2054	7,750	32	330	-
5655	150	UNKN	1979	75	2054	32,440	32	1,382	-
5656	150	UNKN	1979	75	2054	46,160	32	1,967	-
5657	150	UNKN	1979	75	2054	2,110	32	90	-
5658	150	UNKN	1979	75	2054	430	32	18	-



Table A-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
5663	200	UNKN	1979	75	2054	11,570	32	493	-
5664	200	UNKN	1979	75	2054	980	32	42	-
5665	200	UNKN	1979	75	2054	340	32	14	-
5666	200	UNKN	1979	75	2054	41,080	32	1,750	-
5667	300	UNKN	1979	75	2054	141,440	32	6,027	-
5668	150	UNKN	1979	75	2054	84,980	32	3,621	-
5669	150	UNKN	1979	75	2054	520	32	22	-
5670	150	UNKN	1979	75	2054	520	32	22	-
5671	150	UNKN	1979	75	2054	31,150	32	1,327	-
5672	150	UNKN	1979	75	2054	20,440	32	871	-
5673	150	UNKN	1979	75	2054	240	32	10	-
5674	150	UNKN	1979	75	2054	60	32	3	-
5675	200	UNKN	1979	75	2054	85,450	32	3,641	-
5676	200	UNKN	1979	75	2054	1,000	32	43	-
5677	200	UNKN	1979	75	2054	2,370	32	101	-
5678	200	UNKN	1979	75	2054	31,680	32	1,350	-
5679	200	UNKN	1979	75	2054	1,070	32	46	-
5680	200	UNKN	1979	75	2054	670	32	29	-
5681	37	UNKN	1979	75	2054	900	32	38	-
5682	19	UNKN	1979	75	2054	9,490	32	404	-
5683	50	UNKN	1979	75	2054	2,640	32	112	-
5684	50	UNKN	1979	75	2054	5,730	32	244	-
5685	150	UNKN	1979	75	2054	22,410	32	955	-
5686	37	GALV	1979	75	2054	5,500	32	234	-
5687	37	GALV	1979	75	2054	260	32	11	-



Table A-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
5688	37	GALV	1979	75	2054	6,250	32	266	-
5689	37	GALV	1979	75	2054	9,110	32	388	-
5690	37	GALV	1979	75	2054	940	32	40	-
5691	50	UNKN	1979	75	2054	820	32	35	-
5692	50	UNKN	1979	75	2054	3,700	32	158	-
5693	19	UNKN	1979	75	2054	5,160	32	220	-
5694	100	STL	1979	75	2054	34,880	32	1,486	-
5695	100	STL	1979	75	2054	11,620	32	495	-
5696	150	UNKN	1979	75	2054	13,660	32	582	-
5697	150	UNKN	1979	75	2054	10,300	32	439	-
5698	150	UNKN	1979	75	2054	2,100	32	89	-
5699	150	UNKN	1979	75	2054	210	32	9	-
5700	150	UNKN	1979	75	2054	1,850	32	79	-
5701	200	UNKN	1979	75	2054	71,230	32	3,035	-
5702	200	UNKN	1979	75	2054	2,890	32	123	-
5703	200	UNKN	1979	75	2054	3,470	32	148	-
5704	200	UNKN	1979	75	2054	1,840	32	78	-
5705	150	UNKN	1979	75	2054	1,350	32	58	-
5706	150	UNKN	1979	75	2054	3,580	32	153	-
5707	150	UNKN	1979	75	2054	900	32	38	-
5708	250	PVC	1979	75	2054	1,420	32	61	-
5709	250	PVC	1979	75	2054	740	32	32	-
5710	250	PVC	1979	75	2054	800	32	34	-
5711	250	PVC	1979	75	2054	100,290	32	4,273	-



Table A-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
5712	600	UNKN	1979	75	2054	377,760	32	16,097	-
5713	200	UNKN	1979	75	2054	47,000	32	2,003	-
5715	37	UNKN	1979	75	2054	3,980	32	170	-
5716	37	UNKN	1979	75	2054	7,080	32	302	-
5717	37	UNKN	1979	75	2054	5,520	32	235	-
5720	200	AC	1979	75	2054	28,440	32	1,212	-
5721	150	AC	1979	75	2054	42,950	32	1,830	-
5722	150	PVC	1979	75	2054	25,390	32	1,082	-
5723	150	UNKN	1979	75	2054	59,520	32	2,536	-
5724	150	UNKN	1979	75	2054	21,670	32	923	-
5729	100	UNKN	1979	75	2054	4,020	32	171	-
5730	50	UNKN	1979	75	2054	310	32	13	-
5731	100	CI	1979	75	2054	2,270	32	97	-
5732	100	CI	1979	75	2054	1,770	32	75	-
5733	150	UNKN	1979	75	2054	13,720	32	585	-
5734	37	PVC	1979	75	2054	43,420	32	1,850	-
5736	150	UNKN	1979	75	2054	6,300	32	268	-
5158	50	UNKN	2008	75	2083	5,790	61	165	-
5159	50	UNKN	2008	75	2083	9,400	61	268	-
5160	50	UNKN	2008	75	2083	5,600	61	160	-
5162	50	UNKN	2008	75	2083	8,320	61	237	-
5640	150	UNKN	2008	75	2083	32,360	61	923	-
5718	50	UNKN	2008	75	2083	8,750	61	250	-
5719	50	UNKN	2008	75	2083	9,060	61	258	-



Table A-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4915	150	AC	2021	75	2096	56,290	74	1,464	-
5355	200	AC	2021	75	2096	54,510	74	1,418	-
4970	150	PVC	1984	75	2059	59,100	37	2,276	-
4971	150	PVC	1984	75	2059	1,840	37	71	-
4972	150	PVC	1984	75	2059	13,800	37	531	-
4973	150	PVC	1984	75	2059	290	37	11	-
4974	150	PVC	1984	75	2059	1,550	37	60	-
4975	150	PVC	1984	75	2059	10,280	37	396	-
4976	150	PVC	1984	75	2059	2,150	37	83	-
4977	150	PVC	1984	75	2059	440	37	17	-
4978	150	PVC	1984	75	2059	1,400	37	54	-
4979	150	PVC	1984	75	2059	20,540	37	791	-
4980	150	PVC	1984	75	2059	3,070	37	118	-
4981	150	PVC	1984	75	2059	85,340	37	3,286	-
4982	150	PVC	1984	75	2059	14,330	37	552	-
4983	150	PVC	1984	75	2059	1,530	37	59	-
4984	150	PVC	1984	75	2059	1,540	37	59	-
4985	150	PVC	1984	75	2059	7,360	37	283	-
4986	150	PVC	1984	75	2059	94,580	37	3,642	-
4987	150	PVC	1984	75	2059	4,290	37	165	-
4988	200	PVC	1984	75	2059	650	37	25	-
4989	200	PVC	1984	75	2059	11,010	37	424	-
4990	200	PVC	1984	75	2059	4,530	37	174	-
4991	200	PVC	1984	75	2059	2,590	37	100	-



Table A-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4992	200	PVC	1984	75	2059	970	37	37	-
4993	200	PVC	1984	75	2059	1,620	37	62	-
4994	200	PVC	1984	75	2059	3,560	37	137	-
4995	150	PVC	1984	75	2059	920	37	35	-
4996	200	PVC	1984	75	2059	3,240	37	125	-
4997	200	PVC	1984	75	2059	12,300	37	474	-
4998	200	PVC	1984	75	2059	20,720	37	798	-
4999	200	PVC	1984	75	2059	650	37	25	-
5000	200	PVC	1984	75	2059	29,140	37	1,122	-
5001	150	PVC	1984	75	2059	40,610	37	1,564	-
5003	150	PVC	1984	75	2059	49,180	37	1,894	-
5004	150	PVC	1984	75	2059	610	37	23	-
5005	150	PVC	1984	75	2059	21,460	37	826	-
5006	150	PVC	1984	75	2059	15,330	37	590	-
5007	150	PVC	1984	75	2059	5,210	37	201	-
5008	150	PVC	1984	75	2059	1,530	37	59	-
5009	150	PVC	1984	75	2059	62,590	37	2,410	-
5010	150	PVC	1984	75	2059	8,860	37	341	-
5011	150	PVC	1984	75	2059	62,850	37	2,420	-
5012	150	PVC	1984	75	2059	3,430	37	132	-
5013	150	PVC	1984	75	2059	1,540	37	59	-
5014	150	PVC	1984	75	2059	42,110	37	1,622	-
5015	150	PVC	1984	75	2059	5,520	37	213	-
5016	150	PVC	1984	75	2059	610	37	23	-



Table A-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
5017	200	PVC	1984	75	2059	30,440	37	1,172	-
5018	150	PVC	1984	75	2059	610	37	23	-
5019	150	PVC	1984	75	2059	1,530	37	59	-
5020	200	PVC	1984	75	2059	104,900	37	4,039	-
5021	150	PVC	1984	75	2059	1,230	37	47	-
5022	150	PVC	1984	75	2059	1,530	37	59	-
5023	200	PVC	1984	75	2059	1,620	37	62	-
5024	200	PVC	1984	75	2059	9,070	37	349	-
5025	200	PVC	1984	75	2059	1,300	37	50	-
5041	150	PVC	1984	75	2059	11,650	37	449	-
5042	150	PVC	1984	75	2059	1,230	37	47	-
5043	150	PVC	1984	75	2059	1,530	37	59	-
5044	150	PVC	1984	75	2059	33,720	37	1,298	-
5045	150	PVC	1984	75	2059	8,930	37	344	-
5046	150	PVC	1984	75	2059	44,620	37	1,718	-
5047	150	PVC	1984	75	2059	1,530	37	59	-
5048	150	PVC	1984	75	2059	1,530	37	59	-
5049	150	PVC	1984	75	2059	33,110	37	1,275	-
5050	150	PVC	1984	75	2059	33,110	37	1,275	-
5051	150	PVC	1984	75	2059	3,060	37	118	-
5052	150	PVC	1984	75	2059	3,370	37	130	-
5053	150	PVC	1984	75	2059	8,580	37	330	-
5054	150	PVC	1984	75	2059	1,530	37	59	-
5055	150	PVC	1984	75	2059	9,200	37	354	-



Table A-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
5056	150	PVC	1984	75	2059	2,760	37	106	-
5057	150	PVC	1984	75	2059	1,530	37	59	-
5058	150	PVC	1984	75	2059	610	37	23	-
5059	200	PVC	1984	75	2059	51,800	37	1,995	-
5061	200	PVC	1984	75	2059	1,940	37	75	-
5062	150	PVC	1984	75	2059	12,270	37	472	-
5063	200	PVC	1984	75	2059	11,330	37	436	-
5064	200	PVC	1984	75	2059	2,910	37	112	-
5065	200	PVC	1984	75	2059	970	37	37	-
5066	200	PVC	1984	75	2059	1,620	37	62	-
5067	200	PVC	1984	75	2059	55,040	37	2,119	-
5068	200	PVC	1984	75	2059	10,680	37	411	-
5069	200	PVC	1984	75	2059	650	37	25	-
5070	200	PVC	1984	75	2059	5,510	37	212	-
5071	200	PVC	1984	75	2059	47,270	37	1,820	-
5072	150	PVC	1984	75	2059	4,290	37	165	-
5073	200	PVC	1984	75	2059	8,420	37	324	-
5074	200	PVC	1984	75	2059	320	37	12	-
5075	200	PVC	1984	75	2059	1,620	37	62	-
5076	200	PVC	1984	75	2059	3,890	37	150	-
5077	200	PVC	1984	75	2059	31,730	37	1,222	-
5078	200	PVC	1984	75	2059	9,080	37	350	-
5079	150	PVC	1984	75	2059	71,740	37	2,762	-
5080	150	PVC	1984	75	2059	21,700	37	836	-



Table A-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
5115	150	PVC	1984	75	2059	90,740	37	3,494	-
5116	200	PVC	1984	75	2059	90,010	37	3,466	-
5518	150	PVC	1984	75	2059	2,540	37	98	-
5519	150	PVC	1984	75	2059	29,950	37	1,153	-
5520	150	PVC	1984	75	2059	4,120	37	159	-
5735	150	PVC	1984	75	2059	5,920	37	228	-
4806	150	PVC	1987	75	2062	6,070	40	222	-
4807	150	PVC	1987	75	2062	520	40	19	-
4808	150	PVC	1987	75	2062	12,610	40	461	-
4809	150	PVC	1987	75	2062	7,480	40	273	-
4810	150	PVC	1987	75	2062	28,040	40	1,025	-
4811	150	PVC	1987	75	2062	770	40	28	-
4812	150	PVC	1987	75	2062	1,570	40	57	-
4813	150	PVC	1987	75	2062	22,890	40	837	-
4814	150	PVC	1987	75	2062	8,880	40	325	-
4815	150	PVC	1987	75	2062	9,350	40	342	-
4816	150	PVC	1987	75	2062	1,000	40	37	-
4817	200	PVC	1987	75	2062	55,330	40	2,023	-
4818	200	PVC	1987	75	2062	870	40	32	-
4819	200	PVC	1987	75	2062	1,600	40	58	-
4820	200	PVC	1987	75	2062	3,450	40	126	-
4821	150	PVC	1987	75	2062	25,230	40	922	-
4822	150	PVC	1987	75	2062	17,290	40	632	-
4823	150	AC	1987	75	2062	24,060	40	880	-



Table A-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4825	150	PVC	1987	75	2062	56,950	40	2,082	-
4827	150	AC	1987	75	2062	44,850	40	1,640	-
4830	150	AC	1987	75	2062	57,690	40	2,109	-
4831	150	AC	1987	75	2062	26,410	40	965	-
4834	150	PVC	1987	75	2062	1,530	40	56	-
4841	250	PVC	1987	75	2062	21,360	40	781	-
4842	50	UNKN	1987	75	2062	990	40	36	-
4843	250	PVC	1987	75	2062	95,350	40	3,486	-
4844	250	PVC	1987	75	2062	9,930	40	363	-
4846	250	PVC	1987	75	2062	225,980	40	8,261	-
4847	50	PVC	1987	75	2062	890	40	33	-
4848	250	PVC	1987	75	2062	37,490	40	1,370	-
4944	150	PVC	1987	75	2062	940	40	34	-
4945	150	PVC	1987	75	2062	1,870	40	68	-
4949	250	PVC	1987	75	2062	69,730	40	2,549	-
4950	250	PVC	1987	75	2062	44,760	40	1,636	-
4951	250	PVC	1987	75	2062	149,090	40	5,450	-
5139	50	PVC	1987	75	2062	1,180	40	43	-
5140	50	PVC	1987	75	2062	4,520	40	165	-
5141	250	PVC	1987	75	2062	46,820	40	1,712	-
5142	250	PVC	1987	75	2062	3,360	40	123	-
5143	250	PVC	1987	75	2062	350	40	13	-
5171	150	AC	1987	75	2062	30,470	40	1,114	-
5172	150	AC	1987	75	2062	6,930	40	253	-



Table A-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
5175	200	PVC	1987	75	2062	4,510	40	165	-
5176	200	PVC	1987	75	2062	8,410	40	307	-
5177	200	PVC	1987	75	2062	7,520	40	275	-
5178	200	PVC	1987	75	2062	1,140	40	42	-
5179	200	PVC	1987	75	2062	1,030	40	38	-
5202	150	AC	1987	75	2062	470	40	17	-
5203	150	AC	1987	75	2062	30,520	40	1,116	-
5216	150	AC	1987	75	2062	530	40	19	-
5217	150	AC	1987	75	2062	450	40	16	-
5219	150	AC	1987	75	2062	830	40	30	-
5220	150	AC	1987	75	2062	21,860	40	799	-
5221	150	AC	1987	75	2062	28,640	40	1,047	-
5222	150	AC	1987	75	2062	2,980	40	109	-
5223	150	AC	1987	75	2062	720	40	26	-
5248	200	PVC	1987	75	2062	9,380	40	343	-
5249	150	PVC	1987	75	2062	9,340	40	341	-
5250	200	PVC	1987	75	2062	45,920	40	1,679	-
5259	250	PVC	1987	75	2062	173,860	40	6,356	-
5260	50	PVC	1987	75	2062	610	40	22	-
5659	150	AC	1987	75	2062	4,590	40	168	-
5660	150	AC	1987	75	2062	45,210	40	1,653	-
5661	150	AC	1987	75	2062	65,020	40	2,377	-
5662	150	AC	1987	75	2062	2,830	40	103	-
4829	200	PVC	1989	75	2064	31,580	42	1,118	-
4832	200	PVC	1989	75	2064	820	42	29	-



Table A-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4833	200	PVC	1989	75	2064	3,450	42	122	-
4845	50	PVC	1989	75	2064	1,470	42	52	-
4956	150	PVC	1989	75	2064	1,840	42	65	-
4957	150	PVC	1989	75	2064	83,380	42	2,953	-
4958	150	PVC	1989	75	2064	320	42	11	-
4959	150	PVC	1989	75	2064	1,520	42	54	-
4960	150	PVC	1989	75	2064	25,140	42	890	-
4961	150	PVC	1989	75	2064	9,200	42	326	-
4962	150	PVC	1989	75	2064	9,810	42	347	-
4963	150	PVC	1989	75	2064	20,850	42	738	-
4964	150	PVC	1989	75	2064	9,200	42	326	-
4965	150	PVC	1989	75	2064	9,810	42	347	-
4966	150	PVC	1989	75	2064	24,520	42	868	-
4967	150	PVC	1989	75	2064	310	42	11	-
4968	150	PVC	1989	75	2064	1,530	42	54	-
4969	150	PVC	1989	75	2064	27,590	42	977	-
5169	200	PVC	1989	75	2064	33,270	42	1,178	-
5170	200	PVC	1989	75	2064	4,210	42	149	-
5210	200	PVC	1989	75	2064	75,290	42	2,667	-
5211	200	PVC	1989	75	2064	19,730	42	699	-
5212	200	PVC	1989	75	2064	3,450	42	122	-
5213	200	PVC	1989	75	2064	810	42	29	-
5214	200	PVC	1989	75	2064	810	42	29	-
5215	200	PVC	1989	75	2064	1,840	42	65	-
4849	250	PVC	1992	75	2067	560	45	19	-



Table A-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4850	150	PVC	1992	75	2067	9,700	45	329	-
4851	150	PVC	1992	75	2067	1,230	45	42	-
4852	150	PVC	1992	75	2067	40,160	45	1,362	-
4853	250	PVC	1992	75	2067	560	45	19	-
4854	250	PVC	1992	75	2067	700	45	24	-
4855	250	PVC	1992	75	2067	700	45	24	-
4856	250	PVC	1992	75	2067	700	45	24	-
4857	250	PVC	1992	75	2067	110,630	45	3,751	-
4858	250	PVC	1992	75	2067	9,720	45	330	-
4859	250	PVC	1992	75	2067	550	45	19	-
4860	250	PVC	1992	75	2067	144,160	45	4,888	-
4861	250	PVC	1992	75	2067	700	45	24	-
4862	250	PVC	1992	75	2067	700	45	24	-
4863	50	PVC	1992	75	2067	300	45	10	-
4864	250	PVC	1992	75	2067	700	45	24	-
4865	250	PVC	1992	75	2067	700	45	24	-
4866	250	PVC	1992	75	2067	53,090	45	1,800	-
4867	150	PVC	1992	75	2067	1,220	45	41	-
4868	150	PVC	1992	75	2067	75,860	45	2,572	-
4869	250	PVC	1992	75	2067	1,750	45	59	-
4870	250	PVC	1992	75	2067	72,000	45	2,441	-
4871	250	PVC	1992	75	2067	700	45	24	-
4872	250	PVC	1992	75	2067	700	45	24	-
4873	250	PVC	1992	75	2067	105,000	45	3,561	-
4874	50	PVC	1992	75	2067	600	45	20	-



Table A-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4875	250	PVC	1992	75	2067	700	45	24	-
4876	250	PVC	1992	75	2067	700	45	24	-
4877	250	PVC	1992	75	2067	137,440	45	4,661	-
4878	250	PVC	1992	75	2067	690	45	23	-
4879	250	PVC	1992	75	2067	690	45	23	-
4880	250	PVC	1992	75	2067	18,370	45	623	-
4881	250	PVC	1992	75	2067	1,750	45	59	-
4882	250	PVC	1992	75	2067	8,040	45	273	-
4883	50	PVC	1992	75	2067	590	45	20	-
4884	150	PVC	1992	75	2067	1,220	45	41	-
4885	150	PVC	1992	75	2067	62,540	45	2,121	-
4886	150	PVC	1992	75	2067	57,170	45	1,939	-
4887	150	PVC	1992	75	2067	2,190	45	74	-
4888	150	PVC	1992	75	2067	1,490	45	51	-
4889	150	PVC	1992	75	2067	46,600	45	1,580	-
4890	150	PVC	1992	75	2067	32,490	45	1,102	-
4891	150	PVC	1992	75	2067	610	45	21	-
4892	150	PVC	1992	75	2067	610	45	21	-
4893	0	PVC	1992	75	2067	-	45	-	-
4894	150	PVC	1992	75	2067	610	45	21	-
4895	150	PVC	1992	75	2067	84,000	45	2,848	-
4896	150	PVC	1992	75	2067	1,530	45	52	-
4897	150	PVC	1992	75	2067	1,630	45	55	-
4898	150	PVC	1992	75	2067	33,730	45	1,144	-
4899	150	PVC	1992	75	2067	730	45	25	-



Table A-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4900	150	PVC	1992	75	2067	1,050	45	36	-
4901	150	PVC	1992	75	2067	63,610	45	2,157	-
4902	150	PVC	1992	75	2067	56,100	45	1,902	-
4903	150	PVC	1992	75	2067	610	45	21	-
4904	0	PVC	1992	75	2067	-	45	-	-
4952	150	PVC	1992	75	2067	9,200	45	312	-
4946	150	UNKN	1995	75	2070	4,150	48	135	-
4947	150	UNKN	1995	75	2070	20,190	48	658	-
4948	150	UNKN	1995	75	2070	11,410	48	372	-
5123	100	UNKN	1995	75	2070	44,240	48	1,442	-
5187	150	UNKN	1995	75	2070	51,380	48	1,675	-
5188	150	UNKN	1995	75	2070	1,400	48	46	-
5189	150	UNKN	1995	75	2070	1,870	48	61	-
5190	150	UNKN	1995	75	2070	73,390	48	2,393	-
5231	150	UNKN	1995	75	2070	10,490	48	342	-
5232	150	UNKN	1995	75	2070	1,960	48	64	-
5233	150	UNKN	1995	75	2070	16,960	48	553	-
5251	150	UNKN	1995	75	2070	2,940	48	96	-
5252	150	UNKN	1995	75	2070	720	48	23	-
5253	150	UNKN	1995	75	2070	269,770	48	8,795	-
5254	150	UNKN	1995	75	2070	450	48	15	-
5272	100	UNKN	1995	75	2070	4,340	48	141	-
5312	150	UNKN	1995	75	2070	53,300	48	1,738	-
5410	150	UNKN	1995	75	2070	29,650	48	967	-



Table A-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
5714	150	UNKN	1995	75	2070	5,950	48	194	-
5083	150	PVC	2017	75	2092	274,670	70	7,325	-
5084	150	CU	2017	75	2092	53,180	70	1,418	-
5085	150	CU	2017	75	2092	53,500	70	1,427	-
5086	150	CU	2017	75	2092	26,360	70	703	-
5087	150	CU	2017	75	2092	14,720	70	393	-
5088	150	CU	2017	75	2092	21,890	70	584	-
5089	150	CU	2017	75	2092	54,570	70	1,455	-
5090	150	CU	2017	75	2092	60,490	70	1,613	-
5092	150	CU	2017	75	2092	45,370	70	1,210	-
5093	150	CU	2017	75	2092	43,130	70	1,150	-
5094	150	CU	2017	75	2092	96,060	70	2,562	-
5095	150	CU	2017	75	2092	30,660	70	818	-
5096	150	CU	2017	75	2092	12,260	70	327	-
5097	150	CU	2017	75	2092	47,890	70	1,277	-
5098	150	CU	2017	75	2092	33,150	70	884	-
5099	150	CU	2017	75	2092	51,970	70	1,386	-
5100	150	CU	2017	75	2092	35,940	70	958	-
5101	150	CU	2017	75	2092	67,820	70	1,809	-
5102	150	CU	2017	75	2092	41,080	70	1,096	-
5103	150	CU	2017	75	2092	118,620	70	3,163	-
5104	150	CU	2017	75	2092	73,580	70	1,962	-
5105	150	CU	2017	75	2092	68,670	70	1,831	-
5106	150	CU	2017	75	2092	42,310	70	1,128	-



Table A-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
5107	150	CU	2017	75	2092	62,840	70	1,676	-
5108	150	CU	2017	75	2092	50,280	70	1,341	-
5109	150	CU	2017	75	2092	33,770	70	901	-
5110	150	CU	2017	75	2092	119,550	70	3,188	-
5425	150	UNKN	2019	75	2094	102,840	72	2,707	-
5430	150	UNKN	2019	75	2094	8,410	72	221	-
5436	150	UNKN	2019	75	2094	2,050	72	54	-
5437	150	UNKN	2019	75	2094	27,100	72	713	-
5440	150	UNKN	2019	75	2094	15,070	72	397	-
5442	150	UNKN	2019	75	2094	29,570	72	778	-
5452	150	UNKN	2019	75	2094	4,880	72	128	-
5453	150	UNKN	2019	75	2094	3,880	72	102	-
5466	150	UNKN	2019	75	2094	30,210	72	795	-
5467	150	UNKN	2019	75	2094	3,380	72	89	-
5468	150	UNKN	2019	75	2094	17,460	72	460	-
5469	150	UNKN	2019	75	2094	3,120	72	82	-
5532	150	UNKN	2019	75	2094	25,060	72	660	-
5587	150	UNKN	2019	75	2094	3,660	72	96	-
5588	150	UNKN	2019	75	2094	9,910	72	261	-
Total						19,412,150		770,860	0



Table A-4
Municipality of Wawa
Hydrant Inventory

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3214	1992	40	2032	9,400	10	suggested for 10 year capital forecast	9,400
3215	1992	40	2032	9,400	10	suggested for 10 year capital forecast	9,400
3216	1992	40	2032	9,400	10	suggested for 10 year capital forecast	9,400
3217	1992	40	2032	9,400	10	suggested for 10 year capital forecast	9,400
3218	1992	40	2032	9,400	10	suggested for 10 year capital forecast	9,400
3219	1992	40	2032	9,400	10	suggested for 10 year capital forecast	9,400
3220	1992	40	2032	9,400	10	suggested for 10 year capital forecast	9,400
3221	1992	40	2032	9,400	10	suggested for 10 year capital forecast	9,400



Table A-4 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3222	1992	40	2032	9,400	10	suggested for 10 year capital forecast	9,400
3223	1992	40	2032	9,400	10	suggested for 10 year capital forecast	9,400
3224	1992	40	2032	9,400	10	suggested for 10 year capital forecast	9,400
3225	1992	40	2032	9,400	10	suggested for 10 year capital forecast	9,400
3226	1989	40	2029	9,400	7	suggested for 10 year capital forecast	9,400
3227	1989	40	2029	9,400	7	suggested for 10 year capital forecast	9,400
3228	1984	40	2024	9,400	2	suggested for 10 year capital forecast	9,400
3229	1984	40	2024	9,400	2	suggested for 10 year capital forecast	9,400
3230	1984	40	2024	9,400	2	suggested for 10 year capital forecast	9,400



Table A-4 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3231	1984	40	2024	9,400	2	suggested for 10 year capital forecast	9,400
3232	1984	40	2024	9,400	2	suggested for 10 year capital forecast	9,400
3233	1984	40	2024	9,400	2	suggested for 10 year capital forecast	9,400
3234	1984	40	2024	9,400	2	suggested for 10 year capital forecast	9,400
3235	1984	40	2024	9,400	2	suggested for 10 year capital forecast	9,400
3236	1984	40	2024	9,400	2	suggested for 10 year capital forecast	9,400
3237	1984	40	2024	9,400	2	suggested for 10 year capital forecast	9,400
3238	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3239	1984	40	2024	9,400	2	suggested for 10 year capital forecast	9,400



Table A-4 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3240	1984	40	2024	9,400	2	suggested for 10 year capital forecast	9,400
3241	1984	40	2024	9,400	2	suggested for 10 year capital forecast	9,400
3242	1984	40	2024	9,400	2	suggested for 10 year capital forecast	9,400
3243	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3244	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3245	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3246	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3247	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3248	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400



Table A-4 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3249	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3250	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3251	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3252	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3253	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3254	1987	40	2027	9,400	5	suggested for 10 year capital forecast	9,400
3255	1987	40	2027	9,400	5	suggested for 10 year capital forecast	9,400
3256	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3257	1974	40	2022	9,400	0	suggested for 10 year capital forecast	9,400



Table A-4 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3258	1987	40	2027	9,400	5	suggested for 10 year capital forecast	9,400
3259	1975	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3260	1987	40	2027	9,400	5	suggested for 10 year capital forecast	9,400
3261	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3262	1989	40	2029	9,400	7	suggested for 10 year capital forecast	9,400
3263	1989	40	2029	9,400	7	suggested for 10 year capital forecast	9,400
3264	1987	40	2027	9,400	5	suggested for 10 year capital forecast	9,400
3265	1975	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3266	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400



Table A-4 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3267	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3268	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3269	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3270	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3271	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3272	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3273	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3274	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3275	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400



Table A-4 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3276	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3277	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3278	1995	40	2035	9,400	13	828	-
3279	1995	40	2035	9,400	13	828	-
3280	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3281	1987	40	2027	9,400	5	suggested for 10 year capital forecast	9,400
3282	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3283	1984	40	2024	9,400	2	suggested for 10 year capital forecast	9,400
3284	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3285	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400



Table A-4 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3286	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3287	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3288	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3289	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3290	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3291	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3292	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3293	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3294	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400



Table A-4 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3295	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3296	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3297	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3298	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3299	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3300	1972	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3301	1972	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3302	1972	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3303	1972	40	2022	9,400	0	suggested for 10 year capital forecast	9,400



Table A-4 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3304	1972	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3305	1972	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3306	1972	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3307	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3308	1972	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3309	1972	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3310	1972	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3311	1972	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3312	1972	40	2022	9,400	0	suggested for 10 year capital forecast	9,400



Table A-4 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3313	1972	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3314	1972	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3315	1972	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3316	1972	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3317	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3318	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3319	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3320	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3321	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400



Table A-4 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3322	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3323	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3324	1975	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3325	1972	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3326	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3327	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3328	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3329	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3330	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
3331	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400



Table A-4 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3332	1979	40	2022	9,400	0	suggested for 10 year capital forecast	9,400
6510	2017	40	2057	9,400	35	376	-
6511	2017	40	2057	9,400	35	376	-
6512	2017	40	2057	9,400	35	376	-
6513	2017	40	2057	9,400	35	376	-
6537	2021	40	2061	9,330	39	347	-
Total				1,165,530		3,508	1,099,800



Table A-5
Municipality of Wawa
Service Leads Inventory

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3343	1979	60	2039	5,420	17	379	-
3344	1979	60	2039	5,410	17	379	-
3345	1979	60	2039	5,400	17	378	-
3346	1979	60	2039	1,250	17	87	-
3347	1979	60	2039	5,430	17	380	-
3348	1979	60	2039	5,870	17	411	-
3349	1979	60	2039	5,710	17	400	-
3350	1979	60	2039	5,870	17	411	-
3351	1979	60	2039	1,680	17	118	-
3352	1979	60	2039	5,960	17	417	-
3353	1979	60	2039	1,620	17	113	-
3354	1979	60	2039	1,060	17	74	-
3355	1979	60	2039	6,290	17	440	-
3356	1979	60	2039	1,710	17	120	-
3357	1979	60	2039	5,730	17	401	-
3358	1979	60	2039	5,920	17	414	-
3359	1979	60	2039	6,320	17	442	-
3360	1979	60	2039	1,040	17	73	-
3361	1979	60	2039	6,290	17	440	-
3362	1979	60	2039	6,380	17	446	-
3363	1979	60	2039	2,480	17	174	-
3364	1979	60	2039	1,650	17	115	-
3365	1979	60	2039	1,700	17	119	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3366	1979	60	2039	740	17	52	-
3367	1979	60	2039	1,150	17	80	-
3368	1979	60	2039	1,380	17	97	-
3369	1979	60	2039	3,000	17	210	-
3370	1979	60	2039	1,990	17	139	-
3371	1979	60	2039	1,930	17	135	-
3372	1979	60	2039	3,870	17	271	-
3373	1979	60	2039	710	17	50	-
3374	1979	60	2039	1,150	17	80	-
3375	1979	60	2039	3,380	17	236	-
3376	1979	60	2039	3,240	17	227	-
3377	1979	60	2039	4,070	17	285	-
3378	1979	60	2039	16,910	17	1,183	-
3379	1979	60	2039	4,030	17	282	-
3380	1979	60	2039	3,520	17	246	-
3381	1974	60	2034	1,510	12	143	-
3382	1987	60	2047	1,800	25	92	-
3383	1987	60	2047	1,730	25	89	-
3384	1987	60	2047	1,600	25	82	-
3385	1987	60	2047	1,590	25	81	-
3386	1987	60	2047	1,230	25	63	-
3387	1987	60	2047	1,410	25	72	-
3388	1987	60	2047	3,590	25	184	-
3389	1987	60	2047	1,970	25	101	-
3390	1987	60	2047	3,200	25	164	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3391	1987	60	2047	1,530	25	78	-
3392	1987	60	2047	3,230	25	165	-
3393	1987	60	2047	1,460	25	75	-
3394	1987	60	2047	3,380	25	173	-
3395	1987	60	2047	3,440	25	176	-
3396	1979	60	2039	1,000	17	70	-
3397	1979	60	2039	3,060	17	214	-
3398	1979	60	2039	3,500	17	245	-
3399	1979	60	2039	1,420	17	99	-
3400	1979	60	2039	5,910	17	414	-
3401	1979	60	2039	1,510	17	106	-
3402	1995	60	2055	3,950	33	165	-
3403	1995	60	2055	870	33	36	-
3404	1979	60	2039	1,830	17	128	-
3405	1979	60	2039	1,070	17	75	-
3406	1987	60	2047	14,210	25	728	-
3407	1987	60	2047	1,620	25	83	-
3408	1992	60	2052	2,210	30	99	-
3409	1992	60	2052	3,940	30	176	-
3410	1992	60	2052	860	30	38	-
3411	1992	60	2052	590	30	26	-
3412	1992	60	2052	590	30	26	-
3413	1992	60	2052	1,820	30	81	-
3414	1992	60	2052	720	30	32	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3415	1992	60	2052	720	30	32	-
3416	1992	60	2052	720	30	32	-
3417	1992	60	2052	890	30	40	-
3418	1992	60	2052	890	30	40	-
3419	1992	60	2052	720	30	32	-
3420	1992	60	2052	3,870	30	173	-
3421	1992	60	2052	3,250	30	145	-
3422	1989	60	2049	960	27	46	-
3423	1989	60	2049	3,850	27	186	-
3424	1989	60	2049	960	27	46	-
3425	1989	60	2049	3,850	27	186	-
3426	1979	60	2039	5,310	17	372	-
3427	1989	60	2049	970	27	47	-
3428	1989	60	2049	3,840	27	185	-
3429	1989	60	2049	3,610	27	174	-
3430	1989	60	2049	3,610	27	174	-
3431	1989	60	2049	3,610	27	174	-
3432	1989	60	2049	3,850	27	186	-
3433	1989	60	2049	3,610	27	174	-
3434	1989	60	2049	960	27	46	-
3435	1989	60	2049	3,610	27	174	-
3436	1989	60	2049	960	27	46	-
3437	1989	60	2049	3,610	27	174	-
3438	1984	60	2044	960	22	54	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3439	1984	60	2044	3,850	22	218	-
3440	1984	60	2044	4,570	22	259	-
3441	1984	60	2044	2,410	22	136	-
3442	1984	60	2044	960	22	54	-
3443	1984	60	2044	960	22	54	-
3444	1984	60	2044	3,850	22	218	-
3445	1984	60	2044	960	22	54	-
3446	1984	60	2044	3,850	22	218	-
3447	1984	60	2044	3,850	22	218	-
3448	1984	60	2044	960	22	54	-
3449	1984	60	2044	1,680	22	95	-
3450	1984	60	2044	2,650	22	150	-
3451	1984	60	2044	1,560	22	88	-
3452	1984	60	2044	3,250	22	184	-
3453	1984	60	2044	2,650	22	150	-
3454	1984	60	2044	2,040	22	116	-
3455	1984	60	2044	730	22	41	-
3456	1984	60	2044	720	22	41	-
3457	1984	60	2044	3,850	22	218	-
3458	1984	60	2044	720	22	41	-
3459	1984	60	2044	3,850	22	218	-
3460	1984	60	2044	3,610	22	204	-
3461	1984	60	2044	1,440	22	82	-
3462	1984	60	2044	3,850	22	218	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3463	1984	60	2044	3,610	22	204	-
3464	1984	60	2044	3,370	22	191	-
3465	1984	60	2044	1,440	22	82	-
3466	1984	60	2044	2,410	22	136	-
3467	1984	60	2044	1,810	22	103	-
3468	1984	60	2044	2,410	22	136	-
3469	1984	60	2044	2,170	22	123	-
3470	1984	60	2044	2,400	22	136	-
3471	1984	60	2044	2,170	22	123	-
3472	1984	60	2044	2,170	22	123	-
3473	1984	60	2044	2,170	22	123	-
3474	1984	60	2044	2,650	22	150	-
3475	1984	60	2044	2,170	22	123	-
3476	1984	60	2044	2,650	22	150	-
3477	1984	60	2044	2,410	22	136	-
3478	1979	60	2039	2,410	17	169	-
3479	1979	60	2039	960	17	67	-
3480	1979	60	2039	3,130	17	219	-
3481	1979	60	2039	1,680	17	118	-
3482	1979	60	2039	2,770	17	194	-
3483	1979	60	2039	1,320	17	92	-
3484	1979	60	2039	2,770	17	194	-
3485	1979	60	2039	3,370	17	236	-
3486	1979	60	2039	2,170	17	152	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3487	1979	60	2039	3,010	17	211	-
3488	1979	60	2039	3,370	17	236	-
3489	1979	60	2039	2,890	17	202	-
3490	1979	60	2039	1,930	17	135	-
3491	1984	60	2044	2,170	22	123	-
3492	1984	60	2044	3,130	22	177	-
3493	1984	60	2044	4,090	22	232	-
3494	1984	60	2044	7,220	22	409	-
3495	1979	60	2039	3,890	17	272	-
3496	1979	60	2039	1,020	17	71	-
3497	1992	60	2052	3,130	30	140	-
3498	1992	60	2052	3,130	30	140	-
3499	1992	60	2052	3,610	30	161	-
3500	1992	60	2052	1,200	30	54	-
3501	1992	60	2052	3,700	30	165	-
3502	1992	60	2052	3,700	30	165	-
3503	1992	60	2052	1,110	30	50	-
3504	1992	60	2052	1,110	30	50	-
3505	1992	60	2052	1,200	30	54	-
3506	1992	60	2052	1,200	30	54	-
3507	1992	60	2052	3,610	30	161	-
3508	1992	60	2052	3,610	30	161	-
3509	1992	60	2052	1,660	30	74	-
3510	1992	60	2052	3,280	30	146	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3511	1992	60	2052	1,680	30	75	-
3512	1992	60	2052	3,610	30	161	-
3513	1992	60	2052	1,200	30	54	-
3514	1992	60	2052	1,200	30	54	-
3515	1992	60	2052	3,610	30	161	-
3516	1992	60	2052	1,200	30	54	-
3517	1992	60	2052	3,610	30	161	-
3518	1992	60	2052	3,610	30	161	-
3519	1992	60	2052	1,200	30	54	-
3520	1992	60	2052	3,610	30	161	-
3521	1992	60	2052	1,200	30	54	-
3522	1992	60	2052	4,700	30	210	-
3523	1979	60	2039	510	17	36	-
3524	1979	60	2039	1,230	17	86	-
3525	1979	60	2039	1,160	17	81	-
3526	1979	60	2039	1,010	17	71	-
3527	1979	60	2039	1,470	17	103	-
3528	1979	60	2039	450	17	31	-
3529	1979	60	2039	1,300	17	91	-
3530	1979	60	2039	1,720	17	120	-
3531	1979	60	2039	900	17	63	-
3532	1979	60	2039	1,480	17	104	-
3533	1979	60	2039	1,320	17	92	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3534	1979	60	2039	3,260	17	228	-
3535	1979	60	2039	1,190	17	83	-
3536	1979	60	2039	1,490	17	104	-
3537	1972	60	2032	3,480	10	suggested for 10 year capital forecast	3,480
3538	1979	60	2039	5,870	17	411	-
3539	1987	60	2047	3,380	25	173	-
3540	1987	60	2047	3,390	25	174	-
3541	1987	60	2047	1,700	25	87	-
3542	1972	60	2032	3,540	10	suggested for 10 year capital forecast	3,540
3543	1972	60	2032	1,180	10	suggested for 10 year capital forecast	1,180
3544	1972	60	2032	3,340	10	suggested for 10 year capital forecast	3,340
3545	1979	60	2039	210	17	15	-
3546	1972	60	2032	1,060	10	suggested for 10 year capital forecast	1,060
3547	1972	60	2032	3,220	10	suggested for 10 year capital forecast	3,220



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3548	1979	60	2039	1,440	17	101	-
3549	1979	60	2039	11,510	17	805	-
3550	1979	60	2039	6,370	17	446	-
3551	1979	60	2039	630	17	44	-
3552	1979	60	2039	3,830	17	268	-
3553	1979	60	2039	250	17	17	-
3554	1979	60	2039	720	17	50	-
3555	1979	60	2039	560	17	39	-
3556	1979	60	2039	690	17	48	-
3557	1979	60	2039	750	17	52	-
3558	1979	60	2039	480	17	34	-
3559	1979	60	2039	330	17	23	-
3560	1979	60	2039	970	17	68	-
3561	1979	60	2039	890	17	62	-
3562	1979	60	2039	870	17	61	-
3563	1979	60	2039	8,060	17	564	-
3564	1979	60	2039	3,700	17	259	-
3565	1979	60	2039	7,150	17	500	-
3566	1979	60	2039	870	17	61	-
3567	1979	60	2039	2,230	17	156	-
3568	1979	60	2039	2,980	17	209	-
3569	1979	60	2039	19,660	17	1,376	-
3570	1979	60	2039	3,430	17	240	-
3571	1979	60	2039	5,110	17	358	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3572	1979	60	2039	9,500	17	665	-
3573	1979	60	2039	890	17	62	-
3574	1979	60	2039	1,240	17	87	-
3575	1979	60	2039	2,680	17	188	-
3576	1979	60	2039	2,830	17	198	-
3577	1979	60	2039	2,570	17	180	-
3578	1979	60	2039	1,280	17	90	-
3579	1979	60	2039	2,020	17	141	-
3580	1975	60	2035	1,200	13	106	-
3581	1995	60	2055	1,240	33	52	-
3582	1987	60	2047	2,780	25	142	-
3583	1979	60	2039	650	17	45	-
3584	1979	60	2039	730	17	51	-
3585	1979	60	2039	1,390	17	97	-
3586	1976	60	2036	1,340	14	111	-
3587	1974	60	2034	660	12	62	-
3588	1979	60	2039	350	17	24	-
3589	1979	60	2039	320	17	22	-
3590	1979	60	2039	360	17	25	-
3591	1979	60	2039	260	17	18	-
3592	1979	60	2039	340	17	24	-
3593	1979	60	2039	2,650	17	185	-
3594	1979	60	2039	590	17	41	-
3595	1979	60	2039	790	17	55	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3596	1979	60	2039	730	17	51	-
3597	1979	60	2039	15,230	17	1,066	-
3598	1979	60	2039	1,410	17	99	-
3599	1979	60	2039	13,030	17	912	-
3600	1979	60	2039	1,040	17	73	-
3601	1975	60	2035	1,270	13	112	-
3602	1979	60	2039	690	17	48	-
3603	1979	60	2039	450	17	31	-
3604	1979	60	2039	260	17	18	-
3605	1979	60	2039	380	17	27	-
3606	1979	60	2039	230	17	16	-
3607	1977	60	2037	1,370	15	107	-
3608	1977	60	2037	2,990	15	233	-
3609	1979	60	2039	430	17	30	-
3610	1979	60	2039	360	17	25	-
3611	1979	60	2039	330	17	23	-
3612	1979	60	2039	310	17	22	-
3613	1979	60	2039	240	17	17	-
3614	1979	60	2039	220	17	15	-
3615	1979	60	2039	22,370	17	1,565	-
3616	1979	60	2039	4,610	17	323	-
3617	1979	60	2039	8,800	17	616	-
3618	1987	60	2047	310	25	16	-
3619	1987	60	2047	270	25	14	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3620	1995	60	2055	65,110	33	2,714	-
3621	2005	60	2065	7,720	43	269	-
3622	2005	60	2065	360	43	13	-
3623	2005	60	2065	470	43	16	-
3624	2005	60	2065	460	43	16	-
3625	1984	60	2044	2,890	22	164	-
3626	1979	60	2039	5,230	17	366	-
3627	1979	60	2039	2,240	17	157	-
3628	1979	60	2039	2,160	17	151	-
3629	1979	60	2039	2,150	17	150	-
3630	1995	60	2055	2,300	33	96	-
3631	1995	60	2055	16,080	33	670	-
3632	1995	60	2055	4,030	33	168	-
3633	1995	60	2055	750	33	31	-
3634	1995	60	2055	480	33	20	-
3635	1979	60	2039	1,410	17	99	-
3636	1979	60	2039	1,460	17	102	-
3637	1979	60	2039	1,160	17	81	-
3638	1979	60	2039	1,170	17	82	-
3639	1979	60	2039	1,210	17	85	-
3640	1995	60	2055	120	33	5	-
3641	1995	60	2055	3,150	33	131	-
3642	1995	60	2055	260	33	11	-
3643	1995	60	2055	290	33	12	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3644	1995	60	2055	3,270	33	136	-
3645	1995	60	2055	2,970	33	124	-
3646	1995	60	2055	200	33	8	-
3647	1995	60	2055	170	33	7	-
3648	1995	60	2055	1,870	33	78	-
3649	1979	60	2039	3,830	17	268	-
3650	1979	60	2039	3,510	17	246	-
3651	1979	60	2039	400	17	28	-
3652	1979	60	2039	510	17	36	-
3653	1979	60	2039	870	17	61	-
3654	1979	60	2039	820	17	57	-
3655	1979	60	2039	1,140	17	80	-
3656	1979	60	2039	850	17	59	-
3657	1979	60	2039	800	17	56	-
3658	1979	60	2039	3,040	17	213	-
3659	1979	60	2039	2,600	17	182	-
3660	1979	60	2039	1,310	17	92	-
3661	1979	60	2039	3,450	17	241	-
3662	1979	60	2039	2,800	17	196	-
3663	1979	60	2039	3,510	17	246	-
3664	1979	60	2039	1,140	17	80	-
3665	1979	60	2039	1,010	17	71	-
3666	1979	60	2039	3,410	17	239	-
3667	1979	60	2039	4,260	17	298	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3668	1979	60	2039	1,190	17	83	-
3669	1979	60	2039	4,270	17	299	-
3670	1979	60	2039	3,010	17	211	-
3671	1972	60	2032	3,590	10	suggested for 10 year capital forecast	3,590
3672	1972	60	2032	1,150	10	suggested for 10 year capital forecast	1,150
3673	1979	60	2039	2,930	17	205	-
3674	1979	60	2039	1,330	17	93	-
3675	1979	60	2039	3,080	17	216	-
3676	1979	60	2039	1,010	17	71	-
3677	1979	60	2039	2,780	17	195	-
3678	1979	60	2039	750	17	52	-
3679	1979	60	2039	680	17	48	-
3680	1979	60	2039	910	17	64	-
3681	1976	60	2036	3,960	14	327	-
3682	1976	60	2036	720	14	59	-
3683	1976	60	2036	4,550	14	376	-
3684	1976	60	2036	4,100	14	339	-
3685	1976	60	2036	630	14	52	-
3686	1989	60	2049	2,940	27	142	-
3687	1989	60	2049	1,760	27	85	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3688	1989	60	2049	3,060	27	148	-
3689	1989	60	2049	1,510	27	73	-
3690	1989	60	2049	3,350	27	162	-
3691	1989	60	2049	880	27	42	-
3692	1989	60	2049	3,250	27	157	-
3693	1989	60	2049	1,570	27	76	-
3694	1989	60	2049	3,160	27	153	-
3695	1995	60	2055	2,630	33	110	-
3696	1995	60	2055	350	33	15	-
3697	1995	60	2055	310	33	13	-
3698	1995	60	2055	2,650	33	110	-
3699	1995	60	2055	2,970	33	124	-
3700	1995	60	2055	1,750	33	73	-
3701	1979	60	2039	1,340	17	94	-
3702	1979	60	2039	3,980	17	278	-
3703	1979	60	2039	830	17	58	-
3704	1987	60	2047	3,310	25	170	-
3705	1987	60	2047	1,410	25	72	-
3706	1987	60	2047	3,060	25	157	-
3707	1987	60	2047	1,320	25	68	-
3708	1987	60	2047	3,060	25	157	-
3709	1987	60	2047	1,290	25	66	-
3710	1987	60	2047	3,380	25	173	-
3711	1987	60	2047	1,310	25	67	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3712	1987	60	2047	3,120	25	160	-
3713	1987	60	2047	3,320	25	170	-
3714	1987	60	2047	1,070	25	55	-
3715	1976	60	2036	3,610	14	298	-
3716	1976	60	2036	820	14	68	-
3717	1972	60	2032	1,010	10	suggested for 10 year capital forecast	1,010
3718	1972	60	2032	3,950	10	suggested for 10 year capital forecast	3,950
3719	1972	60	2032	1,080	10	suggested for 10 year capital forecast	1,080
3720	1972	60	2032	990	10	suggested for 10 year capital forecast	990
3721	1972	60	2032	40	10	suggested for 10 year capital forecast	40
3722	1979	60	2039	3,480	17	243	-
3723	1979	60	2039	3,190	17	223	-
3724	1974	60	2034	580	12	55	-
3725	1974	60	2034	2,200	12	208	-
3726	1976	60	2036	1,460	14	121	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3727	1986	60	2046	1,130	24	60	-
3728	1986	60	2046	1,660	24	88	-
3729	1986	60	2046	1,360	24	72	-
3730	1986	60	2046	1,380	24	73	-
3731	1989	60	2049	1,970	27	95	-
3732	1989	60	2049	3,210	27	155	-
3733	1989	60	2049	1,420	27	69	-
3734	1989	60	2049	3,150	27	152	-
3735	1989	60	2049	1,770	27	85	-
3736	1989	60	2049	3,150	27	152	-
3737	1989	60	2049	1,670	27	81	-
3738	1989	60	2049	3,030	27	146	-
3739	1989	60	2049	1,470	27	71	-
3740	1989	60	2049	3,110	27	150	-
3741	1989	60	2049	1,480	27	71	-
3742	1989	60	2049	3,010	27	145	-
3743	1989	60	2049	2,050	27	99	-
3744	1989	60	2049	3,080	27	149	-
3745	1989	60	2049	1,680	27	81	-
3746	1989	60	2049	3,170	27	153	-
3747	1989	60	2049	1,300	27	63	-
3748	1989	60	2049	3,070	27	148	-
3749	1979	60	2039	3,340	17	234	-
3750	1979	60	2039	3,110	17	218	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3751	1979	60	2039	2,660	17	186	-
3752	1979	60	2039	1,820	17	127	-
3753	1979	60	2039	2,630	17	184	-
3754	1979	60	2039	3,090	17	216	-
3755	1979	60	2039	2,800	17	196	-
3756	1979	60	2039	2,920	17	204	-
3757	1975	60	2035	3,560	13	314	-
3758	1975	60	2035	1,160	13	102	-
3759	1975	60	2035	3,520	13	310	-
3760	1975	60	2035	1,220	13	108	-
3761	1975	60	2035	3,480	13	307	-
3762	1975	60	2035	1,480	13	130	-
3763	1975	60	2035	3,380	13	298	-
3764	1975	60	2035	3,350	13	295	-
3765	1975	60	2035	1,360	13	120	-
3766	1974	60	2034	660	12	62	-
3767	1974	60	2034	4,160	12	393	-
3768	1974	60	2034	1,240	12	117	-
3769	1974	60	2034	3,710	12	351	-
3770	1974	60	2034	3,810	12	360	-
3771	1987	60	2047	970	25	50	-
3772	1987	60	2047	3,610	25	185	-
3773	1987	60	2047	1,070	25	55	-
3774	1987	60	2047	1,220	25	62	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3775	1987	60	2047	3,450	25	177	-
3776	1987	60	2047	1,330	25	68	-
3777	1975	60	2035	4,080	13	360	-
3778	1975	60	2035	620	13	55	-
3779	1975	60	2035	4,010	13	353	-
3780	1975	60	2035	1,040	13	92	-
3781	1975	60	2035	3,880	13	342	-
3782	1975	60	2035	1,210	13	107	-
3783	1975	60	2035	3,910	13	345	-
3784	1975	60	2035	1,040	13	92	-
3785	1975	60	2035	3,600	13	317	-
3786	1975	60	2035	1,520	13	134	-
3787	1975	60	2035	3,260	13	287	-
3788	1975	60	2035	1,660	13	146	-
3789	1975	60	2035	3,020	13	266	-
3790	1975	60	2035	3,240	13	286	-
3791	1975	60	2035	3,510	13	309	-
3792	1975	60	2035	1,110	13	98	-
3793	1975	60	2035	3,690	13	325	-
3794	1987	60	2047	1,450	25	74	-
3795	1987	60	2047	1,240	25	64	-
3796	1987	60	2047	3,640	25	186	-
3797	1987	60	2047	730	25	37	-
3798	1987	60	2047	3,870	25	198	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3799	1987	60	2047	750	25	38	-
3800	1987	60	2047	3,940	25	202	-
3801	1987	60	2047	540	25	28	-
3802	1987	60	2047	4,010	25	205	-
3803	1987	60	2047	730	25	37	-
3804	1987	60	2047	4,210	25	216	-
3805	1987	60	2047	2,310	25	118	-
3806	1987	60	2047	2,770	25	142	-
3807	1987	60	2047	2,230	25	114	-
3808	1987	60	2047	3,000	25	154	-
3809	1987	60	2047	2,100	25	108	-
3810	1987	60	2047	1,950	25	100	-
3811	1987	60	2047	3,040	25	156	-
3812	1972	60	2032	3,520	10	suggested for 10 year capital forecast	3,520
3813	1972	60	2032	1,260	10	suggested for 10 year capital forecast	1,260
3814	1972	60	2032	3,810	10	suggested for 10 year capital forecast	3,810
3815	1972	60	2032	1,200	10	suggested for 10 year capital forecast	1,200



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3816	1972	60	2032	3,590	10	suggested for 10 year capital forecast	3,590
3817	1972	60	2032	1,270	10	suggested for 10 year capital forecast	1,270
3818	1972	60	2032	3,600	10	suggested for 10 year capital forecast	3,600
3819	1972	60	2032	3,510	10	suggested for 10 year capital forecast	3,510
3820	1972	60	2032	3,290	10	suggested for 10 year capital forecast	3,290
3821	1972	60	2032	3,360	10	suggested for 10 year capital forecast	3,360
3822	1987	60	2047	2,170	25	111	-
3823	1987	60	2047	2,390	25	122	-
3824	1987	60	2047	2,420	25	124	-
3825	1975	60	2035	2,470	13	218	-
3826	1987	60	2047	2,740	25	140	-
3827	1987	60	2047	1,890	25	97	-
3828	1987	60	2047	2,840	25	145	-
3829	1987	60	2047	1,830	25	94	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3830	1979	60	2039	4,170	17	292	-
3831	1987	60	2047	3,080	25	158	-
3832	1987	60	2047	1,980	25	101	-
3833	1987	60	2047	2,280	25	117	-
3834	1974	60	2034	2,350	12	222	-
3835	1974	60	2034	1,810	12	171	-
3836	1974	60	2034	2,230	12	211	-
3837	1974	60	2034	1,820	12	172	-
3838	1974	60	2034	2,980	12	282	-
3839	1974	60	2034	3,030	12	287	-
3840	1974	60	2034	1,460	12	138	-
3841	1974	60	2034	3,120	12	295	-
3842	1974	60	2034	3,350	12	317	-
3843	1974	60	2034	1,400	12	132	-
3844	1974	60	2034	1,800	12	170	-
3845	1974	60	2034	1,630	12	154	-
3846	1974	60	2034	2,360	12	223	-
3847	1974	60	2034	1,560	12	148	-
3848	1974	60	2034	3,520	12	333	-
3849	1974	60	2034	1,350	12	128	-
3850	1974	60	2034	3,570	12	338	-
3851	1974	60	2034	1,470	12	139	-
3852	1987	60	2047	1,880	25	96	-
3853	1987	60	2047	1,490	25	76	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3854	1987	60	2047	1,690	25	87	-
3855	1987	60	2047	2,020	25	103	-
3856	1987	60	2047	540	25	28	-
3857	1987	60	2047	3,830	25	196	-
3858	1987	60	2047	810	25	41	-
3859	1987	60	2047	4,210	25	216	-
3860	1987	60	2047	480	25	25	-
3861	1987	60	2047	4,260	25	218	-
3862	1987	60	2047	630	25	32	-
3863	1987	60	2047	4,270	25	219	-
3864	1987	60	2047	650	25	33	-
3865	1987	60	2047	4,130	25	212	-
3866	1974	60	2034	3,780	12	357	-
3867	1974	60	2034	970	12	92	-
3868	1974	60	2034	3,680	12	348	-
3869	1974	60	2034	3,570	12	338	-
3870	1974	60	2034	1,410	12	133	-
3871	1974	60	2034	3,550	12	336	-
3872	1974	60	2034	3,250	12	307	-
3873	1979	60	2039	3,450	17	241	-
3874	1979	60	2039	840	17	59	-
3875	1979	60	2039	3,990	17	279	-
3876	1979	60	2039	490	17	34	-
3877	1979	60	2039	4,140	17	290	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3878	1979	60	2039	690	17	48	-
3879	1979	60	2039	4,250	17	297	-
3880	1979	60	2039	1,010	17	71	-
3881	1979	60	2039	1,030	17	72	-
3882	1979	60	2039	3,530	17	247	-
3883	1979	60	2039	1,300	17	91	-
3884	1979	60	2039	3,640	17	255	-
3885	1979	60	2039	1,170	17	82	-
3886	1979	60	2039	3,870	17	271	-
3887	1979	60	2039	1,160	17	81	-
3888	1979	60	2039	1,060	17	74	-
3889	1979	60	2039	3,740	17	262	-
3890	1995	60	2055	480	33	20	-
3891	1995	60	2055	1,870	33	78	-
3892	1979	60	2039	3,460	17	242	-
3893	1979	60	2039	1,190	17	83	-
3894	1979	60	2039	3,260	17	228	-
3895	1979	60	2039	1,370	17	96	-
3896	1979	60	2039	3,510	17	246	-
3897	1979	60	2039	1,150	17	80	-
3898	1979	60	2039	3,570	17	250	-
3899	1979	60	2039	1,060	17	74	-
3900	1979	60	2039	3,440	17	241	-
3901	1979	60	2039	1,330	17	93	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3902	1979	60	2039	3,420	17	239	-
3903	1979	60	2039	1,300	17	91	-
3904	1979	60	2039	850	17	59	-
3905	1979	60	2039	1,220	17	85	-
3906	1979	60	2039	1,410	17	99	-
3907	1979	60	2039	3,710	17	260	-
3908	1979	60	2039	3,570	17	250	-
3909	1979	60	2039	3,600	17	252	-
3910	1979	60	2039	1,150	17	80	-
3911	1979	60	2039	3,640	17	255	-
3912	1979	60	2039	1,190	17	83	-
3913	1979	60	2039	3,520	17	246	-
3914	1979	60	2039	1,190	17	83	-
3915	1979	60	2039	3,750	17	262	-
3916	1979	60	2039	760	17	53	-
3917	1979	60	2039	3,870	17	271	-
3918	1979	60	2039	750	17	52	-
3919	1979	60	2039	3,890	17	272	-
3920	1979	60	2039	850	17	59	-
3921	1979	60	2039	4,040	17	283	-
3922	1979	60	2039	3,870	17	271	-
3923	1979	60	2039	3,780	17	264	-
3924	1979	60	2039	1,080	17	76	-
3925	1979	60	2039	3,670	17	257	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3926	1979	60	2039	3,680	17	257	-
3927	1979	60	2039	990	17	69	-
3928	1979	60	2039	3,910	17	274	-
3929	1979	60	2039	770	17	54	-
3930	1979	60	2039	3,760	17	263	-
3931	1979	60	2039	980	17	69	-
3932	1979	60	2039	3,510	17	246	-
3933	1979	60	2039	1,140	17	80	-
3934	1979	60	2039	3,400	17	238	-
3935	1979	60	2039	1,260	17	88	-
3936	1979	60	2039	1,130	17	79	-
3937	1979	60	2039	1,160	17	81	-
3938	1979	60	2039	1,180	17	83	-
3939	1979	60	2039	1,090	17	76	-
3940	1979	60	2039	980	17	69	-
3941	1979	60	2039	870	17	61	-
3942	1979	60	2039	920	17	64	-
3943	1979	60	2039	1,120	17	78	-
3944	1979	60	2039	3,770	17	264	-
3945	1979	60	2039	3,680	17	257	-
3946	1979	60	2039	7,940	17	556	-
3947	1979	60	2039	11,050	17	773	-
3948	1979	60	2039	4,100	17	287	-
3949	1979	60	2039	3,600	17	252	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3950	1979	60	2039	3,570	17	250	-
3951	1979	60	2039	3,550	17	248	-
3952	1979	60	2039	2,930	17	205	-
3953	1979	60	2039	3,410	17	239	-
3954	1979	60	2039	3,490	17	244	-
3955	1979	60	2039	3,480	17	243	-
3956	1979	60	2039	3,730	17	261	-
3957	1979	60	2039	3,080	17	216	-
3958	1979	60	2039	940	17	66	-
3959	1979	60	2039	1,060	17	74	-
3960	1979	60	2039	1,070	17	75	-
3961	1987	60	2047	1,240	25	64	-
3962	1987	60	2047	17,540	25	898	-
3963	1987	60	2047	1,220	25	62	-
3964	1979	60	2039	1,500	17	105	-
3965	1979	60	2039	640	17	45	-
3966	1984	60	2044	1,420	22	80	-
3967	1984	60	2044	6,850	22	388	-
3968	1979	60	2039	4,040	17	283	-
3969	1979	60	2039	640	17	45	-
3970	1979	60	2039	4,030	17	282	-
3971	1979	60	2039	4,150	17	290	-
3972	1979	60	2039	730	17	51	-
3973	1979	60	2039	2,250	17	157	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3974	1979	60	2039	2,390	17	167	-
3975	1979	60	2039	3,670	17	257	-
3976	1979	60	2039	1,060	17	74	-
3977	1979	60	2039	1,080	17	76	-
3978	1979	60	2039	1,110	17	78	-
3979	1979	60	2039	1,080	17	76	-
3980	1979	60	2039	1,020	17	71	-
3981	1979	60	2039	980	17	69	-
3982	1979	60	2039	910	17	64	-
3983	1979	60	2039	940	17	66	-
3984	1979	60	2039	1,010	17	71	-
3985	1979	60	2039	100	17	7	-
3986	1979	60	2039	220	17	15	-
3987	1979	60	2039	270	17	19	-
3988	1979	60	2039	330	17	23	-
3989	1979	60	2039	390	17	27	-
3990	1979	60	2039	400	17	28	-
3991	1979	60	2039	410	17	29	-
3992	1979	60	2039	240	17	17	-
3993	1979	60	2039	260	17	18	-
3994	1979	60	2039	280	17	20	-
3995	1979	60	2039	270	17	19	-
3996	1979	60	2039	160	17	11	-
3997	1979	60	2039	230	17	16	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3998	1979	60	2039	310	17	22	-
3999	1979	60	2039	280	17	20	-
4000	1979	60	2039	170	17	12	-
4001	1979	60	2039	220	17	15	-
4002	1979	60	2039	220	17	15	-
4003	1979	60	2039	340	17	24	-
4004	1979	60	2039	510	17	36	-
4005	1979	60	2039	4,150	17	290	-
4006	1979	60	2039	440	17	31	-
4007	1979	60	2039	1,030	17	72	-
4008	1979	60	2039	430	17	30	-
4009	1979	60	2039	4,090	17	286	-
4010	1979	60	2039	430	17	30	-
4011	1979	60	2039	380	17	27	-
4012	1979	60	2039	2,920	17	204	-
4013	1979	60	2039	770	17	54	-
4014	1979	60	2039	2,560	17	179	-
4015	1979	60	2039	2,730	17	191	-
4016	1979	60	2039	1,020	17	71	-
4017	1979	60	2039	1,230	17	86	-
4018	1979	60	2039	7,050	17	493	-
4019	1979	60	2039	4,740	17	332	-
4020	1979	60	2039	4,950	17	346	-
4021	1979	60	2039	3,370	17	236	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4022	1979	60	2039	280	17	20	-
4023	1979	60	2039	650	17	45	-
4024	1979	60	2039	940	17	66	-
4025	1979	60	2039	1,050	17	73	-
4026	1979	60	2039	970	17	68	-
4027	1979	60	2039	760	17	53	-
4028	1979	60	2039	680	17	48	-
4029	1979	60	2039	340	17	24	-
4030	1979	60	2039	310	17	22	-
4031	1979	60	2039	4,160	17	291	-
4032	1995	60	2055	3,180	33	133	-
4033	1995	60	2055	3,530	33	147	-
4034	1987	60	2047	19,280	25	988	-
4035	1995	60	2055	13,940	33	581	-
4036	1979	60	2039	1,100	17	77	-
4037	1979	60	2039	3,070	17	215	-
4038	1979	60	2039	1,320	17	92	-
4039	1979	60	2039	1,530	17	107	-
4040	1979	60	2039	1,590	17	111	-
4041	1979	60	2039	1,580	17	111	-
4042	1979	60	2039	1,730	17	121	-
4043	1979	60	2039	1,950	17	136	-
4044	1979	60	2039	3,110	17	218	-
4045	1979	60	2039	1,460	17	102	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4046	1979	60	2039	1,620	17	113	-
4047	1979	60	2039	1,580	17	111	-
4048	1979	60	2039	9,750	17	682	-
4049	1979	60	2039	570	17	40	-
4050	1979	60	2039	220	17	15	-
4051	1979	60	2039	300	17	21	-
4052	1979	60	2039	260	17	18	-
4053	1979	60	2039	480	17	34	-
4054	1979	60	2039	430	17	30	-
4055	1979	60	2039	250	17	17	-
4056	1979	60	2039	280	17	20	-
4057	1979	60	2039	350	17	24	-
4058	1979	60	2039	310	17	22	-
4059	1979	60	2039	320	17	22	-
4060	1979	60	2039	390	17	27	-
4061	1977	60	2037	4,400	15	342	-
4062	1979	60	2039	250	17	17	-
4063	1979	60	2039	210	17	15	-
4064	1979	60	2039	130	17	9	-
4065	1979	60	2039	220	17	15	-
4066	1979	60	2039	180	17	13	-
4067	1979	60	2039	260	17	18	-
4068	1979	60	2039	540	17	38	-
4069	1979	60	2039	510	17	36	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4070	1979	60	2039	540	17	38	-
4071	1979	60	2039	440	17	31	-
4072	1979	60	2039	640	17	45	-
4073	1979	60	2039	370	17	26	-
4074	1979	60	2039	410	17	29	-
4075	1979	60	2039	420	17	29	-
4076	1979	60	2039	440	17	31	-
4077	1979	60	2039	390	17	27	-
4078	1979	60	2039	760	17	53	-
4079	1979	60	2039	680	17	48	-
4080	1979	60	2039	240	17	17	-
4081	1979	60	2039	220	17	15	-
4082	1979	60	2039	230	17	16	-
4083	1979	60	2039	230	17	16	-
4084	1979	60	2039	570	17	40	-
4085	1979	60	2039	590	17	41	-
4086	1979	60	2039	660	17	46	-
4087	1979	60	2039	530	17	37	-
4088	1979	60	2039	910	17	64	-
4089	1979	60	2039	410	17	29	-
4090	1979	60	2039	490	17	34	-
4091	1979	60	2039	2,630	17	184	-
4092	1979	60	2039	2,600	17	182	-
4093	1979	60	2039	6,680	17	467	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4094	1979	60	2039	2,450	17	171	-
4095	1979	60	2039	6,880	17	481	-
4096	1979	60	2039	2,480	17	174	-
4097	1979	60	2039	2,350	17	164	-
4098	1979	60	2039	2,630	17	184	-
4099	1979	60	2039	2,670	17	187	-
4100	1979	60	2039	6,020	17	421	-
4101	1979	60	2039	6,350	17	444	-
4102	1979	60	2039	680	17	48	-
4103	1979	60	2039	3,840	17	269	-
4104	1979	60	2039	570	17	40	-
4105	1979	60	2039	3,370	17	236	-
4106	1979	60	2039	4,120	17	288	-
4107	1979	60	2039	550	17	38	-
4108	1979	60	2039	2,020	17	141	-
4109	1979	60	2039	2,490	17	174	-
4110	1979	60	2039	2,650	17	185	-
4111	1979	60	2039	2,070	17	145	-
4112	1979	60	2039	2,600	17	182	-
4113	1979	60	2039	330	17	23	-
4114	1979	60	2039	330	17	23	-
4115	1979	60	2039	410	17	29	-
4116	1979	60	2039	400	17	28	-
4117	1979	60	2039	490	17	34	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4118	1979	60	2039	520	17	36	-
4119	1979	60	2039	700	17	49	-
4120	1979	60	2039	590	17	41	-
4121	1979	60	2039	400	17	28	-
4122	1979	60	2039	600	17	42	-
4123	1979	60	2039	190	17	13	-
4124	1979	60	2039	230	17	16	-
4125	1979	60	2039	250	17	17	-
4126	1979	60	2039	230	17	16	-
4127	1979	60	2039	190	17	13	-
4128	1979	60	2039	190	17	13	-
4129	1979	60	2039	170	17	12	-
4130	1979	60	2039	170	17	12	-
4131	1979	60	2039	510	17	36	-
4132	1979	60	2039	440	17	31	-
4133	1979	60	2039	1,980	17	139	-
4134	1979	60	2039	2,030	17	142	-
4135	1979	60	2039	2,200	17	154	-
4136	1979	60	2039	1,980	17	139	-
4137	1979	60	2039	2,060	17	144	-
4138	1979	60	2039	1,870	17	131	-
4139	1979	60	2039	2,150	17	150	-
4140	1979	60	2039	1,930	17	135	-
4141	1979	60	2039	2,110	17	148	-
4142	1979	60	2039	1,970	17	138	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4143	1979	60	2039	2,100	17	147	-
4144	1979	60	2039	1,820	17	127	-
4145	1979	60	2039	530	17	37	-
4146	1979	60	2039	550	17	38	-
4147	1979	60	2039	560	17	39	-
4148	1979	60	2039	440	17	31	-
4149	1979	60	2039	400	17	28	-
4150	1979	60	2039	530	17	37	-
4151	1979	60	2039	560	17	39	-
4152	1979	60	2039	710	17	50	-
4153	1979	60	2039	720	17	50	-
4154	1979	60	2039	360	17	25	-
4155	1979	60	2039	340	17	24	-
4156	1979	60	2039	560	17	39	-
4157	1979	60	2039	460	17	32	-
4158	1979	60	2039	360	17	25	-
4159	1979	60	2039	360	17	25	-
4160	1979	60	2039	980	17	69	-
4161	1979	60	2039	520	17	36	-
4162	1979	60	2039	450	17	31	-
4163	1979	60	2039	400	17	28	-
4164	1979	60	2039	880	17	62	-
4165	1979	60	2039	750	17	52	-
4166	1979	60	2039	320	17	22	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4167	1979	60	2039	320	17	22	-
4168	1979	60	2039	510	17	36	-
4169	1979	60	2039	460	17	32	-
4170	1979	60	2039	910	17	64	-
4171	1979	60	2039	1,030	17	72	-
4172	1979	60	2039	520	17	36	-
4173	1979	60	2039	520	17	36	-
4174	1979	60	2039	500	17	35	-
4175	1979	60	2039	380	17	27	-
4176	1979	60	2039	430	17	30	-
4177	1979	60	2039	570	17	40	-
4178	1979	60	2039	560	17	39	-
4179	1979	60	2039	420	17	29	-
4180	1979	60	2039	430	17	30	-
4181	1979	60	2039	3,320	17	232	-
4182	1979	60	2039	3,320	17	232	-
4183	1979	60	2039	3,220	17	225	-
4184	1979	60	2039	3,360	17	235	-
4185	1979	60	2039	1,260	17	88	-
4186	1979	60	2039	1,810	17	127	-
4187	1979	60	2039	1,050	17	73	-
4188	1979	60	2039	950	17	66	-
4189	1979	60	2039	3,180	17	223	-
4190	1979	60	2039	770	17	54	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4191	1979	60	2039	3,540	17	248	-
4192	1979	60	2039	4,910	17	344	-
4193	1979	60	2039	4,950	17	346	-
4194	1979	60	2039	820	17	57	-
4195	1979	60	2039	4,900	17	343	-
4196	1979	60	2039	1,000	17	70	-
4197	1979	60	2039	4,740	17	332	-
4198	1979	60	2039	990	17	69	-
4199	1979	60	2039	4,710	17	330	-
4200	1979	60	2039	1,450	17	101	-
4201	1979	60	2039	1,180	17	83	-
4202	1979	60	2039	4,920	17	344	-
4203	1979	60	2039	540	17	38	-
4204	1979	60	2039	630	17	44	-
4205	1979	60	2039	540	17	38	-
4206	1979	60	2039	630	17	44	-
4207	1979	60	2039	320	17	22	-
4208	1979	60	2039	480	17	34	-
4209	1979	60	2039	1,050	17	73	-
4210	1979	60	2039	800	17	56	-
4211	1979	60	2039	1,050	17	73	-
4212	1979	60	2039	1,100	17	77	-
4213	1979	60	2039	340	17	24	-
4214	1979	60	2039	310	17	22	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4215	1979	60	2039	540	17	38	-
4216	1979	60	2039	530	17	37	-
4217	1979	60	2039	810	17	57	-
4218	1979	60	2039	860	17	60	-
4219	1979	60	2039	2,780	17	195	-
4220	1979	60	2039	4,400	17	308	-
4221	1979	60	2039	1,300	17	91	-
4222	1979	60	2039	780	17	55	-
4223	1979	60	2039	1,190	17	83	-
4224	1979	60	2039	280	17	20	-
4225	1979	60	2039	640	17	45	-
4226	1979	60	2039	640	17	45	-
4227	1972	60	2032	1,630	10	suggested for 10 year capital forecast	1,630
4228	1972	60	2032	1,890	10	suggested for 10 year capital forecast	1,890
4229	1979	60	2039	1,050	17	73	-
4230	1979	60	2039	1,270	17	89	-
4231	1979	60	2039	1,310	17	92	-
4232	1979	60	2039	560	17	39	-
4233	1979	60	2039	540	17	38	-
4234	1979	60	2039	1,430	17	100	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4235	1979	60	2039	530	17	37	-
4236	1979	60	2039	550	17	38	-
4237	1979	60	2039	16,710	17	1,169	-
4238	1979	60	2039	660	17	46	-
4239	1979	60	2039	1,490	17	104	-
4240	1979	60	2039	580	17	41	-
4241	1979	60	2039	4,300	17	301	-
4242	1979	60	2039	4,630	17	324	-
4243	1979	60	2039	4,170	17	292	-
4244	1979	60	2039	630	17	44	-
4245	1979	60	2039	810	17	57	-
4246	1979	60	2039	660	17	46	-
4247	1979	60	2039	530	17	37	-
4248	1979	60	2039	350	17	24	-
4249	1979	60	2039	350	17	24	-
4250	1979	60	2039	600	17	42	-
4251	1979	60	2039	680	17	48	-
4252	1979	60	2039	390	17	27	-
4253	1979	60	2039	900	17	63	-
4254	1979	60	2039	510	17	36	-
4255	1979	60	2039	450	17	31	-
4256	1979	60	2039	310	17	22	-
4257	1979	60	2039	320	17	22	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4258	1979	60	2039	2,550	17	178	-
4259	1979	60	2039	340	17	24	-
4260	1979	60	2039	290	17	20	-
4261	1979	60	2039	280	17	20	-
4262	1979	60	2039	640	17	45	-
4263	1979	60	2039	660	17	46	-
4264	1979	60	2039	410	17	29	-
4265	1979	60	2039	400	17	28	-
4266	1979	60	2039	440	17	31	-
4267	1977	60	2037	1,670	15	130	-
4268	1977	60	2037	1,470	15	114	-
				900		suggested for 10 year capital forecast	900
4269	1966	60	2026		4		-
4270	1976	60	2036	4,460	14	368	-
4271	1995	60	2055	19,270	33	803	-
4272	1995	60	2055	5,240	33	218	-
4273	1995	60	2055	1,100	33	46	-
4274	1987	60	2047	730	25	37	-
4275	1984	60	2044	1,240	22	70	-
4276	1979	60	2039	3,820	17	267	-
4277	1979	60	2039	1,940	17	136	-
4278	1979	60	2039	1,630	17	114	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4279	1979	60	2039	1,880	17	132	-
4280	1979	60	2039	5,530	17	387	-
4281	1979	60	2039	200	17	14	-
4282	1979	60	2039	230	17	16	-
4283	1979	60	2039	800	17	56	-
4284	1979	60	2039	460	17	32	-
4285	1979	60	2039	3,220	17	225	-
4286	1979	60	2039	3,440	17	241	-
4287	1979	60	2039	1,170	17	82	-
4288	1979	60	2039	3,370	17	236	-
4289	1979	60	2039	920	17	64	-
4290	1979	60	2039	970	17	68	-
4291	1979	60	2039	3,090	17	216	-
4292	1979	60	2039	450	17	31	-
4293	1979	60	2039	460	17	32	-
4294	1979	60	2039	470	17	33	-
4295	1979	60	2039	450	17	31	-
4296	1979	60	2039	480	17	34	-
4297	1979	60	2039	710	17	50	-
4298	1979	60	2039	560	17	39	-
4299	1979	60	2039	290	17	20	-
4300	1979	60	2039	150	17	10	-
4301	1979	60	2039	40	17	3	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4302	1979	60	2039	480	17	34	-
4303	1979	60	2039	300	17	21	-
4304	1979	60	2039	380	17	27	-
4305	1979	60	2039	300	17	21	-
4306	1979	60	2039	860	17	60	-
4307	1979	60	2039	970	17	68	-
4308	1979	60	2039	610	17	43	-
4309	1979	60	2039	910	17	64	-
4310	1979	60	2039	1,200	17	84	-
4311	1979	60	2039	6,850	17	479	-
4312	1984	60	2044	1,870	22	106	-
4313	1984	60	2044	8,240	22	467	-
4314	1979	60	2039	4,810	17	337	-
4315	1979	60	2039	1,080	17	76	-
4316	1979	60	2039	3,120	17	218	-
4317	1979	60	2039	1,190	17	83	-
4318	1979	60	2039	3,590	17	251	-
4319	1979	60	2039	800	17	56	-
4320	1979	60	2039	2,670	17	187	-
4321	1979	60	2039	720	17	50	-
4322	1979	60	2039	2,830	17	198	-
4323	1979	60	2039	2,870	17	201	-
4324	1979	60	2039	630	17	44	-
4325	1979	60	2039	650	17	45	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4326	1979	60	2039	2,930	17	205	-
4327	1979	60	2039	830	17	58	-
4328	1979	60	2039	3,960	17	277	-
4329	1976	60	2036	2,000	14	165	-
4330	1976	60	2036	480	14	40	-
4331	1976	60	2036	440	14	36	-
4332	1975	60	2035	960	13	85	-
4333	1975	60	2035	1,240	13	109	-
4334	1979	60	2039	2,220	17	155	-
4335	1974	60	2034	70	12	7	-
4336	1974	60	2034	1,170	12	111	-
4337	1979	60	2039	1,290	17	90	-
4338	1979	60	2039	650	17	45	-
4339	1972	60	2032	340	10	suggested for 10 year capital forecast	340
4340	1972	60	2032	2,760	10	suggested for 10 year capital forecast	2,760
4341	1979	60	2039	1,200	17	84	-
4342	1972	60	2032	1,040	10	suggested for 10 year capital forecast	1,040
4343	1979	60	2039	3,220	17	225	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4344	1979	60	2039	240	17	17	-
4345	1979	60	2039	820	17	57	-
4346	1979	60	2039	490	17	34	-
4347	1979	60	2039	3,410	17	239	-
4348	1979	60	2039	2,110	17	148	-
4349	1979	60	2039	270	17	19	-
4350	1979	60	2039	21,260	17	1,488	-
4351	1979	60	2039	7,020	17	491	-
4352	1978	60	2038	5,540	16	408	-
4353	1979	60	2039	1,210	17	85	-
4354	1979	60	2039	540	17	38	-
4355	1979	60	2039	900	17	63	-
4356	1972	60	2032	1,600	10	suggested for 10 year capital forecast	1,600
4357	1972	60	2032	980	10	suggested for 10 year capital forecast	980
4358	1972	60	2032	4,120	10	suggested for 10 year capital forecast	4,120
4359	1972	60	2032	3,870	10	suggested for 10 year capital forecast	3,870



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4360	1979	60	2039	560	17	39	-
4361	1979	60	2039	560	17	39	-
4362	1979	60	2039	530	17	37	-
4363	1979	60	2039	550	17	38	-
4364	1979	60	2039	430	17	30	-
4365	1979	60	2039	450	17	31	-
4366	1979	60	2039	630	17	44	-
4367	1979	60	2039	610	17	43	-
4368	1979	60	2039	750	17	52	-
4369	1979	60	2039	2,860	17	200	-
4370	1979	60	2039	1,300	17	91	-
4371	1979	60	2039	3,490	17	244	-
4372	1979	60	2039	1,110	17	78	-
4373	1979	60	2039	610	17	43	-
4374	1979	60	2039	510	17	36	-
4375	1979	60	2039	510	17	36	-
4376	1979	60	2039	4,190	17	293	-
4377	1979	60	2039	10,440	17	730	-
4378	1979	60	2039	590	17	41	-
4379	1979	60	2039	2,620	17	183	-
4380	1979	60	2039	2,070	17	145	-
4381	1978	60	2038	500	16	37	-
4382	1978	60	2038	450	16	33	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4383	1979	60	2039	5,360	17	375	-
4384	1979	60	2039	1,920	17	134	-
4385	1979	60	2039	290	17	20	-
4386	1979	60	2039	290	17	20	-
4387	1979	60	2039	160	17	11	-
4388	1979	60	2039	170	17	12	-
4389	1979	60	2039	530	17	37	-
4390	1979	60	2039	520	17	36	-
4391	1979	60	2039	530	17	37	-
4392	1979	60	2039	560	17	39	-
4393	1979	60	2039	560	17	39	-
4394	1979	60	2039	400	17	28	-
4395	1979	60	2039	400	17	28	-
4396	1979	60	2039	360	17	25	-
4397	1979	60	2039	470	17	33	-
4398	1979	60	2039	2,920	17	204	-
4399	1979	60	2039	770	17	54	-
4400	1979	60	2039	1,100	17	77	-
4401	1979	60	2039	1,130	17	79	-
4402	1979	60	2039	3,040	17	213	-
4403	1979	60	2039	950	17	66	-
4404	1979	60	2039	1,040	17	73	-
4405	1979	60	2039	940	17	66	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4406	1979	60	2039	1,090	17	76	-
4407	1979	60	2039	1,300	17	91	-
4408	1979	60	2039	1,270	17	89	-
4409	1979	60	2039	980	17	69	-
4410	1979	60	2039	940	17	66	-
4411	1979	60	2039	880	17	62	-
4412	1979	60	2039	1,590	17	111	-
4413	1979	60	2039	1,670	17	117	-
4414	1979	60	2039	4,210	17	295	-
4415	1979	60	2039	4,700	17	329	-
4416	1979	60	2039	4,270	17	299	-
4417	1979	60	2039	990	17	69	-
4418	1979	60	2039	3,890	17	272	-
4419	1979	60	2039	820	17	57	-
4420	1979	60	2039	3,800	17	266	-
4421	1979	60	2039	790	17	55	-
4422	1979	60	2039	3,540	17	248	-
4423	1979	60	2039	1,920	17	134	-
4424	1979	60	2039	3,300	17	231	-
4425	1979	60	2039	1,740	17	122	-
4426	1979	60	2039	1,780	17	125	-
4427	1979	60	2039	1,750	17	122	-
4428	1979	60	2039	3,120	17	218	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4429	1979	60	2039	2,270	17	159	-
4430	1979	60	2039	3,360	17	235	-
4431	1979	60	2039	1,770	17	124	-
4432	1979	60	2039	3,500	17	245	-
4433	1979	60	2039	1,430	17	100	-
4434	1979	60	2039	3,300	17	231	-
4435	1979	60	2039	1,390	17	97	-
4436	1979	60	2039	3,310	17	232	-
4437	1979	60	2039	1,550	17	108	-
4438	1979	60	2039	3,660	17	256	-
4439	1979	60	2039	2,620	17	183	-
4440	1979	60	2039	1,070	17	75	-
4441	1979	60	2039	1,080	17	76	-
4442	1979	60	2039	3,290	17	230	-
4443	1979	60	2039	1,460	17	102	-
4444	1979	60	2039	3,480	17	243	-
4445	1979	60	2039	1,650	17	115	-
4446	1979	60	2039	3,130	17	219	-
4447	1979	60	2039	3,140	17	220	-
4448	1979	60	2039	1,620	17	113	-
4449	1979	60	2039	2,950	17	206	-
4450	1979	60	2039	1,960	17	137	-
4451	1979	60	2039	3,170	17	222	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4452	1979	60	2039	2,040	17	143	-
4453	1979	60	2039	3,340	17	234	-
4454	1979	60	2039	1,400	17	98	-
4455	1979	60	2039	3,250	17	227	-
4456	1979	60	2039	11,510	17	805	-
4457	1979	60	2039	1,170	17	82	-
4458	1979	60	2039	3,340	17	234	-
4459	1979	60	2039	13,860	17	970	-
4460	1979	60	2039	1,750	17	122	-
4461	1979	60	2039	2,520	17	176	-
4462	1979	60	2039	1,460	17	102	-
4463	1979	60	2039	720	17	50	-
4464	1979	60	2039	1,340	17	94	-
4465	1979	60	2039	1,390	17	97	-
4466	1979	60	2039	1,650	17	115	-
4467	1979	60	2039	1,690	17	118	-
4468	1979	60	2039	3,310	17	232	-
4469	1979	60	2039	1,210	17	85	-
4470	1979	60	2039	4,230	17	296	-
4471	1979	60	2039	3,590	17	251	-
4472	1979	60	2039	1,100	17	77	-
4473	1979	60	2039	1,630	17	114	-
4474	1979	60	2039	1,590	17	111	-
4475	1979	60	2039	4,470	17	313	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4476	1979	60	2039	560	17	39	-
4477	1979	60	2039	4,590	17	321	-
4478	1979	60	2039	630	17	44	-
4479	1979	60	2039	11,780	17	824	-
4480	1979	60	2039	3,150	17	220	-
4481	1979	60	2039	3,580	17	250	-
4482	1979	60	2039	1,190	17	83	-
4483	1987	60	2047	2,910	25	149	-
4484	1987	60	2047	1,750	25	90	-
4485	1987	60	2047	2,880	25	148	-
4486	1987	60	2047	1,860	25	95	-
4487	1987	60	2047	2,870	25	147	-
4488	1987	60	2047	1,760	25	90	-
4489	1987	60	2047	2,690	25	138	-
4490	1979	60	2039	3,230	17	226	-
4491	1979	60	2039	2,320	17	162	-
4492	1979	60	2039	2,890	17	202	-
4493	1979	60	2039	3,240	17	227	-
4494	1979	60	2039	1,320	17	92	-
4495	1979	60	2039	1,360	17	95	-
4496	1979	60	2039	3,470	17	243	-
4497	1979	60	2039	1,930	17	135	-
4498	1979	60	2039	3,280	17	230	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4499	1972	60	2032	580	10	suggested for 10 year capital forecast	580
4500	1979	60	2039	490	17		34
4501	1974	60	2034	360	12		34
4502	1979	60	2039	370	17		26
4503	1986	60	2046	530	24		28
4504	1979	60	2039	370	17		26
4505	1979	60	2039	550	17		38
4506	1979	60	2039	370	17		26
4507	1979	60	2039	450	17		31
4508	1979	60	2039	250	17		17
4509	1979	60	2039	810	17		57
4510	1979	60	2039	780	17		55
4511	1979	60	2039	270	17		19
4512	1972	60	2032	1,020	10	suggested for 10 year capital forecast	1,020
4513	1972	60	2032	1,120	10	suggested for 10 year capital forecast	1,120
4514	1972	60	2032	3,320	10	suggested for 10 year capital forecast	3,320



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4515	1972	60	2032	1,020	10	suggested for 10 year capital forecast	1,020
4516	1972	60	2032	3,720	10	suggested for 10 year capital forecast	3,720
4517	1972	60	2032	1,050	10	suggested for 10 year capital forecast	1,050
4518	1972	60	2032	3,810	10	suggested for 10 year capital forecast	3,810
4519	1972	60	2032	1,120	10	suggested for 10 year capital forecast	1,120
4520	1972	60	2032	3,420	10	suggested for 10 year capital forecast	3,420
4521	1972	60	2032	1,030	10	suggested for 10 year capital forecast	1,030
4522	1972	60	2032	3,720	10	suggested for 10 year capital forecast	3,720
4523	1972	60	2032	1,110	10	suggested for 10 year capital forecast	1,110



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4524	1972	60	2032	3,720	10	suggested for 10 year capital forecast	3,720
4525	1972	60	2032	1,080	10	suggested for 10 year capital forecast	1,080
4526	1972	60	2032	1,180	10	suggested for 10 year capital forecast	1,180
4527	1972	60	2032	3,620	10	suggested for 10 year capital forecast	3,620
4528	1972	60	2032	1,160	10	suggested for 10 year capital forecast	1,160
4529	1972	60	2032	5,040	10	suggested for 10 year capital forecast	5,040
4530	1972	60	2032	7,320	10	suggested for 10 year capital forecast	7,320
4531	1972	60	2032	8,660	10	suggested for 10 year capital forecast	8,660
4532	1972	60	2032	100	10	suggested for 10 year capital forecast	100



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4533	1972	60	2032	380	10	suggested for 10 year capital forecast	380
4534	1972	60	2032	990	10	suggested for 10 year capital forecast	990
4535	1972	60	2032	3,490	10	suggested for 10 year capital forecast	3,490
4536	1972	60	2032	1,170	10	suggested for 10 year capital forecast	1,170
4537	1972	60	2032	3,420	10	suggested for 10 year capital forecast	3,420
4538	1972	60	2032	1,220	10	suggested for 10 year capital forecast	1,220
4539	1972	60	2032	1,370	10	suggested for 10 year capital forecast	1,370
4540	1972	60	2032	3,340	10	suggested for 10 year capital forecast	3,340
4541	1972	60	2032	1,360	10	suggested for 10 year capital forecast	1,360



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4542	1972	60	2032	3,290	10	suggested for 10 year capital forecast	3,290
4543	1972	60	2032	1,240	10	suggested for 10 year capital forecast	1,240
4544	1972	60	2032	3,390	10	suggested for 10 year capital forecast	3,390
4545	1972	60	2032	1,210	10	suggested for 10 year capital forecast	1,210
4546	1972	60	2032	3,540	10	suggested for 10 year capital forecast	3,540
4547	1972	60	2032	1,200	10	suggested for 10 year capital forecast	1,200
4548	1972	60	2032	3,560	10	suggested for 10 year capital forecast	3,560
4549	1972	60	2032	1,210	10	suggested for 10 year capital forecast	1,210
4550	1972	60	2032	3,570	10	suggested for 10 year capital forecast	3,570



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4551	1972	60	2032	970	10	suggested for 10 year capital forecast	970
4552	1972	60	2032	1,090	10	suggested for 10 year capital forecast	1,090
4553	1972	60	2032	3,760	10	suggested for 10 year capital forecast	3,760
4554	1972	60	2032	1,370	10	suggested for 10 year capital forecast	1,370
4555	1972	60	2032	3,650	10	suggested for 10 year capital forecast	3,650
4556	1972	60	2032	3,580	10	suggested for 10 year capital forecast	3,580
4557	1972	60	2032	1,220	10	suggested for 10 year capital forecast	1,220
4558	1972	60	2032	1,090	10	suggested for 10 year capital forecast	1,090
4559	1972	60	2032	3,620	10	suggested for 10 year capital forecast	3,620



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4560	1972	60	2032	1,120	10	suggested for 10 year capital forecast	1,120
4561	1972	60	2032	1,110	10	suggested for 10 year capital forecast	1,110
4562	1972	60	2032	3,690	10	suggested for 10 year capital forecast	3,690
4563	1972	60	2032	1,130	10	suggested for 10 year capital forecast	1,130
4564	1972	60	2032	3,580	10	suggested for 10 year capital forecast	3,580
4565	1972	60	2032	3,830	10	suggested for 10 year capital forecast	3,830
4566	1972	60	2032	3,840	10	suggested for 10 year capital forecast	3,840
4567	1972	60	2032	4,130	10	suggested for 10 year capital forecast	4,130
4568	1972	60	2032	4,250	10	suggested for 10 year capital forecast	4,250



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4569	1972	60	2032	420	10	suggested for 10 year capital forecast	420
4570	1972	60	2032	3,590	10	suggested for 10 year capital forecast	3,590
4571	1972	60	2032	2,190	10	suggested for 10 year capital forecast	2,190
4572	1972	60	2032	1,520	10	suggested for 10 year capital forecast	1,520
4573	1972	60	2032	4,650	10	suggested for 10 year capital forecast	4,650
4574	1972	60	2032	4,550	10	suggested for 10 year capital forecast	4,550
4575	1972	60	2032	4,080	10	suggested for 10 year capital forecast	4,080
4576	1972	60	2032	1,160	10	suggested for 10 year capital forecast	1,160
4577	1972	60	2032	3,440	10	suggested for 10 year capital forecast	3,440



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4578	1972	60	2032	1,440	10	suggested for 10 year capital forecast	1,440
4579	1972	60	2032	3,390	10	suggested for 10 year capital forecast	3,390
4580	1972	60	2032	3,400	10	suggested for 10 year capital forecast	3,400
4581	1972	60	2032	1,240	10	suggested for 10 year capital forecast	1,240
4582	1972	60	2032	3,380	10	suggested for 10 year capital forecast	3,380
4583	1972	60	2032	1,400	10	suggested for 10 year capital forecast	1,400
4584	1972	60	2032	3,500	10	suggested for 10 year capital forecast	3,500
4585	1972	60	2032	1,200	10	suggested for 10 year capital forecast	1,200
4586	1972	60	2032	3,340	10	suggested for 10 year capital forecast	3,340



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4587	1972	60	2032	1,210	10	suggested for 10 year capital forecast	1,210
4588	1972	60	2032	3,400	10	suggested for 10 year capital forecast	3,400
4589	1972	60	2032	1,140	10	suggested for 10 year capital forecast	1,140
4590	1972	60	2032	3,430	10	suggested for 10 year capital forecast	3,430
4591	1979	60	2039	3,620	17	253	-
4592	1979	60	2039	1,150	17	80	-
4593	1979	60	2039	980	17	69	-
4594	1979	60	2039	3,320	17	232	-
4595	1979	60	2039	720	17	50	-
4596	1979	60	2039	3,530	17	247	-
4597	1979	60	2039	3,690	17	258	-
4598	1979	60	2039	3,970	17	278	-
4599	1979	60	2039	690	17	48	-
4600	1979	60	2039	4,110	17	288	-
4601	1979	60	2039	1,240	17	87	-
4602	1979	60	2039	3,620	17	253	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4603	1979	60	2039	3,470	17	243	-
4604	1979	60	2039	1,190	17	83	-
4605	1979	60	2039	3,680	17	257	-
4606	1979	60	2039	1,030	17	72	-
4607	1979	60	2039	3,840	17	269	-
4608	1979	60	2039	1,080	17	76	-
4609	1979	60	2039	3,740	17	262	-
4610	1979	60	2039	880	17	62	-
4611	1979	60	2039	1,390	17	97	-
4612	1979	60	2039	1,070	17	75	-
4613	1979	60	2039	3,450	17	241	-
4614	1979	60	2039	1,050	17	73	-
4615	1979	60	2039	3,430	17	240	-
4616	1979	60	2039	1,090	17	76	-
4617	1979	60	2039	3,470	17	243	-
4618	1979	60	2039	1,180	17	83	-
4619	1979	60	2039	3,980	17	278	-
4620	1979	60	2039	980	17	69	-
4621	1979	60	2039	3,900	17	273	-
4622	1979	60	2039	3,680	17	257	-
4623	1979	60	2039	1,250	17	87	-
4624	1979	60	2039	3,530	17	247	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4625	1979	60	2039	980	17	69	-
4626	1979	60	2039	3,810	17	267	-
4627	1972	60	2032	3,400	10	suggested for 10 year capital forecast	3,400
4628	1972	60	2032	980	10	suggested for 10 year capital forecast	980
4629	1972	60	2032	1,500	10	suggested for 10 year capital forecast	1,500
4630	1972	60	2032	3,440	10	suggested for 10 year capital forecast	3,440
4631	1979	60	2039	1,240	17	87	-
4632	1979	60	2039	1,260	17	88	-
4633	1979	60	2039	570	17	40	-
4634	1979	60	2039	3,880	17	271	-
4635	1979	60	2039	880	17	62	-
4636	1979	60	2039	4,030	17	282	-
4637	1979	60	2039	780	17	55	-
4638	1979	60	2039	4,470	17	313	-
4639	1979	60	2039	1,030	17	72	-
4640	1979	60	2039	6,240	17	437	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4641	1979	60	2039	640	17	45	-
4642	1979	60	2039	3,310	17	232	-
4643	1979	60	2039	810	17	57	-
4644	1979	60	2039	2,920	17	204	-
4645	1979	60	2039	1,220	17	85	-
4646	1979	60	2039	3,580	17	250	-
4647	1979	60	2039	1,190	17	83	-
4648	1979	60	2039	1,080	17	76	-
4649	1979	60	2039	3,700	17	259	-
4650	1979	60	2039	970	17	68	-
4651	1979	60	2039	1,290	17	90	-
4652	1979	60	2039	3,580	17	250	-
4653	1979	60	2039	460	17	32	-
4654	1979	60	2039	1,410	17	99	-
4655	1979	60	2039	1,340	17	94	-
4656	1979	60	2039	1,250	17	87	-
4657	1979	60	2039	1,060	17	74	-
4658	1979	60	2039	3,380	17	236	-
4659	1979	60	2039	1,290	17	90	-
4660	1979	60	2039	3,430	17	240	-
4661	1979	60	2039	1,180	17	83	-
4662	1979	60	2039	3,530	17	247	-
4663	1979	60	2039	1,280	17	90	-
4664	1979	60	2039	3,570	17	250	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4665	1979	60	2039	3,410	17	239	-
4666	1979	60	2039	1,100	17	77	-
4667	1979	60	2039	1,390	17	97	-
4668	1979	60	2039	3,490	17	244	-
4669	1979	60	2039	1,300	17	91	-
4670	1979	60	2039	3,550	17	248	-
4671	1979	60	2039	1,350	17	94	-
4672	1979	60	2039	3,390	17	237	-
4673	1979	60	2039	1,480	17	104	-
4674	1979	60	2039	3,450	17	241	-
4675	1979	60	2039	1,260	17	88	-
4676	1979	60	2039	3,440	17	241	-
4677	1979	60	2039	1,370	17	96	-
4678	1979	60	2039	3,510	17	246	-
4679	1979	60	2039	1,180	17	83	-
4680	1979	60	2039	3,280	17	230	-
4681	1979	60	2039	1,170	17	82	-
4682	1979	60	2039	3,460	17	242	-
4683	1979	60	2039	1,240	17	87	-
4684	1979	60	2039	3,590	17	251	-
4685	1979	60	2039	1,410	17	99	-
4686	1979	60	2039	3,590	17	251	-
4687	1979	60	2039	2,760	17	193	-
4688	1979	60	2039	3,620	17	253	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4689	1979	60	2039	1,430	17	100	-
4690	1979	60	2039	3,350	17	234	-
4691	1979	60	2039	1,450	17	101	-
4692	1979	60	2039	1,650	17	115	-
4693	1979	60	2039	860	17	60	-
4694	1979	60	2039	3,660	17	256	-
4695	1979	60	2039	3,410	17	239	-
4696	1979	60	2039	3,510	17	246	-
4697	1979	60	2039	8,070	17	565	-
4698	1972	60	2032	1,480	10	suggested for 10 year capital forecast	1,480
4699	1972	60	2032	3,380	10	suggested for 10 year capital forecast	3,380
4700	1972	60	2032	1,340	10	suggested for 10 year capital forecast	1,340
4701	1972	60	2032	3,340	10	suggested for 10 year capital forecast	3,340
4702	1972	60	2032	1,230	10	suggested for 10 year capital forecast	1,230



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4703	1972	60	2032	3,500	10	suggested for 10 year capital forecast	3,500
4704	1972	60	2032	1,240	10	suggested for 10 year capital forecast	1,240
4705	1972	60	2032	3,520	10	suggested for 10 year capital forecast	3,520
4706	1972	60	2032	1,190	10	suggested for 10 year capital forecast	1,190
4707	1972	60	2032	3,410	10	suggested for 10 year capital forecast	3,410
4708	1972	60	2032	1,490	10	suggested for 10 year capital forecast	1,490
4709	1972	60	2032	1,200	10	suggested for 10 year capital forecast	1,200
4710	1979	60	2039	600	17	42	-
4711	1979	60	2039	860	17	60	-
4712	1979	60	2039	420	17	29	-
4713	1979	60	2039	2,290	17	160	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4714	1979	60	2039	2,920	17	204	-
4715	1979	60	2039	930	17	65	-
4716	1979	60	2039	3,490	17	244	-
4717	1979	60	2039	3,120	17	218	-
4718	1979	60	2039	1,330	17	93	-
4719	1979	60	2039	1,490	17	104	-
4720	1979	60	2039	3,280	17	230	-
4721	1979	60	2039	1,570	17	110	-
4722	1979	60	2039	1,470	17	103	-
4723	1979	60	2039	3,320	17	232	-
4724	1979	60	2039	1,460	17	102	-
4725	1979	60	2039	3,400	17	238	-
4726	1979	60	2039	1,390	17	97	-
4727	1979	60	2039	3,390	17	237	-
4728	1979	60	2039	3,390	17	237	-
4729	1979	60	2039	1,310	17	92	-
4730	1979	60	2039	3,250	17	227	-
4731	1979	60	2039	7,500	17	525	-
4732	1979	60	2039	990	17	69	-
4733	1979	60	2039	7,630	17	534	-
4734	1979	60	2039	7,000	17	490	-
4735	1979	60	2039	1,190	17	83	-
4736	1987	60	2047	3,400	25	174	-
4737	1979	60	2039	1,230	17	86	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4738	1979	60	2039	3,540	17	248	-
4739	1979	60	2039	250	17	17	-
4740	1979	60	2039	3,590	17	251	-
4741	1979	60	2039	3,600	17	252	-
4742	1979	60	2039	3,470	17	243	-
4743	1979	60	2039	1,280	17	90	-
4744	1979	60	2039	1,160	17	81	-
4745	1979	60	2039	3,630	17	254	-
4746	1979	60	2039	3,680	17	257	-
4747	1979	60	2039	3,750	17	262	-
4748	1979	60	2039	890	17	62	-
4749	1979	60	2039	3,580	17	250	-
4750	1979	60	2039	850	17	59	-
4751	1979	60	2039	2,260	17	158	-
4752	1979	60	2039	710	17	50	-
4753	1979	60	2039	510	17	36	-
4754	1979	60	2039	2,960	17	207	-
4755	1979	60	2039	530	17	37	-
4756	1979	60	2039	11,790	17	825	-
4757	1979	60	2039	1,480	17	104	-
4758	1979	60	2039	3,820	17	267	-
4759	1979	60	2039	880	17	62	-
4760	1979	60	2039	840	17	59	-
4761	1979	60	2039	780	17	55	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4762	1979	60	2039	4,890	17	342	-
4763	1979	60	2039	770	17	54	-
4764	1979	60	2039	6,140	17	430	-
4765	1979	60	2039	5,890	17	412	-
4766	1979	60	2039	5,640	17	395	-
4767	1979	60	2039	1,570	17	110	-
4768	1979	60	2039	1,300	17	91	-
4769	1979	60	2039	3,040	17	213	-
4770	1979	60	2039	5,020	17	351	-
4771	1979	60	2039	5,020	17	351	-
4772	1979	60	2039	5,380	17	376	-
4773	1979	60	2039	5,590	17	391	-
4774	1979	60	2039	3,170	17	222	-
4775	1979	60	2039	1,080	17	76	-
4776	1979	60	2039	4,010	17	281	-
4777	1979	60	2039	3,640	17	255	-
4778	1979	60	2039	7,850	17	549	-
4779	1979	60	2039	3,690	17	258	-
4780	1979	60	2039	1,170	17	82	-
4781	1979	60	2039	3,300	17	231	-
4782	1979	60	2039	1,230	17	86	-
4783	1979	60	2039	1,550	17	108	-
4784	1979	60	2039	1,350	17	94	-



Table A-5 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
4785	1979	60	2039	1,760	17	123	-
4786	1979	60	2039	2,370	17	166	-
4787	1979	60	2039	2,190	17	153	-
4788	1979	60	2039	3,450	17	241	-
4789	1979	60	2039	2,130	17	149	-
4790	1979	60	2039	2,130	17	149	-
4791	1979	60	2039	2,880	17	202	-
4792	1979	60	2039	1,850	17	129	-
4793	1979	60	2039	5,210	17	365	-
4794	1979	60	2039	1,710	17	120	-
4795	1979	60	2039	1,870	17	131	-
4796	1979	60	2039	1,420	17	99	-
4797	1979	60	2039	1,340	17	94	-
4798	1979	60	2039	4,960	17	347	-
4799	1979	60	2039	1,230	17	86	-
Total				3,346,020		199,934	311,780



Table A-6
Municipality of Wawa
Valve Inventory

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2039	1957	50	2022	2,580	0	suggested for 10 year capital forecast	2,580
2662	1966	50	2022	2,290	0	suggested for 10 year capital forecast	2,290
2027	1972	50	2022	2,290	0	suggested for 10 year capital forecast	2,290
2028	1972	50	2022	2,290	0	suggested for 10 year capital forecast	2,290
2101	1972	50	2022	2,290	0	suggested for 10 year capital forecast	2,290
2102	1972	50	2022	2,290	0	suggested for 10 year capital forecast	2,290
2103	1972	50	2022	2,290	0	suggested for 10 year capital forecast	2,290
2104	1972	50	2022	2,290	0	suggested for 10 year capital forecast	2,290
2105	1972	50	2022	2,290	0	suggested for 10 year capital forecast	2,290
2106	1972	50	2022	2,290	0	suggested for 10 year capital forecast	2,290
2107	1972	50	2022	2,290	0	suggested for 10 year capital forecast	2,290
2108	1972	50	2022	2,290	0	suggested for 10 year capital forecast	2,290
2368	1972	50	2022	2,290	0	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2369	1972	50	2022	2,290	0	suggested for 10 year capital forecast	2,290
2444	1972	50	2022	3,150	0	suggested for 10 year capital forecast	3,150
2807	1972	50	2022	2,290	0	suggested for 10 year capital forecast	2,290
2883	1972	50	2022	2,290	0	suggested for 10 year capital forecast	2,290
2884	1972	50	2022	2,290	0	suggested for 10 year capital forecast	2,290
2885	1972	50	2022	2,290	0	suggested for 10 year capital forecast	2,290
2886	1972	50	2022	2,290	0	suggested for 10 year capital forecast	2,290
2887	1972	50	2022	2,290	0	suggested for 10 year capital forecast	2,290
2888	1972	50	2022	2,290	0	suggested for 10 year capital forecast	2,290
2889	1972	50	2022	2,290	0	suggested for 10 year capital forecast	2,290
2890	1972	50	2022	2,290	0	suggested for 10 year capital forecast	2,290
2894	1972	50	2022	2,290	0	suggested for 10 year capital forecast	2,290
2895	1972	50	2022	2,290	0	suggested for 10 year capital forecast	2,290
2896	1972	50	2022	2,290	0	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2897	1972	50	2022	2,290	0	suggested for 10 year capital forecast	2,290
2898	1972	50	2022	2,290	0	suggested for 10 year capital forecast	2,290
2899	1972	50	2022	2,290	0	suggested for 10 year capital forecast	2,290
2900	1972	50	2022	2,290	0	suggested for 10 year capital forecast	2,290
2901	1972	50	2022	2,290	0	suggested for 10 year capital forecast	2,290
1673	1974	50	2024	2,290	2	suggested for 10 year capital forecast	2,290
1690	1974	50	2024	3,150	2	suggested for 10 year capital forecast	3,150
1855	1974	50	2024	2,290	2	suggested for 10 year capital forecast	2,290
1969	1974	50	2024	2,290	2	suggested for 10 year capital forecast	2,290
1973	1974	50	2024	2,290	2	suggested for 10 year capital forecast	2,290
1974	1974	50	2024	2,580	2	suggested for 10 year capital forecast	2,580
2150	1974	50	2024	2,290	2	suggested for 10 year capital forecast	2,290
2151	1974	50	2024	2,290	2	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2152	1974	50	2024	2,290	2	suggested for 10 year capital forecast	2,290
2153	1974	50	2024	2,290	2	suggested for 10 year capital forecast	2,290
2154	1974	50	2024	2,290	2	suggested for 10 year capital forecast	2,290
2155	1974	50	2024	2,290	2	suggested for 10 year capital forecast	2,290
2218	1974	50	2024	2,290	2	suggested for 10 year capital forecast	2,290
2219	1974	50	2024	2,290	2	suggested for 10 year capital forecast	2,290
2220	1974	50	2024	2,290	2	suggested for 10 year capital forecast	2,290
2221	1974	50	2024	2,290	2	suggested for 10 year capital forecast	2,290
2222	1974	50	2024	2,290	2	suggested for 10 year capital forecast	2,290
2223	1974	50	2024	2,290	2	suggested for 10 year capital forecast	2,290
2224	1974	50	2024	2,290	2	suggested for 10 year capital forecast	2,290
2236	1974	50	2024	2,290	2	suggested for 10 year capital forecast	2,290
2237	1974	50	2024	2,290	2	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2238	1974	50	2024	2,290	2	suggested for 10 year capital forecast	2,290
2239	1974	50	2024	2,290	2	suggested for 10 year capital forecast	2,290
2240	1974	50	2024	3,150	2	suggested for 10 year capital forecast	3,150
2241	1974	50	2024	2,290	2	suggested for 10 year capital forecast	2,290
2242	1974	50	2024	2,290	2	suggested for 10 year capital forecast	2,290
2243	1974	50	2024	2,290	2	suggested for 10 year capital forecast	2,290
2244	1974	50	2024	2,290	2	suggested for 10 year capital forecast	2,290
2245	1974	50	2024	2,290	2	suggested for 10 year capital forecast	2,290
2246	1974	50	2024	2,290	2	suggested for 10 year capital forecast	2,290
2247	1974	50	2024	3,150	2	suggested for 10 year capital forecast	3,150
2248	1974	50	2024	2,290	2	suggested for 10 year capital forecast	2,290
2249	1974	50	2024	2,290	2	suggested for 10 year capital forecast	2,290
2250	1974	50	2024	2,290	2	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2251	1974	50	2024	2,290	2	suggested for 10 year capital forecast	2,290
2252	1974	50	2024	2,290	2	suggested for 10 year capital forecast	2,290
2678	1974	50	2024	2,290	2	suggested for 10 year capital forecast	2,290
2679	1974	50	2024	2,290	2	suggested for 10 year capital forecast	2,290
2808	1974	50	2024	2,290	2	suggested for 10 year capital forecast	2,290
2893	1974	50	2024	2,290	2	suggested for 10 year capital forecast	2,290
1868	1975	50	2025	3,150	3	suggested for 10 year capital forecast	3,150
1966	1975	50	2025	2,290	3	suggested for 10 year capital forecast	2,290
1967	1975	50	2025	2,290	3	suggested for 10 year capital forecast	2,290
2145	1975	50	2025	2,290	3	suggested for 10 year capital forecast	2,290
2146	1975	50	2025	2,290	3	suggested for 10 year capital forecast	2,290
2147	1975	50	2025	2,290	3	suggested for 10 year capital forecast	2,290
2148	1975	50	2025	2,290	3	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2149	1975	50	2025	3,150	3	suggested for 10 year capital forecast	3,150
2156	1975	50	2025	2,290	3	suggested for 10 year capital forecast	2,290
2157	1975	50	2025	2,290	3	suggested for 10 year capital forecast	2,290
2158	1975	50	2025	2,290	3	suggested for 10 year capital forecast	2,290
2159	1975	50	2025	2,290	3	suggested for 10 year capital forecast	2,290
2160	1975	50	2025	3,150	3	suggested for 10 year capital forecast	3,150
2161	1975	50	2025	2,290	3	suggested for 10 year capital forecast	2,290
2168	1975	50	2025	2,290	3	suggested for 10 year capital forecast	2,290
2170	1975	50	2025	2,290	3	suggested for 10 year capital forecast	2,290
2171	1975	50	2025	2,290	3	suggested for 10 year capital forecast	2,290
2172	1975	50	2025	2,290	3	suggested for 10 year capital forecast	2,290
2173	1975	50	2025	2,290	3	suggested for 10 year capital forecast	2,290
2174	1975	50	2025	2,290	3	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2181	1975	50	2025	2,290	3	suggested for 10 year capital forecast	2,290
2182	1975	50	2025	2,290	3	suggested for 10 year capital forecast	2,290
2183	1975	50	2025	2,290	3	suggested for 10 year capital forecast	2,290
2184	1975	50	2025	2,290	3	suggested for 10 year capital forecast	2,290
2185	1975	50	2025	2,290	3	suggested for 10 year capital forecast	2,290
2186	1975	50	2025	2,290	3	suggested for 10 year capital forecast	2,290
2187	1975	50	2025	2,290	3	suggested for 10 year capital forecast	2,290
2188	1975	50	2025	2,290	3	suggested for 10 year capital forecast	2,290
2189	1975	50	2025	2,290	3	suggested for 10 year capital forecast	2,290
2190	1975	50	2025	3,150	3	suggested for 10 year capital forecast	3,150
2191	1975	50	2025	3,150	3	suggested for 10 year capital forecast	3,150
2202	1975	50	2025	3,150	3	suggested for 10 year capital forecast	3,150
2206	1975	50	2025	2,290	3	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2674	1975	50	2025	2,290	3	suggested for 10 year capital forecast	2,290
2675	1975	50	2025	2,290	3	suggested for 10 year capital forecast	2,290
1971	1976	50	2026	2,290	4	suggested for 10 year capital forecast	2,290
2069	1976	50	2026	2,290	4	suggested for 10 year capital forecast	2,290
2070	1976	50	2026	2,290	4	suggested for 10 year capital forecast	2,290
2071	1976	50	2026	2,290	4	suggested for 10 year capital forecast	2,290
2077	1976	50	2026	3,150	4	suggested for 10 year capital forecast	3,150
2078	1976	50	2026	3,150	4	suggested for 10 year capital forecast	3,150
2079	1976	50	2026	2,290	4	suggested for 10 year capital forecast	2,290
2080	1976	50	2026	2,290	4	suggested for 10 year capital forecast	2,290
2081	1976	50	2026	2,290	4	suggested for 10 year capital forecast	2,290
2082	1976	50	2026	2,290	4	suggested for 10 year capital forecast	2,290
2663	1976	50	2026	2,290	4	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2664	1976	50	2026	2,290	4	suggested for 10 year capital forecast	2,290
2669	1976	50	2026	3,150	4	suggested for 10 year capital forecast	3,150
2670	1976	50	2026	2,290	4	suggested for 10 year capital forecast	2,290
2671	1976	50	2026	2,290	4	suggested for 10 year capital forecast	2,290
2672	1976	50	2026	2,290	4	suggested for 10 year capital forecast	2,290
2673	1976	50	2026	2,290	4	suggested for 10 year capital forecast	2,290
1972	1977	50	2027	2,290	5	suggested for 10 year capital forecast	2,290
1983	1977	50	2027	2,290	5	suggested for 10 year capital forecast	2,290
2660	1977	50	2027	2,290	5	suggested for 10 year capital forecast	2,290
2661	1977	50	2027	2,290	5	suggested for 10 year capital forecast	2,290
2026	1978	50	2028	2,290	6	suggested for 10 year capital forecast	2,290
2633	1978	50	2028	2,290	6	suggested for 10 year capital forecast	2,290
1645	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1646	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1647	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1648	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1649	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1650	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1651	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1652	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1653	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1654	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1655	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1656	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1657	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1658	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1659	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1660	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1661	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1662	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1663	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1664	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1665	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1666	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1667	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1668	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1669	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1670	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1671	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1685	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
1686	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
1687	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1688	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1689	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
1691	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1692	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
1693	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
1694	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
1695	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
1696	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1697	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
1698	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1700	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
1701	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1702	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1795	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1796	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1797	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1798	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1799	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1800	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1801	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1802	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1803	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1804	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1805	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
1806	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
1807	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
1808	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1809	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1810	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1811	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
1812	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
1850	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1851	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
1852	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1853	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1854	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1873	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1874	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1875	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
1876	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1877	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1878	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1879	1979	50	2029	3,440	7	suggested for 10 year capital forecast	3,440
1880	1979	50	2029	3,440	7	suggested for 10 year capital forecast	3,440
1881	1979	50	2029	2,580	7	suggested for 10 year capital forecast	2,580
1882	1979	50	2029	2,580	7	suggested for 10 year capital forecast	2,580
1883	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1884	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1885	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1886	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1887	1979	50	2029	2,580	7	suggested for 10 year capital forecast	2,580
1888	1979	50	2029	2,580	7	suggested for 10 year capital forecast	2,580
1889	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1890	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1891	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1892	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
1914	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1915	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1924	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1925	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1926	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1927	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1928	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1929	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1930	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1931	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1932	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1933	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
1934	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1935	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1936	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1937	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1938	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1939	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1940	1979	50	2029	2,870	7	suggested for 10 year capital forecast	2,870



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1941	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1942	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1943	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1944	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1945	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1946	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1947	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1948	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1949	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1950	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1951	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1952	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1953	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1954	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1955	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1956	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1957	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1958	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1959	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1960	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1961	1979	50	2029	2,870	7	suggested for 10 year capital forecast	2,870
1962	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1965	1979	50	2029	2,580	7	suggested for 10 year capital forecast	2,580
1968	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1975	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1976	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1977	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1978	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1979	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1980	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1981	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1982	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1984	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1985	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1986	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1987	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1988	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1992	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1993	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1994	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1995	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1996	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1997	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1998	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
1999	1979	50	2029	2,580	7	suggested for 10 year capital forecast	2,580
2000	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2001	1979	50	2029	3,440	7	suggested for 10 year capital forecast	3,440
2002	1979	50	2029	3,440	7	suggested for 10 year capital forecast	3,440
2003	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2004	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2005	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2006	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2007	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2008	1979	50	2029	2,580	7	suggested for 10 year capital forecast	2,580
2009	1979	50	2029	3,440	7	suggested for 10 year capital forecast	3,440
2023	1979	50	2029	2,580	7	suggested for 10 year capital forecast	2,580
2024	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2025	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2032	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2033	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2034	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2035	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2036	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2037	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2038	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2040	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2041	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2043	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2044	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2045	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2046	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2047	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2048	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2049	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2050	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2051	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2052	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2053	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2054	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2055	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2056	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2057	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2058	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2059	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2060	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2061	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2062	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2063	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2064	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2065	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2066	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2067	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2068	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2125	1979	50	2029	3,440	7	suggested for 10 year capital forecast	3,440
2126	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2127	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2139	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2140	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2141	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2142	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2143	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2144	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2162	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2163	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2164	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2165	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2166	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2215	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2216	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2217	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2254	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2255	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2256	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2257	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2258	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2259	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2260	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2261	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2262	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2263	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2264	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2265	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2266	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2267	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2268	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2269	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2270	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2271	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2272	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2273	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2274	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2275	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2276	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2277	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2278	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2279	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2280	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2281	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2282	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2283	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2284	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2287	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2288	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2289	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2297	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2298	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2299	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2300	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2301	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2302	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2303	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2304	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2305	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2306	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2307	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2308	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2309	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2310	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2311	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2312	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2313	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2314	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2315	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2316	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2317	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2318	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2319	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2320	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2321	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2322	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2323	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2324	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2325	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2326	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2327	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2328	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2329	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2330	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2331	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2332	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2333	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2334	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2335	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2336	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2337	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2338	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2339	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2340	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2341	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2342	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2343	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2344	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2345	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2346	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2347	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2348	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2349	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2350	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2351	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2352	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2353	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2354	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2355	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2356	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2357	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2358	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2359	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2360	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2361	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2362	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2363	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2364	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2365	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2366	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2367	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2370	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2371	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2372	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2373	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2374	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2375	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2376	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2377	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2378	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2379	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2380	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2381	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2382	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2383	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2384	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2385	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2386	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2387	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2388	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2389	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2390	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2391	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2392	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2393	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2394	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2395	1979	50	2029	3,440	7	suggested for 10 year capital forecast	3,440
2396	1979	50	2029	3,440	7	suggested for 10 year capital forecast	3,440
2397	1979	50	2029	3,440	7	suggested for 10 year capital forecast	3,440
2398	1979	50	2029	3,440	7	suggested for 10 year capital forecast	3,440
2399	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2400	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2401	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2402	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2403	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2404	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2405	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2406	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2407	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2408	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2409	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2410	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2411	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2412	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2413	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2414	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2415	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2416	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2417	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2418	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2419	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2420	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2421	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2422	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2423	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2424	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2425	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2426	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2427	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2428	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2429	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2430	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2431	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2432	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2433	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2434	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2435	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2436	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2437	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2438	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2439	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2440	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2441	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2442	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2443	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2446	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2454	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2455	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2456	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2457	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2458	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2459	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2460	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2463	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2464	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2465	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2466	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2467	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2468	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2469	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2470	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2471	1979	50	2029	2,580	7	suggested for 10 year capital forecast	2,580
2472	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2473	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2474	1979	50	2029	2,580	7	suggested for 10 year capital forecast	2,580
2475	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2476	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2477	1979	50	2029	2,580	7	suggested for 10 year capital forecast	2,580



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2478	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2479	1979	50	2029	2,580	7	suggested for 10 year capital forecast	2,580
2480	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2481	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2482	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2483	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2484	1979	50	2029	2,580	7	suggested for 10 year capital forecast	2,580
2485	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2486	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2487	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2488	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2489	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2490	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2491	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2492	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2493	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2494	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2495	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2496	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2497	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2498	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2499	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2500	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2501	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2502	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2503	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2504	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2505	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2506	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2507	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2508	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2509	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2510	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2511	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2512	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2513	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2514	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2515	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2516	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2517	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2518	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2519	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2520	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2521	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2522	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2523	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2524	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2525	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2526	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2527	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2528	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2530	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2531	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2532	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2533	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2534	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2535	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2536	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2537	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2538	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2539	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2540	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2541	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2542	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2543	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2544	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2545	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2546	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2547	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2548	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2549	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2550	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2551	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2552	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2553	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2554	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2555	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2556	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2557	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2558	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2559	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2560	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2561	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2562	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2563	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2564	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2565	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2566	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2567	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2568	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2569	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2570	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2571	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2572	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2573	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2574	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2575	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2576	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2577	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2578	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2579	1979	50	2029	3,440	7	suggested for 10 year capital forecast	3,440
2580	1979	50	2029	3,440	7	suggested for 10 year capital forecast	3,440
2581	1979	50	2029	3,440	7	suggested for 10 year capital forecast	3,440
2582	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2583	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2584	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2585	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2586	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2587	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2588	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2589	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2590	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2591	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2592	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2593	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2594	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2595	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2596	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2597	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2598	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2599	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2600	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2601	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2602	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2603	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2604	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2605	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2606	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2607	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2608	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2609	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2610	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2611	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2612	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2613	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2614	1979	50	2029	2,870	7	suggested for 10 year capital forecast	2,870
2615	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2616	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2617	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2618	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2619	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2620	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2621	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2622	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2623	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2624	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2625	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2626	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2627	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2628	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2629	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2630	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2631	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2632	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2634	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2635	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2636	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2637	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2638	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2639	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2640	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2641	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2642	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2643	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2644	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2645	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2646	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2647	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2648	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2649	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2650	1979	50	2029	3,440	7	suggested for 10 year capital forecast	3,440
2651	1979	50	2029	3,440	7	suggested for 10 year capital forecast	3,440
2652	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2653	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2654	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2655	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2656	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2657	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2658	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2659	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2676	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2677	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2680	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2681	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2682	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2683	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2684	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2685	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2686	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2687	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2688	1979	50	2029	2,870	7	suggested for 10 year capital forecast	2,870
2689	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2690	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2691	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2692	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2693	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2694	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2695	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2696	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2697	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2698	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2699	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2700	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2701	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2702	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2703	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2704	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2705	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2706	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2707	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2708	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2709	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2710	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2711	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2712	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2713	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2714	1979	50	2029	2,580	7	suggested for 10 year capital forecast	2,580
2715	1979	50	2029	2,870	7	suggested for 10 year capital forecast	2,870
2716	1979	50	2029	2,870	7	suggested for 10 year capital forecast	2,870
2717	1979	50	2029	2,870	7	suggested for 10 year capital forecast	2,870
2718	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2719	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2720	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2721	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2722	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2723	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2724	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2725	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2726	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2727	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2728	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2729	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2730	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2731	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2732	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2733	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2734	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2735	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2736	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2737	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2738	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2739	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2740	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2741	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2742	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2743	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2744	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2745	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2746	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2747	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2748	1979	50	2029	2,580	7	suggested for 10 year capital forecast	2,580
2749	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2750	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2751	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2752	1979	50	2029	4,580	7	suggested for 10 year capital forecast	4,580
2753	1979	50	2029	4,580	7	suggested for 10 year capital forecast	4,580
2754	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2755	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2756	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2757	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2758	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2759	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2760	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2761	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2762	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2763	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2764	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2765	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2766	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2767	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2768	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2769	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2770	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2771	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2772	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2773	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2774	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2775	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2776	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2777	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2778	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2779	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2780	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2781	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2782	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2783	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2784	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2785	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2786	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2787	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2788	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2789	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2798	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2799	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2800	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2801	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2802	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2803	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2804	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2805	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2806	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2809	1979	50	2029	3,440	7	suggested for 10 year capital forecast	3,440
2810	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2812	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2813	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2814	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2815	1979	50	2029	4,580	7	suggested for 10 year capital forecast	4,580
2816	1979	50	2029	4,580	7	suggested for 10 year capital forecast	4,580
2817	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2818	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2819	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2820	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2821	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2822	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2823	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2824	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2825	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2826	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2827	1979	50	2029	4,580	7	suggested for 10 year capital forecast	4,580
2828	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2829	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2830	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2831	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2832	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2833	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2834	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2835	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2836	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2837	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2838	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2839	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2840	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2841	1979	50	2029	4,010	7	suggested for 10 year capital forecast	4,010
2842	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2843	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2844	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2845	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2846	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2847	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2848	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2849	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2850	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2851	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2852	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2853	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2854	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2855	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2856	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2857	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2858	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2859	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2860	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2861	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2862	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2863	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2864	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2865	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2866	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2867	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2868	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2869	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2870	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2871	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2872	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2873	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2874	1979	50	2029	2,870	7	suggested for 10 year capital forecast	2,870
2875	1979	50	2029	2,870	7	suggested for 10 year capital forecast	2,870
2876	1979	50	2029	2,870	7	suggested for 10 year capital forecast	2,870
2877	1979	50	2029	2,870	7	suggested for 10 year capital forecast	2,870
2878	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2891	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2892	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2902	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2903	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2904	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2905	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2906	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2907	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2908	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2909	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2910	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2911	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2912	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2913	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2914	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2915	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2916	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2917	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2918	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2919	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2920	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2921	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2922	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2923	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2924	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2925	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2926	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2927	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2928	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2929	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2930	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2931	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2932	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2933	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2934	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2935	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2936	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2937	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2938	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2939	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2940	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2941	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2942	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2943	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2944	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2945	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2946	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2947	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2948	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2949	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2950	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2951	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2952	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2953	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2954	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2955	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2956	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2957	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2958	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2959	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2960	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2961	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2962	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2963	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2964	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2965	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2966	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2967	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2968	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2969	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2970	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2971	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2972	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2973	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2974	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2975	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2976	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2977	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2978	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2979	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2980	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2981	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2982	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2983	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2984	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2985	1979	50	2029	4,010	7	suggested for 10 year capital forecast	4,010
2986	1979	50	2029	4,010	7	suggested for 10 year capital forecast	4,010
2987	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2988	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2989	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2990	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2991	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2992	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2993	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2994	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2995	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2996	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
2997	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2998	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
2999	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3000	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3001	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3002	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3003	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3004	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3005	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3006	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3007	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3008	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3009	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3010	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3011	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3012	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3013	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3014	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3015	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3016	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3017	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3018	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3019	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3020	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3021	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3022	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3023	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3024	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3025	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3026	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3027	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3028	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3029	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3030	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3031	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3032	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3033	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3034	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3035	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3036	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3037	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3038	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3039	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3040	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3041	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3042	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3043	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3044	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3045	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3046	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3047	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3048	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3049	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3050	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3051	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3052	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3053	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3054	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3055	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3056	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3057	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3058	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3059	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3060	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3061	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3062	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3063	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3064	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3065	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3066	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3067	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3068	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3069	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3070	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3071	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3072	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3073	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3074	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3075	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3076	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3077	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3078	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3079	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3080	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3081	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3082	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3083	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3084	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3085	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3086	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3087	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3088	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3089	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3090	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3091	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3092	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3093	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3094	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3095	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3096	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3097	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3098	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3099	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3100	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3101	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3102	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3103	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3104	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3105	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3106	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3107	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3108	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3109	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3110	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
3111	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3112	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3113	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3114	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3115	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3116	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3117	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3118	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3119	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
3120	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
3121	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3122	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3123	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3124	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3125	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3126	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3127	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3128	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3129	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3130	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
3131	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
3132	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
3133	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
3134	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
3135	1979	50	2029	3,440	7	suggested for 10 year capital forecast	3,440
3136	1979	50	2029	3,440	7	suggested for 10 year capital forecast	3,440
3137	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
3138	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
3139	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3140	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3141	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3142	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3143	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3144	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3145	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3146	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3147	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3148	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3149	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3150	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3151	1979	50	2029	2,870	7	suggested for 10 year capital forecast	2,870
3152	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
3153	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3154	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
3155	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3156	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3157	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3158	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3159	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3160	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3161	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3162	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3163	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3164	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3165	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3166	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3167	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3168	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3169	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3170	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3171	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3172	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3173	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3174	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3175	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3176	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3177	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3178	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3179	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3180	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3181	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3182	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3183	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3184	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3185	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3186	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3187	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3188	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3189	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3190	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
3191	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
3192	1979	50	2029	4,010	7	suggested for 10 year capital forecast	4,010



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3193	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
3194	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3195	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3196	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3197	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3198	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3199	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
3200	1979	50	2029	3,440	7	suggested for 10 year capital forecast	3,440
3201	1979	50	2029	3,440	7	suggested for 10 year capital forecast	3,440
3202	1979	50	2029	3,440	7	suggested for 10 year capital forecast	3,440
3203	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3204	1979	50	2029	3,440	7	suggested for 10 year capital forecast	3,440
3205	1979	50	2029	3,440	7	suggested for 10 year capital forecast	3,440



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
3206	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3207	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3208	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3209	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3210	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3211	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3212	1979	50	2029	2,290	7	suggested for 10 year capital forecast	2,290
3213	1979	50	2029	3,150	7	suggested for 10 year capital forecast	3,150
1736	1984	50	2034	2,290	12	217	-
1737	1984	50	2034	2,290	12	217	-
1738	1984	50	2034	3,150	12	298	-
1739	1984	50	2034	3,150	12	298	-
1740	1984	50	2034	3,150	12	298	-
1741	1984	50	2034	3,150	12	298	-
1742	1984	50	2034	3,150	12	298	-
1743	1984	50	2034	3,150	12	298	-
1744	1984	50	2034	2,290	12	217	-



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1745	1984	50	2034	2,290	12	217	-
1746	1984	50	2034	3,150	12	298	-
1747	1984	50	2034	2,290	12	217	-
1748	1984	50	2034	2,290	12	217	-
1749	1984	50	2034	2,290	12	217	-
1750	1984	50	2034	3,150	12	298	-
1751	1984	50	2034	2,290	12	217	-
1752	1984	50	2034	2,290	12	217	-
1753	1984	50	2034	2,290	12	217	-
1754	1984	50	2034	2,290	12	217	-
1755	1984	50	2034	3,440	12	325	-
1756	1984	50	2034	3,440	12	325	-
1757	1984	50	2034	3,440	12	325	-
1758	1984	50	2034	3,440	12	325	-
1780	1984	50	2034	2,290	12	217	-
1781	1984	50	2034	2,290	12	217	-
1782	1984	50	2034	2,290	12	217	-
1783	1984	50	2034	3,150	12	298	-
1784	1984	50	2034	3,150	12	298	-
1785	1984	50	2034	2,290	12	217	-
1786	1984	50	2034	2,290	12	217	-
1787	1984	50	2034	2,290	12	217	-
1788	1984	50	2034	2,290	12	217	-



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1789	1984	50	2034	2,290	12	217	-
1790	1984	50	2034	2,290	12	217	-
1791	1984	50	2034	2,290	12	217	-
1792	1984	50	2034	3,150	12	298	-
1793	1984	50	2034	3,150	12	298	-
1794	1984	50	2034	3,150	12	298	-
1813	1984	50	2034	3,150	12	298	-
1838	1984	50	2034	3,440	12	325	-
1839	1984	50	2034	2,290	12	217	-
1840	1984	50	2034	2,290	12	217	-
1841	1984	50	2034	2,290	12	217	-
1842	1984	50	2034	2,290	12	217	-
1843	1984	50	2034	2,290	12	217	-
1844	1984	50	2034	2,290	12	217	-
1845	1984	50	2034	2,290	12	217	-
1846	1984	50	2034	2,290	12	217	-
1847	1984	50	2034	3,150	12	298	-
1848	1984	50	2034	3,150	12	298	-
1849	1984	50	2034	3,150	12	298	-
1893	1984	50	2034	3,440	12	325	-
1894	1984	50	2034	3,440	12	325	-
1895	1984	50	2034	2,290	12	217	-
1896	1984	50	2034	2,290	12	217	-



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1897	1984	50	2034	2,290	12	217	-
1898	1984	50	2034	2,290	12	217	-
1899	1984	50	2034	2,290	12	217	-
1900	1984	50	2034	2,290	12	217	-
1901	1984	50	2034	2,290	12	217	-
1902	1984	50	2034	2,290	12	217	-
1903	1984	50	2034	2,290	12	217	-
1904	1984	50	2034	2,290	12	217	-
1905	1984	50	2034	2,290	12	217	-
1906	1984	50	2034	3,440	12	325	-
1907	1984	50	2034	3,150	12	298	-
1908	1984	50	2034	3,440	12	325	-
1909	1984	50	2034	3,440	12	325	-
1910	1984	50	2034	3,440	12	325	-
1911	1984	50	2034	3,150	12	298	-
1912	1984	50	2034	3,440	12	325	-
1913	1984	50	2034	3,440	12	325	-
1916	1984	50	2034	3,150	12	298	-
1917	1984	50	2034	2,290	12	217	-
1918	1984	50	2034	2,290	12	217	-
1919	1984	50	2034	3,150	12	298	-
1920	1984	50	2034	3,150	12	298	-
1921	1984	50	2034	3,150	12	298	-



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1922	1984	50	2034	2,290	12	217	-
1923	1984	50	2034	2,290	12	217	-
1991	1984	50	2034	2,290	12	217	-
2296	1984	50	2034	2,290	12	217	-
2461	1984	50	2034	3,150	12	298	-
2462	1984	50	2034	2,290	12	217	-
2529	1984	50	2034	2,290	12	217	-
1970	1986	50	2036	2,290	14	189	-
2665	1986	50	2036	2,290	14	189	-
2666	1986	50	2036	2,290	14	189	-
2667	1986	50	2036	2,290	14	189	-
2668	1986	50	2036	2,290	14	189	-
1672	1987	50	2037	2,290	15	178	-
1674	1987	50	2037	2,290	15	178	-
1675	1987	50	2037	2,290	15	178	-
1676	1987	50	2037	2,290	15	178	-
1677	1987	50	2037	2,290	15	178	-
1678	1987	50	2037	2,290	15	178	-
1679	1987	50	2037	2,290	15	178	-
1680	1987	50	2037	2,290	15	178	-
1681	1987	50	2037	2,290	15	178	-
1682	1987	50	2037	2,290	15	178	-
1683	1987	50	2037	2,290	15	178	-



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1707	1987	50	2037	3,150	15	245	-
1856	1987	50	2037	2,290	15	178	-
1857	1987	50	2037	2,290	15	178	-
1858	1987	50	2037	3,150	15	245	-
1859	1987	50	2037	2,290	15	178	-
1860	1987	50	2037	2,290	15	178	-
1861	1987	50	2037	3,150	15	245	-
1862	1987	50	2037	3,150	15	245	-
1863	1987	50	2037	3,440	15	268	-
1864	1987	50	2037	3,440	15	268	-
1865	1987	50	2037	3,150	15	245	-
1866	1987	50	2037	2,290	15	178	-
1867	1987	50	2037	3,150	15	245	-
1869	1987	50	2037	3,150	15	245	-
1870	1987	50	2037	2,290	15	178	-
1871	1987	50	2037	2,290	15	178	-
1872	1987	50	2037	2,290	15	178	-
2022	1987	50	2037	2,290	15	178	-
2042	1987	50	2037	2,290	15	178	-
2075	1987	50	2037	2,290	15	178	-
2076	1987	50	2037	2,290	15	178	-
2083	1987	50	2037	2,290	15	178	-
2084	1987	50	2037	2,290	15	178	-



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2085	1987	50	2037	2,290	15	178	-
2086	1987	50	2037	2,290	15	178	-
2087	1987	50	2037	2,290	15	178	-
2088	1987	50	2037	2,290	15	178	-
2089	1987	50	2037	2,290	15	178	-
2090	1987	50	2037	2,290	15	178	-
2091	1987	50	2037	2,290	15	178	-
2092	1987	50	2037	3,440	15	268	-
2093	1987	50	2037	3,440	15	268	-
2094	1987	50	2037	3,440	15	268	-
2095	1987	50	2037	2,290	15	178	-
2096	1987	50	2037	2,290	15	178	-
2097	1987	50	2037	2,290	15	178	-
2098	1987	50	2037	2,290	15	178	-
2099	1987	50	2037	3,150	15	245	-
2100	1987	50	2037	2,290	15	178	-
2124	1987	50	2037	3,150	15	245	-
2167	1987	50	2037	2,290	15	178	-
2169	1987	50	2037	2,290	15	178	-
2175	1987	50	2037	2,290	15	178	-
2176	1987	50	2037	2,290	15	178	-
2177	1987	50	2037	2,290	15	178	-
2178	1987	50	2037	2,290	15	178	-



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2179	1987	50	2037	2,290	15	178	-
2180	1987	50	2037	2,290	15	178	-
2192	1987	50	2037	2,290	15	178	-
2193	1987	50	2037	3,150	15	245	-
2194	1987	50	2037	3,150	15	245	-
2195	1987	50	2037	2,290	15	178	-
2196	1987	50	2037	2,290	15	178	-
2197	1987	50	2037	2,290	15	178	-
2198	1987	50	2037	2,290	15	178	-
2199	1987	50	2037	2,290	15	178	-
2200	1987	50	2037	2,290	15	178	-
2201	1987	50	2037	2,290	15	178	-
2203	1987	50	2037	2,290	15	178	-
2204	1987	50	2037	2,290	15	178	-
2205	1987	50	2037	2,290	15	178	-
2207	1987	50	2037	2,290	15	178	-
2208	1987	50	2037	2,290	15	178	-
2209	1987	50	2037	2,290	15	178	-
2210	1987	50	2037	2,290	15	178	-
2211	1987	50	2037	2,290	15	178	-
2212	1987	50	2037	2,290	15	178	-
2213	1987	50	2037	3,150	15	245	-
2214	1987	50	2037	3,150	15	245	-



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2225	1987	50	2037	2,290	15	178	-
2226	1987	50	2037	2,290	15	178	-
2227	1987	50	2037	2,290	15	178	-
2228	1987	50	2037	2,290	15	178	-
2229	1987	50	2037	2,290	15	178	-
2230	1987	50	2037	2,290	15	178	-
2231	1987	50	2037	2,290	15	178	-
2232	1987	50	2037	2,290	15	178	-
2233	1987	50	2037	2,290	15	178	-
2234	1987	50	2037	2,290	15	178	-
2235	1987	50	2037	2,290	15	178	-
2290	1987	50	2037	2,580	15	201	-
2291	1987	50	2037	2,580	15	201	-
2292	1987	50	2037	2,290	15	178	-
2293	1987	50	2037	2,290	15	178	-
2294	1987	50	2037	2,290	15	178	-
2295	1987	50	2037	4,010	15	312	-
2445	1987	50	2037	2,290	15	178	-
2448	1987	50	2037	2,290	15	178	-
2449	1987	50	2037	2,290	15	178	-
2450	1987	50	2037	2,290	15	178	-
2451	1987	50	2037	2,290	15	178	-
2452	1987	50	2037	2,290	15	178	-



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2453	1987	50	2037	2,290	15	178	-
2790	1987	50	2037	2,290	15	178	-
2791	1987	50	2037	2,290	15	178	-
2792	1987	50	2037	2,290	15	178	-
2793	1987	50	2037	2,290	15	178	-
2794	1987	50	2037	2,290	15	178	-
2795	1987	50	2037	2,290	15	178	-
2796	1987	50	2037	2,290	15	178	-
2797	1987	50	2037	2,290	15	178	-
1684	1989	50	2039	3,440	17	241	-
1705	1989	50	2039	3,150	17	220	-
1706	1989	50	2039	3,150	17	220	-
1719	1989	50	2039	2,290	17	160	-
1720	1989	50	2039	2,290	17	160	-
1721	1989	50	2039	2,290	17	160	-
1722	1989	50	2039	2,290	17	160	-
1723	1989	50	2039	2,290	17	160	-
1724	1989	50	2039	2,290	17	160	-
1725	1989	50	2039	2,290	17	160	-
1726	1989	50	2039	2,290	17	160	-
1727	1989	50	2039	2,290	17	160	-
1728	1989	50	2039	3,150	17	220	-
1729	1989	50	2039	3,150	17	220	-



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1730	1989	50	2039	2,290	17	160	-
1731	1989	50	2039	2,290	17	160	-
1732	1989	50	2039	2,290	17	160	-
1733	1989	50	2039	2,290	17	160	-
1734	1989	50	2039	2,290	17	160	-
1735	1989	50	2039	2,290	17	160	-
2072	1989	50	2039	3,440	17	241	-
2073	1989	50	2039	3,440	17	241	-
2074	1989	50	2039	2,290	17	160	-
2109	1989	50	2039	2,290	17	160	-
2110	1989	50	2039	2,290	17	160	-
2111	1989	50	2039	2,290	17	160	-
2112	1989	50	2039	2,290	17	160	-
2113	1989	50	2039	2,290	17	160	-
2114	1989	50	2039	2,290	17	160	-
2115	1989	50	2039	2,290	17	160	-
2116	1989	50	2039	2,290	17	160	-
2117	1989	50	2039	2,290	17	160	-
2118	1989	50	2039	2,290	17	160	-
2119	1989	50	2039	2,290	17	160	-
2120	1989	50	2039	2,290	17	160	-
2121	1989	50	2039	2,290	17	160	-
2122	1989	50	2039	2,290	17	160	-



Tabel A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2123	1989	50	2039	2,290	17	160	-
2128	1989	50	2039	2,290	17	160	-
2129	1989	50	2039	2,290	17	160	-
2130	1989	50	2039	2,290	17	160	-
2131	1989	50	2039	2,290	17	160	-
2132	1989	50	2039	2,290	17	160	-
2133	1989	50	2039	2,290	17	160	-
2134	1989	50	2039	2,290	17	160	-
2135	1989	50	2039	2,290	17	160	-
2136	1989	50	2039	2,290	17	160	-
2137	1989	50	2039	2,290	17	160	-
2138	1989	50	2039	2,290	17	160	-
1703	1992	50	2042	2,290	20	140	-
1704	1992	50	2042	2,290	20	140	-
1708	1992	50	2042	3,150	20	193	-
1709	1992	50	2042	2,580	20	158	-
1710	1992	50	2042	2,580	20	158	-
1711	1992	50	2042	3,150	20	193	-
1712	1992	50	2042	3,150	20	193	-
1713	1992	50	2042	4,010	20	245	-
1714	1992	50	2042	2,580	20	158	-
1715	1992	50	2042	2,580	20	158	-
1716	1992	50	2042	2,580	20	158	-



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1717	1992	50	2042	4,010	20	245	-
1718	1992	50	2042	3,150	20	193	-
1759	1992	50	2042	2,290	20	140	-
1760	1992	50	2042	4,010	20	245	-
1761	1992	50	2042	2,290	20	140	-
1762	1992	50	2042	2,290	20	140	-
1763	1992	50	2042	4,010	20	245	-
1764	1992	50	2042	2,290	20	140	-
1765	1992	50	2042	4,010	20	245	-
1766	1992	50	2042	2,580	20	158	-
1767	1992	50	2042	2,580	20	158	-
1768	1992	50	2042	4,010	20	245	-
1769	1992	50	2042	4,010	20	245	-
1770	1992	50	2042	3,150	20	193	-
1771	1992	50	2042	2,290	20	140	-
1772	1992	50	2042	2,580	20	158	-
1773	1992	50	2042	3,150	20	193	-
1774	1992	50	2042	2,290	20	140	-
1775	1992	50	2042	2,290	20	140	-
1776	1992	50	2042	2,290	20	140	-
1777	1992	50	2042	3,150	20	193	-
1778	1992	50	2042	2,290	20	140	-
1779	1992	50	2042	2,290	20	140	-



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1814	1992	50	2042	3,150	20	193	-
1815	1992	50	2042	2,290	20	140	-
1816	1992	50	2042	2,290	20	140	-
1817	1992	50	2042	2,290	20	140	-
1818	1992	50	2042	2,290	20	140	-
1819	1992	50	2042	3,150	20	193	-
1820	1992	50	2042	3,150	20	193	-
1821	1992	50	2042	3,150	20	193	-
1822	1992	50	2042	3,150	20	193	-
1823	1992	50	2042	2,290	20	140	-
1824	1992	50	2042	2,290	20	140	-
1825	1992	50	2042	3,150	20	193	-
1826	1992	50	2042	2,290	20	140	-
1827	1992	50	2042	3,150	20	193	-
1828	1992	50	2042	2,290	20	140	-
1829	1992	50	2042	2,290	20	140	-
1830	1992	50	2042	2,290	20	140	-
1831	1992	50	2042	2,290	20	140	-
1832	1992	50	2042	2,290	20	140	-
1833	1992	50	2042	2,290	20	140	-
1834	1992	50	2042	3,150	20	193	-
1835	1992	50	2042	2,290	20	140	-
1836	1992	50	2042	2,290	20	140	-



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1837	1992	50	2042	2,290	20	140	-
2010	1994	50	2044	3,440	22	195	-
1699	1995	50	2045	2,290	23	125	-
1963	1995	50	2045	2,290	23	125	-
1964	1995	50	2045	2,290	23	125	-
2011	1995	50	2045	2,290	23	125	-
2012	1995	50	2045	2,290	23	125	-
2013	1995	50	2045	2,290	23	125	-
2014	1995	50	2045	3,150	23	172	-
2015	1995	50	2045	2,290	23	125	-
2016	1995	50	2045	2,290	23	125	-
2017	1995	50	2045	2,290	23	125	-
2018	1995	50	2045	2,290	23	125	-
2019	1995	50	2045	2,290	23	125	-
2020	1995	50	2045	2,290	23	125	-
2021	1995	50	2045	2,290	23	125	-
2029	1995	50	2045	2,290	23	125	-
2030	1995	50	2045	2,290	23	125	-
2031	1995	50	2045	3,150	23	172	-
2253	1995	50	2045	2,870	23	157	-
2285	1995	50	2045	2,290	23	125	-
2286	1995	50	2045	2,290	23	125	-
2811	1995	50	2045	2,290	23	125	-



Table A-6 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Total Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
2879	1995	50	2045	2,290	23	125	-
2880	1995	50	2045	2,290	23	125	-
2881	1995	50	2045	2,290	23	125	-
2882	1995	50	2045	2,290	23	125	-
1989	2005	50	2055	2,580	33	108	-
1990	2005	50	2055	2,290	33	95	-
2447	2008	50	2058	2,290	36	90	-
6514	2008	50	2058	2,290	36	90	-
6530	2020	50	2070	100,620	48	3,280	-
6532	2021	50	2071	94,970	49	3,058	-
3333	1987	50	2037	6,930	15	539	-
3334	1987	50	2037	6,930	15	539	-
3335	1987	50	2037	6,930	15	539	-
3336	1992	50	2042	6,180	20	378	-
3337	1992	50	2042	6,180	20	378	-
3338	1992	50	2042	6,180	20	378	-
3339	2008	50	2058	2,860	36	112	-
3340	2005	50	2055	3,570	33	149	-
3341	1995	50	2045	5,160	23	282	-
3342	1979	50	2029	11,380	7	suggested for 10 year capital forecast	11,380
Total				4,170,270		75,765	3,054,740



Appendix B

Wastewater System Inventory Data



Appendix B: Wastewater System Inventory Data

Table B-1
Municipality of Wawa
Wastewater Facility Inventory

Facility	Asset ID	Year Installed	Estimated Life	Replacement Year	Replacement Cost	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
Sewage Lagoons	6489	1988	50	2038	5,934,030	16	437,042	-
Sewage Lagoon Building	6027	1988	40	2028	438,440	6	suggested for 10 year capital forecast	438,440
Sewage Lagoon Building - LED Exterior Lights	6028	2017	20	2037	14,420	15	1,122	-
Sewage Lagoon Building - Metal Roof	6029	2018	20	2038	8,190	16	603	-
SEWAGE CHEMICAL FEED SYSTEM	6398	2018	20	2038	11,360	16	837	-
SEWAGE LAGOON AERATION SYSTEM	6394	2017	20	2037	1,945,690	15	151,424	-
SEWAGE PLANT BLOWER (Rebuild Blower Model RVT 100V)	6356	2008	20	2028	9,920	6	suggested for 10 year capital forecast	9,920
Total					8,362,050		591,028	448,360



Table B-2
Municipality of Wawa
Manhole Inventory

Asset ID	Year Installed	Estimated Life	Replacement Year	Replacement Cost	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1228	1971	60	2031	9,450	9	suggested for 10 year capital forecast	9,450
1229	1971	60	2031	9,450	9	suggested for 10 year capital forecast	9,450
1230	1971	60	2031	9,450	9	suggested for 10 year capital forecast	9,450
1299	1971	60	2031	9,450	9	suggested for 10 year capital forecast	9,450
1300	1971	60	2031	9,450	9	suggested for 10 year capital forecast	9,450
1111	1972	60	2032	9,450	10	suggested for 10 year capital forecast	9,450
1112	1972	60	2032	9,450	10	suggested for 10 year capital forecast	9,450
1113	1972	60	2032	9,450	10	suggested for 10 year capital forecast	9,450
1114	1972	60	2032	9,450	10	suggested for 10 year capital forecast	9,450
1115	1972	60	2032	9,450	10	suggested for 10 year capital forecast	9,450
1116	1972	60	2032	9,450	10	suggested for 10 year capital forecast	9,450



Table B-2 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Replacement Cost	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1117	1972	60	2032	9,450	10	suggested for 10 year capital forecast	9,450
1118	1972	60	2032	9,450	10	suggested for 10 year capital forecast	9,450
1119	1972	60	2032	9,450	10	suggested for 10 year capital forecast	9,450
1130	1972	60	2032	9,450	10	suggested for 10 year capital forecast	9,450
1131	1972	60	2032	9,450	10	suggested for 10 year capital forecast	9,450
1132	1972	60	2032	9,450	10	suggested for 10 year capital forecast	9,450
1133	1972	60	2032	9,450	10	suggested for 10 year capital forecast	9,450
1134	1972	60	2032	9,450	10	suggested for 10 year capital forecast	9,450
1135	1972	60	2032	9,450	10	suggested for 10 year capital forecast	9,450
1136	1972	60	2032	9,450	10	suggested for 10 year capital forecast	9,450
1137	1972	60	2032	9,450	10	suggested for 10 year capital forecast	9,450
1138	1972	60	2032	9,450	10	suggested for 10 year capital forecast	9,450
1139	1972	60	2032	9,450	10	suggested for 10 year capital forecast	9,450



Table B-2 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Replacement Cost	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1140	1972	60	2032	9,450	10	suggested for 10 year capital forecast	9,450
1141	1972	60	2032	9,450	10	suggested for 10 year capital forecast	9,450
1142	1972	60	2032	9,450	10	suggested for 10 year capital forecast	9,450
1143	1972	60	2032	9,450	10	suggested for 10 year capital forecast	9,450
1144	1972	60	2032	9,450	10	suggested for 10 year capital forecast	9,450
1145	1972	60	2032	9,450	10	suggested for 10 year capital forecast	9,450
1146	1972	60	2032	9,450	10	suggested for 10 year capital forecast	9,450
1147	1972	60	2032	9,450	10	suggested for 10 year capital forecast	9,450
1148	1972	60	2032	9,450	10	suggested for 10 year capital forecast	9,450
1150	1972	60	2032	9,450	10	suggested for 10 year capital forecast	9,450
1189	1972	60	2032	9,450	10	suggested for 10 year capital forecast	9,450
1190	1972	60	2032	9,450	10	suggested for 10 year capital forecast	9,450
1191	1972	60	2032	9,450	10	suggested for 10 year capital forecast	9,450



Table B-2 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Replacement Cost	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1192	1972	60	2032	9,450	10	suggested for 10 year capital forecast	9,450
1193	1972	60	2032	9,450	10	suggested for 10 year capital forecast	9,450
1194	1972	60	2032	9,450	10	suggested for 10 year capital forecast	9,450
1195	1972	60	2032	9,450	10	suggested for 10 year capital forecast	9,450
1196	2007	60	2067	9,450	45	320	-
1197	2007	60	2067	9,450	45	320	-
1198	2007	60	2067	9,450	45	320	-
1199	2007	60	2067	9,450	45	320	-
1200	2007	60	2067	9,450	45	320	-
1201	2007	60	2067	9,450	45	320	-
1202	2007	60	2067	9,450	45	320	-
1203	2007	60	2067	9,450	45	320	-
1204	2007	60	2067	9,450	45	320	-
1205	2007	60	2067	9,450	45	320	-
1206	2007	60	2067	9,450	45	320	-
1207	2007	60	2067	9,450	45	320	-
1208	2007	60	2067	9,450	45	320	-
1209	2007	60	2067	9,450	45	320	-
1210	2007	60	2067	9,450	45	320	-



Table B-2 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Replacement Cost	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1211	2007	60	2067	9,450	45	320	-
1212	2007	60	2067	9,450	45	320	-
1213	2007	60	2067	9,450	45	320	-
1214	2007	60	2067	9,450	45	320	-
1215	2007	60	2067	9,450	45	320	-
1216	2007	60	2067	9,450	45	320	-
1224	2007	60	2067	9,450	45	320	-
1225	2007	60	2067	9,450	45	320	-
1226	2007	60	2067	9,450	45	320	-
1227	2007	60	2067	9,450	45	320	-
1231	2007	60	2067	9,450	45	320	-
1232	2007	60	2067	9,450	45	320	-
1233	2007	60	2067	9,450	45	320	-
1234	2007	60	2067	9,450	45	320	-
1235	2007	60	2067	9,450	45	320	-
1236	2007	60	2067	9,450	45	320	-
1237	2007	60	2067	9,450	45	320	-
1238	2007	60	2067	9,450	45	320	-
1239	2007	60	2067	9,450	45	320	-
1240	2007	60	2067	9,450	45	320	-
1298	2007	60	2067	9,450	45	320	-
1323	2007	60	2067	9,450	45	320	-



Table B-2 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Replacement Cost	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1324	2007	60	2067	9,450	45	320	-
1325	2007	60	2067	9,450	45	320	-
1326	2007	60	2067	9,450	45	320	-
1327	2007	60	2067	9,450	45	320	-
1085	2007	60	2067	9,450	45	320	-
1151	2007	60	2067	9,450	45	320	-
1152	2007	60	2067	9,450	45	320	-
1319	2007	60	2067	9,450	45	320	-
1320	2007	60	2067	9,450	45	320	-
1321	2007	60	2067	9,450	45	320	-
1322	2007	60	2067	9,450	45	320	-
1076	1979	60	2039	9,450	17	661	-
1077	1979	60	2039	9,450	17	661	-
1078	1979	60	2039	9,450	17	661	-
1091	1979	60	2039	9,450	17	661	-
1092	1979	60	2039	9,450	17	661	-
1093	1979	60	2039	9,450	17	661	-
1094	1979	60	2039	9,450	17	661	-
1095	1979	60	2039	9,450	17	661	-
1099	1979	60	2039	9,450	17	661	-
1100	1979	60	2039	9,450	17	661	-



Table B-2 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Replacement Cost	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1101	1979	60	2039	9,450	17	661	-
1102	1979	60	2039	9,450	17	661	-
1103	1979	60	2039	9,450	17	661	-
1104	1979	60	2039	9,450	17	661	-
1105	1979	60	2039	9,450	17	661	-
1106	1979	60	2039	9,450	17	661	-
1107	1979	60	2039	9,450	17	661	-
1108	1979	60	2039	9,450	17	661	-
1109	1979	60	2039	9,450	17	661	-
1110	1979	60	2039	9,450	17	661	-
1121	1979	60	2039	9,450	17	661	-
1122	1979	60	2039	9,450	17	661	-
1123	1979	60	2039	9,450	17	661	-
1124	1979	60	2039	9,450	17	661	-
1125	1979	60	2039	9,450	17	661	-
1126	1979	60	2039	9,450	17	661	-
1127	1979	60	2039	9,450	17	661	-
1128	1979	60	2039	9,450	17	661	-
1129	1979	60	2039	9,450	17	661	-
1153	1979	60	2039	9,450	17	661	-
1156	1979	60	2039	9,450	17	661	-



Table B-2 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Replacement Cost	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1157	1979	60	2039	9,450	17	661	-
1158	1979	60	2039	9,450	17	661	-
1159	1979	60	2039	9,450	17	661	-
1160	1979	60	2039	9,450	17	661	-
1161	1979	60	2039	9,450	17	661	-
1177	1979	60	2039	9,450	17	661	-
1178	1979	60	2039	9,450	17	661	-
1179	1979	60	2039	9,450	17	661	-
1180	1979	60	2039	9,450	17	661	-
1181	1979	60	2039	9,450	17	661	-
1182	1979	60	2039	9,450	17	661	-
1183	1979	60	2039	9,450	17	661	-
1184	1979	60	2039	9,450	17	661	-
1185	1979	60	2039	9,450	17	661	-
1186	1979	60	2039	9,450	17	661	-
1187	1979	60	2039	9,450	17	661	-
1188	1979	60	2039	9,450	17	661	-
1217	1979	60	2039	9,450	17	661	-
1218	1979	60	2039	9,450	17	661	-
1219	1979	60	2039	9,450	17	661	-
1220	1979	60	2039	9,450	17	661	-



Table B-2 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Replacement Cost	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1221	1979	60	2039	9,450	17	661	-
1222	1979	60	2039	9,450	17	661	-
1223	1979	60	2039	9,450	17	661	-
1241	1979	60	2039	9,450	17	661	-
1242	1979	60	2039	9,450	17	661	-
1243	1979	60	2039	9,450	17	661	-
1244	1979	60	2039	9,450	17	661	-
1245	1979	60	2039	9,450	17	661	-
1246	1979	60	2039	9,450	17	661	-
1247	1979	60	2039	9,450	17	661	-
1248	1979	60	2039	9,450	17	661	-
1249	1979	60	2039	9,450	17	661	-
1250	1979	60	2039	9,450	17	661	-
1251	1979	60	2039	9,450	17	661	-
1252	1979	60	2039	9,450	17	661	-
1253	1979	60	2039	9,450	17	661	-
1254	1979	60	2039	9,450	17	661	-
1255	1979	60	2039	9,450	17	661	-
1256	1979	60	2039	9,450	17	661	-
1257	1979	60	2039	9,450	17	661	-
1258	1979	60	2039	9,450	17	661	-



Table B-2 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Replacement Cost	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1259	1979	60	2039	9,450	17	661	-
1260	1979	60	2039	9,450	17	661	-
1261	1979	60	2039	9,450	17	661	-
1262	1979	60	2039	9,450	17	661	-
1263	1979	60	2039	9,450	17	661	-
1264	1979	60	2039	9,450	17	661	-
1265	1979	60	2039	9,450	17	661	-
1266	1979	60	2039	9,450	17	661	-
1267	1979	60	2039	9,450	17	661	-
1268	1979	60	2039	9,450	17	661	-
1269	1979	60	2039	9,450	17	661	-
1270	1979	60	2039	9,450	17	661	-
1271	1979	60	2039	9,450	17	661	-
1272	1979	60	2039	9,450	17	661	-
1273	1979	60	2039	9,450	17	661	-
1274	1979	60	2039	9,450	17	661	-
1275	1979	60	2039	9,450	17	661	-
1276	1979	60	2039	9,450	17	661	-
1277	1979	60	2039	9,450	17	661	-
1278	1979	60	2039	9,450	17	661	-
1279	1979	60	2039	9,450	17	661	-



Table B-2 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Replacement Cost	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1280	1979	60	2039	9,450	17	661	-
1281	1979	60	2039	9,450	17	661	-
1282	1979	60	2039	9,450	17	661	-
1283	1979	60	2039	9,450	17	661	-
1284	1979	60	2039	9,450	17	661	-
1285	1979	60	2039	9,450	17	661	-
1286	1979	60	2039	9,450	17	661	-
1287	1979	60	2039	9,450	17	661	-
1288	1979	60	2039	9,450	17	661	-
1289	1979	60	2039	9,450	17	661	-
1290	1979	60	2039	9,450	17	661	-
1291	1979	60	2039	9,450	17	661	-
1292	1979	60	2039	9,450	17	661	-
1293	1979	60	2039	9,450	17	661	-
1294	1979	60	2039	9,450	17	661	-
1295	1979	60	2039	9,450	17	661	-
1296	1979	60	2039	9,450	17	661	-
1297	1979	60	2039	9,450	17	661	-
1301	1979	60	2039	9,450	17	661	-
1302	1979	60	2039	9,450	17	661	-
1303	1979	60	2039	9,450	17	661	-



Table B-2 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Replacement Cost	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1304	1979	60	2039	9,450	17	661	-
1305	1979	60	2039	9,450	17	661	-
1306	1979	60	2039	9,450	17	661	-
1307	1979	60	2039	9,450	17	661	-
1308	1979	60	2039	9,450	17	661	-
1313	1979	60	2039	9,450	17	661	-
1314	1979	60	2039	9,450	17	661	-
1315	1979	60	2039	9,450	17	661	-
1316	1979	60	2039	9,450	17	661	-
1317	1979	60	2039	9,450	17	661	-
1318	1979	60	2039	9,450	17	661	-
1120	1984	60	2044	9,450	22	535	-
1079	1986	60	2046	9,450	24	500	-
1309	1986	60	2046	9,450	24	500	-
1310	1986	60	2046	9,450	24	500	-
1311	1986	60	2046	9,450	24	500	-
1312	1986	60	2046	9,450	24	500	-
1086	1987	60	2047	9,450	25	484	-
1163	1987	60	2047	9,450	25	484	-
1164	1987	60	2047	9,450	25	484	-
1165	1987	60	2047	9,450	25	484	-



Table B-2 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Replacement Cost	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1166	1987	60	2047	9,450	25	484	-
1167	1987	60	2047	9,450	25	484	-
1168	1987	60	2047	9,450	25	484	-
1169	1987	60	2047	9,450	25	484	-
1170	1987	60	2047	9,450	25	484	-
1171	1987	60	2047	9,450	25	484	-
1172	1987	60	2047	9,450	25	484	-
1173	1987	60	2047	9,450	25	484	-
1174	1987	60	2047	9,450	25	484	-
1175	1987	60	2047	9,450	25	484	-
1176	1987	60	2047	9,450	25	484	-
1149	1989	60	2049	9,450	27	456	-
1162	1989	60	2049	9,450	27	456	-
1096	1991	60	2051	9,450	29	433	-
1097	1991	60	2051	9,450	29	433	-
1098	1991	60	2051	9,450	29	433	-
1080	1995	60	2055	9,450	33	394	-
1081	1995	60	2055	9,450	33	394	-
1082	1995	60	2055	9,450	33	394	-
1083	1995	60	2055	9,450	33	394	-
1084	1995	60	2055	9,450	33	394	-



Table B-2 (Cont'd)

Asset ID	Year Installed	Estimated Life	Replacement Year	Replacement Cost	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1087	1995	60	2055	9,450	33	394	-
1088	1995	60	2055	9,450	33	394	-
1089	1995	60	2055	9,450	33	394	-
1090	1995	60	2055	9,450	33	394	-
1154	1995	60	2055	9,450	33	394	-
1155	1995	60	2055	9,450	33	394	-
Total				2,381,400		115,532	387,450



Table B-3
Municipality of Wawa
Sanitary Sewers Inventory

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1456	250	UNKN	1971	75	2046	49,770	24	2,631	-
1458	250	UNKN	1971	75	2046	80,110	24	4,236	-
1487	250	UNKN	1971	75	2046	27,640	24	1,461	-
1614	250	UNKN	1971	75	2046	39,570	24	2,092	-
1362	250	UNKN	1972	75	2047	83,490	25	4,276	-
1395	250	UNKN	1972	75	2047	61,160	25	3,133	-
1396	200	UNKN	1972	75	2047	47,280	25	2,422	-
1397	0	UNKN	1972	75	2047	50,490	25	2,586	-
1398	0	UNKN	1972	75	2047	54,340	25	2,783	-
1400	200	UNKN	1972	75	2047	47,190	25	2,417	-
1401	250	UNKN	1972	75	2047	61,820	25	3,166	-
1402	250	UNKN	1972	75	2047	62,220	25	3,187	-
1403	250	UNKN	1972	75	2047	60,600	25	3,104	-
1404	250	UNKN	1972	75	2047	60,990	25	3,124	-
1405	250	UNKN	1972	75	2047	58,480	25	2,995	-
1406	250	UNKN	1972	75	2047	61,340	25	3,142	-
1420	300	UNKN	1972	75	2047	53,750	25	2,753	-
1421	300	UNKN	1972	75	2047	52,480	25	2,688	-
1437	250	UNKN	1972	75	2047	78,100	25	4,000	-
1439	250	UNKN	1972	75	2047	41,560	25	2,129	-
1445	250	UNKN	1972	75	2047	29,510	25	1,512	-
1446	250	UNKN	1972	75	2047	64,170	25	3,287	-



Table B-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1447	250	UNKN	1972	75	2047	22,160	25	1,135	-
1453	250	UNKN	1972	75	2047	61,530	25	3,152	-
1454	375	UNKN	1972	75	2047	33,530	25	1,717	-
1455	375	UNKN	1972	75	2047	90,330	25	4,627	-
1457	300	AC	1972	75	2047	76,110	25	3,898	-
1459	300	UNKN	1972	75	2047	63,290	25	3,242	-
1460	300	AC	1972	75	2047	51,520	25	2,639	-
1461	300	UNKN	1972	75	2047	59,770	25	3,061	-
1462	300	UNKN	1972	75	2047	66,680	25	3,415	-
1463	300	UNKN	1972	75	2047	71,820	25	3,679	-
1464	250	UNKN	1972	75	2047	34,920	25	1,789	-
1465	200	UNKN	1972	75	2047	44,920	25	2,301	-
1485	250	CONC	1972	75	2047	23,050	25	1,181	-
1486	250	CONC	1972	75	2047	45,990	25	2,356	-
1488	250	UNKN	1972	75	2047	62,740	25	3,214	-
1489	250	UNKN	1972	75	2047	62,990	25	3,226	-
1497	300	UNKN	1972	75	2047	81,560	25	4,178	-
1498	300	AC	1972	75	2047	82,200	25	4,210	-
1499	250	UNKN	1972	75	2047	63,830	25	3,269	-
1500	0	UNKN	1972	75	2047	52,990	25	2,714	-
1501	300	CONC	1972	75	2047	43,590	25	2,233	-
1502	375	UNKN	1972	75	2047	39,980	25	2,048	-



Table B-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1503	375	UNKN	1972	75	2047	39,250	25	2,010	-
1504	0	UNKN	1972	75	2047	42,750	25	2,190	-
1505	0	UNKN	1972	75	2047	43,550	25	2,231	-
1512	250	UNKN	1972	75	2047	13,560	25	695	-
1515	250	AC	1972	75	2047	66,130	25	3,387	-
1516	250	UNKN	1972	75	2047	57,980	25	2,970	-
1517	250	UNKN	1972	75	2047	60,670	25	3,108	-
1518	250	AC	1972	75	2047	54,920	25	2,813	-
1519	250	UNKN	1972	75	2047	61,140	25	3,132	-
1549	250	AC	1972	75	2047	60,670	25	3,108	-
1550	250	AC	1972	75	2047	38,850	25	1,990	-
1551	250	AC	1972	75	2047	47,760	25	2,446	-
1552	200	UNKN	1972	75	2047	81,920	25	4,196	-
1553	200	UNKN	1972	75	2047	61,180	25	3,134	-
1554	250	UNKN	1972	75	2047	15,720	25	805	-
1555	250	UNKN	1972	75	2047	47,910	25	2,454	-
1556	250	UNKN	1972	75	2047	10,920	25	559	-
1559	250	UNKN	1972	75	2047	5,350	25	274	-
1562	250	UNKN	1972	75	2047	52,950	25	2,712	-
1563	250	UNKN	1972	75	2047	6,560	25	336	-
1591	200	UNKN	1972	75	2047	34,730	25	1,779	-
1592	200	UNKN	1972	75	2047	18,710	25	958	-



Table B-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1593	375	UNKN	1972	75	2047	67,200	25	3,442	-
1594	375	UNKN	1972	75	2047	13,160	25	674	-
1595	375	UNKN	1972	75	2047	46,700	25	2,392	-
1596	250	UNKN	1972	75	2047	57,300	25	2,935	-
1597	250	UNKN	1972	75	2047	74,020	25	3,791	-
1598	250	UNKN	1972	75	2047	65,300	25	3,345	-
1613	250	UNKN	1972	75	2047	70,100	25	3,591	-
1629	300	UNKN	1972	75	2047	69,530	25	3,561	-
1635	200	UNKN	1972	75	2047	47,740	25	2,445	-
1636	250	AC	1972	75	2047	65,440	25	3,352	-
1641	250	UNKN	1972	75	2047	12,150	25	622	-
1358	150	TPP	1974	75	2049	15,010	27	725	-
1386	500	UNKN	1974	75	2049	46,410	27	2,241	-
1387	300	AC	1974	75	2049	36,160	27	1,746	-
1442	250	AC	1974	75	2049	47,730	27	2,305	-
1443	250	AC	1974	75	2049	40,570	27	1,959	-
1444	250	AC	1974	75	2049	41,090	27	1,984	-
1473	300	UNKN	1974	75	2049	43,450	27	2,098	-
1474	300	UNKN	1974	75	2049	41,200	27	1,990	-
1475	250	AC	1974	75	2049	40,100	27	1,937	-
1477	250	AC	1974	75	2049	48,870	27	2,360	-
1334	375	UNKN	1979	75	2054	74,930	32	3,193	-



Table B-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1335	525	UNKN	1979	75	2054	19,570	32	834	-
1342	200	UNKN	1979	75	2054	31,770	32	1,354	-
1344	250	UNKN	1979	75	2054	14,550	32	620	-
1345	300	UNKN	1979	75	2054	67,730	32	2,886	-
1346	200	UNKN	1979	75	2054	78,890	32	3,362	-
1352	250	UNKN	1979	75	2054	62,800	32	2,676	-
1354	525	UNKN	1979	75	2054	30,740	32	1,310	-
1355	250	UNKN	1979	75	2054	2,600	32	111	-
1356	150	UNKN	1979	75	2054	19,510	32	831	-
1357	250	UNKN	1979	75	2054	24,240	32	1,033	-
1359	250	UNKN	1979	75	2054	7,140	32	304	-
1360	200	UNKN	1979	75	2054	1,770	32	75	-
1361	200	UNKN	1979	75	2054	4,250	32	181	-
1363	375	UNKN	1979	75	2054	35,240	32	1,502	-
1364	375	UNKN	1979	75	2054	73,680	32	3,140	-
1365	375	UNKN	1979	75	2054	96,220	32	4,100	-
1366	375	UNKN	1979	75	2054	63,070	32	2,687	-
1367	375	UNKN	1979	75	2054	42,370	32	1,805	-
1368	375	UNKN	1979	75	2054	97,990	32	4,175	-
1369	375	UNKN	1979	75	2054	48,890	32	2,083	-
1370	200	UNKN	1979	75	2054	6,530	32	278	-
1371	200	UNKN	1979	75	2054	3,320	32	141	-



Table B-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1372	250	UNKN	1979	75	2054	18,760	32	799	-
1373	250	UNKN	1979	75	2054	18,190	32	775	-
1374	250	UNKN	1979	75	2054	5,540	32	236	-
1375	250	UNKN	1979	75	2054	3,950	32	168	-
1376	250	UNKN	1979	75	2054	32,350	32	1,378	-
1383	200	UNKN	1979	75	2054	9,880	32	421	-
1385	200	UNKN	1979	75	2054	35,810	32	1,526	-
1388	200	UNKN	1979	75	2054	55,090	32	2,347	-
1389	200	UNKN	1979	75	2054	45,580	32	1,942	-
1391	450	UNKN	1979	75	2054	3,900	32	166	-
1393	250	UNKN	1979	75	2054	66,110	32	2,817	-
1399	200	UNKN	1979	75	2054	50,430	32	2,149	-
1407	250	AC	1979	75	2054	44,620	32	1,901	-
1422	300	PVC	1979	75	2054	57,220	32	2,438	-
1423	300	PVC	1979	75	2054	62,130	32	2,647	-
1425	300	PVC	1979	75	2054	40,990	32	1,747	-
1427	200	UNKN	1979	75	2054	29,480	32	1,256	-
1438	450	UNKN	1979	75	2054	60,410	32	2,574	-
1448	250	UNKN	1979	75	2054	51,450	32	2,192	-
1449	250	UNKN	1979	75	2054	36,650	32	1,562	-
1450	250	UNKN	1979	75	2054	2,410	32	103	-
1451	250	UNKN	1979	75	2054	63,480	32	2,705	-



Table B-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1452	250	AC	1979	75	2054	22,940	32	977	-
1466	200	UNKN	1979	75	2054	62,020	32	2,643	-
1467	200	UNKN	1979	75	2054	37,530	32	1,599	-
1468	250	UNKN	1979	75	2054	33,200	32	1,415	-
1469	250	UNKN	1979	75	2054	89,050	32	3,794	-
1471	450	UNKN	1979	75	2054	25,660	32	1,093	-
1472	200	UNKN	1979	75	2054	15,800	32	673	-
1478	250	UNKN	1979	75	2054	66,580	32	2,837	-
1479	250	UNKN	1979	75	2054	21,610	32	921	-
1480	200	UNKN	1979	75	2054	37,310	32	1,590	-
1481	200	UNKN	1979	75	2054	38,550	32	1,643	-
1483	300	UNKN	1979	75	2054	71,010	32	3,026	-
1484	250	UNKN	1979	75	2054	19,510	32	831	-
1490	250	UNKN	1979	75	2054	63,250	32	2,695	-
1491	200	UNKN	1979	75	2054	35,590	32	1,517	-
1492	250	UNKN	1979	75	2054	65,880	32	2,807	-
1493	250	UNKN	1979	75	2054	9,640	32	411	-
1494	250	UNKN	1979	75	2054	20,090	32	856	-
1495	250	UNKN	1979	75	2054	35,400	32	1,508	-
1496	250	UNKN	1979	75	2054	17,070	32	727	-
1506	250	UNKN	1979	75	2054	86,610	32	3,691	-
1508	200	UNKN	1979	75	2054	82,610	32	3,520	-



Table B-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1509	250	UNKN	1979	75	2054	53,120	32	2,263	-
1510	200	UNKN	1979	75	2054	76,380	32	3,255	-
1511	200	UNKN	1979	75	2054	57,790	32	2,462	-
1513	250	UNKN	1979	75	2054	45,250	32	1,928	-
1514	250	0	1979	75	2054	17,670	32	753	-
1520	200	UNKN	1979	75	2054	8,610	32	367	-
1521	200	UNKN	1979	75	2054	46,000	32	1,960	-
1522	450	UNKN	1979	75	2054	83,430	32	3,555	-
1523	450	UNKN	1979	75	2054	20,980	32	894	-
1524	150	UNKN	1979	75	2054	46,270	32	1,972	-
1525	450	UNKN	1979	75	2054	52,810	32	2,250	-
1526	200	UNKN	1979	75	2054	58,600	32	2,497	-
1527	450	UNKN	1979	75	2054	71,450	32	3,045	-
1528	450	UNKN	1979	75	2054	68,520	32	2,920	-
1529	450	UNKN	1979	75	2054	66,410	32	2,830	-
1530	450	UNKN	1979	75	2054	66,430	32	2,831	-
1531	450	UNKN	1979	75	2054	61,280	32	2,611	-
1532	250	UNKN	1979	75	2054	47,790	32	2,036	-
1533	300	UNKN	1979	75	2054	69,700	32	2,970	-
1534	300	UNKN	1979	75	2054	83,290	32	3,549	-
1535	300	UNKN	1979	75	2054	54,940	32	2,341	-
1536	200	UNKN	1979	75	2054	58,020	32	2,472	-
1537	200	UNKN	1979	75	2054	91,010	32	3,878	-



Table B-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1539	250	UNKN	1979	75	2054	66,650	32	2,840	-
1540	250	UNKN	1979	75	2054	62,240	32	2,652	-
1541	250	UNKN	1979	75	2054	65,030	32	2,771	-
1545	250	UNKN	1979	75	2054	48,140	32	2,051	-
1546	250	UNKN	1979	75	2054	56,450	32	2,405	-
1547	250	UNKN	1979	75	2054	40,420	32	1,722	-
1548	200	UNKN	1979	75	2054	66,970	32	2,854	-
1557	250	UNKN	1979	75	2054	8,620	32	367	-
1558	250	UNKN	1979	75	2054	2,760	32	118	-
1560	150	CLP	1979	75	2054	17,560	32	748	-
1561	250	UNKN	1979	75	2054	30,230	32	1,288	-
1564	150	UNKN	1979	75	2054	24,730	32	1,054	-
1565	200	UNKN	1979	75	2054	9,870	32	421	-
1566	375	UNKN	1979	75	2054	62,880	32	2,679	-
1567	375	UNKN	1979	75	2054	60,130	32	2,562	-
1568	250	UNKN	1979	75	2054	28,930	32	1,233	-
1569	250	UNKN	1979	75	2054	15,010	32	640	-
1570	250	UNKN	1979	75	2054	2,190	32	93	-
1571	250	UNKN	1979	75	2054	6,300	32	268	-
1572	250	UNKN	1979	75	2054	7,130	32	304	-
1573	250	UNKN	1979	75	2054	31,270	32	1,332	-
1574	250	UNKN	1979	75	2054	54,420	32	2,319	-



Table B-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1575	150	UNKN	1979	75	2054	35,870	32	1,528	-
1576	250	UNKN	1979	75	2054	53,710	32	2,289	-
1577	150	UNKN	1979	75	2054	23,100	32	984	-
1578	250	UNKN	1979	75	2054	75,940	32	3,236	-
1580	200	UNKN	1979	75	2054	58,300	32	2,484	-
1581	375	UNKN	1979	75	2054	62,250	32	2,653	-
1582	150	UNKN	1979	75	2054	5,900	32	251	-
1587	0	UNKN	1979	75	2054	28,870	32	1,230	-
1588	0	UNKN	1979	75	2054	17,650	32	752	-
1589	375	UNKN	1979	75	2054	74,340	32	3,168	-
1590	375	UNKN	1979	75	2054	20,690	32	882	-
1599	200	UNKN	1979	75	2054	42,930	32	1,829	-
1600	250	UNKN	1979	75	2054	52,070	32	2,219	-
1601	200	UNKN	1979	75	2054	40,290	32	1,717	-
1602	200	UNKN	1979	75	2054	43,350	32	1,847	-
1604	200	UNKN	1979	75	2054	31,980	32	1,363	-
1605	200	UNKN	1979	75	2054	48,030	32	2,047	-
1606	200	UNKN	1979	75	2054	50,190	32	2,139	-
1607	200	UNKN	1979	75	2054	58,220	32	2,481	-
1608	200	UNKN	1979	75	2054	6,340	32	270	-
1609	250	UNKN	1979	75	2054	58,320	32	2,485	-



Table B-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1610	200	UNKN	1979	75	2054	90,200	32	3,843	-
1611	150	UNKN	1979	75	2054	34,790	32	1,482	-
1612	150	UNKN	1979	75	2054	23,180	32	988	-
1615	250	UNKN	1979	75	2054	22,770	32	970	-
1616	300	UNKN	1979	75	2054	51,240	32	2,183	-
1617	200	UNKN	1979	75	2054	52,110	32	2,220	-
1618	200	UNKN	1979	75	2054	26,550	32	1,131	-
1619	300	UNKN	1979	75	2054	69,370	32	2,956	-
1620	300	UNKN	1979	75	2054	65,710	32	2,800	-
1621	300	UNKN	1979	75	2054	22,810	32	972	-
1622	200	UNKN	1979	75	2054	44,990	32	1,917	-
1623	200	UNKN	1979	75	2054	53,290	32	2,271	-
1624	200	UNKN	1979	75	2054	52,740	32	2,247	-
1625	200	UNKN	1979	75	2054	33,260	32	1,417	-
1626	200	UNKN	1979	75	2054	31,610	32	1,347	-
1627	200	UNKN	1979	75	2054	62,950	32	2,682	-
1628	300	UNKN	1979	75	2054	69,780	32	2,973	-
1630	200	UNKN	1979	75	2054	41,660	32	1,775	-
1631	200	UNKN	1979	75	2054	34,710	32	1,479	-
1632	200	UNKN	1979	75	2054	56,140	32	2,392	-
1633	200	UNKN	1979	75	2054	63,010	32	2,685	-



Table B-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1634	375	UNKN	1979	75	2054	57,330	32	2,443	-
1637	200	UNKN	1979	75	2054	45,800	32	1,952	-
1638	250	UNKN	1979	75	2054	90,790	32	3,869	-
1336	525	UNKN	2007	75	2082	82,440	60	2,372	-
1337	525	UNKN	2007	75	2082	81,400	60	2,342	-
1338	525	UNKN	2007	75	2082	27,900	60	803	-
1339	525	UNKN	2007	75	2082	65,680	60	1,889	-
1340	525	UNKN	2007	75	2082	91,520	60	2,633	-
1341	525	UNKN	2007	75	2082	75,460	60	2,171	-
1353	525	UNKN	2007	75	2082	71,540	60	2,058	-
1440	525	UNKN	2007	75	2082	94,590	60	2,721	-
1507	525	UNKN	2007	75	2082	69,880	60	2,010	-
6600	375	UNKN	2007	75	2082	19,500	60	561	-
6601	375	UNKN	2007	75	2082	13,190	60	379	-
6602	300	UNKN	2007	75	2082	64,030	60	1,842	-
6603	150	UNKN	2007	75	2082	4,900	60	141	-
6604	200	UNKN	2007	75	2082	17,040	60	490	-
6605	300	UNKN	2007	75	2082	145,580	60	4,188	-
6606	150	UNKN	2007	75	2082	1,900	60	55	-
6607	375	UNKN	2007	75	2082	63,090	60	1,815	-
6608	200	UNKN	2007	75	2082	15,820	60	455	-



Table B-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
6609	375	UNKN	2007	75	2082	73,990	60	2,129	-
6610	375	UNKN	2007	75	2082	74,480	60	2,143	-
6611	375	UNKN	2007	75	2082	20,900	60	601	-
6612	375	UNKN	2007	75	2082	81,940	60	2,357	-
6613	375	UNKN	2007	75	2082	19,750	60	568	-
6614	150	UNKN	2007	75	2082	14,150	60	407	-
6615	375	UNKN	2007	75	2082	7,540	60	217	-
6616	375	UNKN	2007	75	2082	54,160	60	1,558	-
6617	150	UNKN	2007	75	2082	1,900	60	55	-
6618	400	UNKN	2007	75	2082	82,100	60	2,362	-
6619	400	UNKN	2007	75	2082	70,710	60	2,034	-
6620	375	UNKN	2007	75	2082	26,220	60	754	-
6621	300	UNKN	2007	75	2082	28,750	60	827	-
1392	200	UNKN	2011	75	2086	54,560	64	1,519	-
1394	300	UNKN	2011	75	2086	42,570	64	1,185	-
1538	250	UNKN	2011	75	2086	52,280	64	1,455	-
1542	300	UNKN	2011	75	2086	79,480	64	2,213	-
1543	300	UNKN	2011	75	2086	69,100	64	1,924	-
1544	300	UNKN	2011	75	2086	63,990	64	1,781	-
1441	200	UNKN	2019	75	2094	66,320	72	1,746	-
1579	200	UNKN	2019	75	2094	46,680	72	1,229	-



Table B-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1584	200	UNKN	2019	75	2094	65,050	72	1,713	-
1585	200	UNKN	2019	75	2094	55,140	72	1,452	-
1586	200	UNKN	2019	75	2094	34,760	72	915	-
1603	250	UNKN	2021	75	2096	55,370	74	1,440	-
1583	375	UNKN	1984	75	2059	61,330	37	2,362	-
1639	250	AC	1986	75	2061	33,530	39	1,246	-
1642	250	AC	1986	75	2061	42,320	39	1,573	-
1643	250	AC	1986	75	2061	24,140	39	897	-
1644	250	AC	1986	75	2061	15,610	39	580	-
1414	250	AC	1987	75	2062	42,080	40	1,538	-
1415	250	AC	1987	75	2062	40,640	40	1,486	-
1416	250	AC	1987	75	2062	4,130	40	151	-
1417	250	AC	1987	75	2062	41,700	40	1,524	-
1426	300	PVC	1987	75	2062	31,930	40	1,167	-
1428	250	UNKN	1987	75	2062	7,730	40	283	-
1429	250	PVC	1987	75	2062	2,040	40	75	-
1430	250	AC	1987	75	2062	42,010	40	1,536	-
1431	250	AC	1987	75	2062	41,310	40	1,510	-
1432	250	AC	1987	75	2062	29,340	40	1,073	-
1433	250	UNKN	1987	75	2062	9,340	40	341	-
1434	250	AC	1987	75	2062	47,930	40	1,752	-



Table B-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1435	250	AC	1987	75	2062	49,990	40	1,827	-
1436	250	AC	1987	75	2062	37,410	40	1,368	-
1470	250	PVC	1987	75	2062	11,180	40	409	-
1476	250	UNKN	1987	75	2062	33,430	40	1,222	-
1640	250	AC	1987	75	2062	45,350	40	1,658	-
1418	300	PVC	1989	75	2064	49,090	42	1,739	-
1419	300	PVC	1989	75	2064	53,420	42	1,892	-
1424	300	PVC	1989	75	2064	58,090	42	2,057	-
1347	250	UNKN	1991	75	2066	23,980	44	825	-
1348	250	UNKN	1991	75	2066	2,050	44	70	-
1349	250	UNKN	1991	75	2066	51,760	44	1,780	-
1350	250	UNKN	1991	75	2066	52,170	44	1,794	-
1330	250	PVC	1995	75	2070	62,740	48	2,045	-
1331	250	PVC	1995	75	2070	61,370	48	2,001	-
1332	300	PVC	1995	75	2070	18,690	48	609	-
1333	250	PVC	1995	75	2070	8,370	48	273	-
1343	250	PVC	1995	75	2070	53,790	48	1,754	-
1351	250	PVC	1995	75	2070	42,280	48	1,378	-
1377	250	PVC	1995	75	2070	15,640	48	510	-
1378	250	PVC	1995	75	2070	31,560	48	1,029	-
1379	250	PVC	1995	75	2070	12,380	48	404	-



Table B-3 (Cont'd)

Asset ID	Diameter (mm)	Material	Year Installed	Estimated Life	Replacement Year	Total Main Replacement Costs	Years until Replacement	Annual Lifecycle Contribution	Amount to be included in 10 year Forecast
1380	250	PVC	1995	75	2070	20,140	48	657	-
1381	250	PVC	1995	75	2070	10,200	48	333	-
1382	250	PVC	1995	75	2070	34,160	48	1,114	-
1384	250	PVC	1995	75	2070	100,620	48	3,280	-
1390	250	PVC	1995	75	2070	26,110	48	851	-
1408	250	PVC	1995	75	2070	4,920	48	160	-
1409	250	PVC	1995	75	2070	133,920	48	4,366	-
1410	250	PVC	1995	75	2070	63,950	48	2,085	-
1411	250	PVC	1995	75	2070	13,830	48	451	-
1412	250	PVC	1995	75	2070	9,070	48	296	-
1413	250	PVC	1995	75	2070	1,340	48	44	-
1482	250	PVC	1995	75	2070	10,930	48	356	-
Total						15,160,310		636,945	0



Appendix C

Detailed Water Rate Calculations



Appendix C: Detailed Water Rate Calculations

Table C-1
Municipality of Wawa
Water Service
Capital Budget Forecast (Uninflated \$)

Description	Budget 2022	Total	Forecast															
			2023	2024	2025	2026	2027	2028	2029	2030	2031	2032						
Capital Expenditures																		
Water Main and Hydrant - MRV	75,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Water and WW 10 yr Plan & Rate Study	24,500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrant Rehabilitation	45,000	135,000	45,000	45,000	45,000	-	-	-	-	-	-	-	-	-	-	-	-	-
Water Treatment Plant - Filters	180,000	360,000	180,000	180,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Water Intake Valve	250,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Water & Wastewater Master Plan	105,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Water Intake	3,232,021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Asset Management Works	-	1,120,000	-	-	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000
Total Capital Expenditures	3,911,521	1,615,000	225,000	225,000	185,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000



Table C-2
Municipality of Wawa
Water Service
Capital Budget Forecast (Inflated \$)

Description	Budget 2022	Total	Forecast													
			2023	2024	2025	2026	2027	2028	2029	2030	2031	2032				
Capital Expenditures																
Water Main and Hydrant - MRV	75,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Water and WW 10 Yr Plan & Rate Study	24,500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrant Rehabilitation	45,000	145,000	47,000	49,000	49,000	-	-	-	-	-	-	-	-	-	-	-
Water Treatment Plant - Filters	180,000	384,000	189,000	195,000	-	-	-	-	-	-	-	-	-	-	-	-
Water Intake Valve	250,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Water & Wastewater Master Plan	105,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Water Intake	3,232,021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Asset Management Works	-	1,308,000	-	-	153,000	156,000	159,000	162,000	165,000	168,000	171,000	174,000	-	-	-	-
Total Capital Expenditures	3,911,521	1,837,000	236,000	244,000	202,000	156,000	159,000	162,000	165,000	168,000	171,000	174,000				
Capital Financing																
Provincial/Federal Grants	2,657,021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OCIF Reserve Fund	165,000	150,000	75,000	75,000	-	-	-	-	-	-	-	-	-	-	-	-
Debtenture Requirements	680,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operating Contributions	284,500	378,000	161,000	169,000	48,000	-	-	-	-	-	-	-	-	-	-	-
Rate Stabilization Reserve	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Water General Capital Reserve	-	669,000	-	-	74,000	76,000	79,000	82,000	85,000	88,000	91,000	94,000	-	-	-	-
Water Equipment Reserve	125,000	640,000	-	-	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	-	-	-	-
Total Capital Financing	3,911,521	1,837,000	236,000	244,000	202,000	156,000	159,000	162,000	165,000	168,000	171,000	174,000				



Table C-3
Municipality of Wawa
Water Service
Schedule of Debenture Repayments
Inflated \$

Debenture Year	2022	Principal (Inflated)	Forecast												
			2023	2024	2025	2026	2027	2028	2029	2030	2031	2032			
2022	-	680,000	59,285	59,285	59,285	59,285	59,285	59,285	59,285	59,285	59,285	59,285	59,285	59,285	59,285
2023	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2024	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2026	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2027	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2028	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2029	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2030	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2031	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2032	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Annual Debt Charges	-	680,000	59,285	59,285	59,285	59,285	59,285	59,285	59,285	59,285	59,285	59,285	59,285	59,285	59,285

Table C-4
Municipality of Wawa
Water Service
Water Equipment Reserve Continuity
Inflated \$

Description	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Opening Balance	505,436	478,853	581,207	681,043	725,264	658,170	589,733	519,928	448,726	376,101	302,023
Transfer from Operating	80,000	80,000	80,000	110,000	-	-	-	-	-	-	-
Transfer to Capital	125,000	-	-	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000
Transfer to Operating	-	-	-	-	-	-	-	-	-	-	-
Closing Balance	460,436	558,853	661,207	711,043	645,264	578,170	509,733	439,928	368,726	296,101	222,023
Interest	18,417	22,354	19,836	14,221	12,905	11,563	10,195	8,799	7,375	5,922	4,440



Table C-5
Municipality of Wawa
Water Service
Water Rate Stabilization Reserve Continuity
Inflated \$

Description	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Opening Balance	91,105	94,749	98,539	101,495	103,525	105,596	107,708	109,862	112,059	114,300	116,586
Transfer from Operating	-	-	-	-	-	-	-	-	-	-	-
Transfer to Capital	-	-	-	-	-	-	-	-	-	-	-
Transfer to Operating	-	-	-	-	-	-	-	-	-	-	-
Closing Balance	91,105	94,749	98,539	101,495	103,525	105,596	107,708	109,862	112,059	114,300	116,586
Interest	3,644	3,790	2,956	2,030	2,071	2,112	2,154	2,197	2,241	2,286	2,332

Table C-6
Municipality of Wawa
Water Service
Water General Capital Reserve Continuity
Inflated \$

Description	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Opening Balance	218,439	227,177	236,264	243,352	172,739	234,198	327,662	455,830	619,788	821,274	1,065,711
Transfer from Operating	-	-	-	-	132,867	166,039	201,229	236,805	273,383	314,541	357,214
Transfer from Wastewater Reserve	280,636	190,222	173,019	55,297	-	-	-	-	-	-	-
Transfer to Capital	-	-	-	74,000	76,000	79,000	82,000	85,000	88,000	91,000	94,000
Transfer to Operating	280,636	190,222	173,019	55,297	-	-	-	-	-	-	-
Closing Balance	218,439	227,177	236,264	169,352	229,606	321,238	446,892	607,635	805,171	1,044,815	1,328,925
Interest	8,738	9,087	7,088	3,387	4,592	6,425	8,938	12,153	16,103	20,896	26,578



Table C-7 (Cont'd)

Description	Budget 2022	Forecast										
		2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	
Pump -Materials / Supplies	2,500	2,600	2,700	2,780	2,840	2,900	2,960	3,020	3,080	3,140	3,200	
Pump - Taxes	2,996	3,100	3,220	3,320	3,390	3,460	3,530	3,600	3,670	3,740	3,810	
Pump - Consulting / Professional Fees	1,000	1,100	1,140	1,170	1,190	1,210	1,230	1,250	1,280	1,310	1,340	
Pump - Insurance	233	245	255	263	268	273	278	284	290	296	302	
18Chev - Gasoline / Diesel	2,700	2,900	3,100	3,300	3,500	3,700	3,900	4,100	4,300	4,500	4,700	
18Chev - Insurance	487	500	520	540	550	560	570	580	590	600	610	
18Chev - Licenses	72	76	79	81	83	85	87	89	91	93	95	
18Chev - Maintenance & Repairs	300	300	310	320	330	340	350	360	370	380	390	
08 F350 - Gasoline / Diesel	2,700	2,900	3,100	3,300	3,500	3,700	3,900	4,100	4,300	4,500	4,700	
08 F350 - Insurance	487	500	520	540	550	560	570	580	590	600	610	
08 F350 - Licenses	159	167	174	179	183	187	191	195	199	203	207	
08 F350 - Maintenance & Repairs	600	600	620	640	650	660	670	680	690	700	710	
Sub Total Operating Capital-Related	696,674	734,625	768,886	799,392	824,904	851,056	878,028	905,911	934,974	964,957	995,850	
Existing Debt (Principal)	33,967	35,896	37,934	40,088	42,365	44,770	47,312	49,999	52,838	55,838	59,009	
Existing Debt (Interest)	123,299	121,370	119,332	117,178	114,901	112,496	109,953	107,267	104,428	101,427	98,257	
New Debt (Principal)		18,485	19,595	20,770	22,017	23,337	24,738	26,222	27,795	29,463	31,231	
New Debt (Interest)		40,800	39,691	38,515	37,269	35,948	34,548	33,063	31,490	29,822	28,055	
Transfer to Capital	284,500	161,000	169,000	48,000	-	-	-	-	-	-	-	
Transfer to Rate Stabilization Reserve												
Transfer to Equipment Reserve	80,000	80,000	80,000	110,000	-	-	-	-	-	-	-	
Transfer to Capital Reserve					132,867	166,039	201,229	236,805	273,383	314,541	357,214	
Sub Total Capital Related	521,766	457,551	465,551	374,551	349,419	382,591	417,781	453,357	489,934	531,092	573,765	
Total Expenditures	1,218,440	1,192,176	1,234,437	1,173,943	1,174,323	1,233,647	1,295,809	1,359,268	1,424,908	1,496,049	1,569,615	
Revenues												
Base Charge	643,872	679,896	715,399	752,225	790,945	830,492	872,627	916,259	962,072	1,010,175	1,060,684	
W & S - Fire Hydrant Rentals	11,125	11,700	12,170	12,540	12,790	13,050	13,310	13,580	13,850	14,130	14,410	
W & S - Reconnection Fees	700	740	770	790	810	830	850	870	890	910	930	
W & S - Penalty & Interest Other	4,550	4,800	4,990	5,140	5,240	5,340	5,450	5,560	5,670	5,780	5,900	
W & S - Miscellaneous Revenues	4,550	4,800	4,990	5,140	5,240	5,340	5,450	5,560	5,670	5,780	5,900	
WTP - Solar Energy Revenue	7,500	7,900	8,220	8,470	8,640	8,810	8,990	9,170	9,350	9,540	9,730	
Contributions from Reserves / Reserve Funds	280,636	190,222	173,019	55,297	-	-	-	-	-	-	-	
Total Operating Revenue	952,933	900,058	919,558	839,602	823,665	863,862	906,677	950,999	997,502	1,046,315	1,097,554	
Water Billing Recovery - Total	265,507	292,118	314,879	334,341	350,658	369,785	389,131	408,269	427,406	449,734	472,061	



Table C-8
Municipality of Wawa
Water Rate Forecast
Inflated \$

Description	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Total Water Billing Recovery	265,507	292,118	314,879	334,341	350,658	369,785	389,131	408,269	427,406	449,734	472,061
Total Volume (m ³)	316,080	317,520	318,060	318,420	318,780	318,780	318,960	318,960	318,960	318,960	318,960
Constant Rate	0.84	0.92	0.99	1.05	1.10	1.16	1.22	1.28	1.34	1.41	1.48
Annual Percentage Change		10%	8%	6%	5%	5%	5%	5%	5%	5%	5%



Appendix D

Detailed Wastewater Rate Calculations



Appendix D: Detailed Wastewater Rate Calculations

Table D-1
Municipality of Wawa
Wastewater Service
Capital Budget Forecast (Uninflated \$)

Description	Budget 2022	Total	Forecast																	
			2023	2024	2025	2026	2027	2028	2029	2030	2031	2032								
Capital Expenditures																				
Water and WW 10 yr Plan & Rate Study	10,500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer Jet / Vacuum Trailer	-	90,000	-	90,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Water & Wastewater Master Plan	45,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Asset Management Works	-	480,000	-	-	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000
Total Capital Expenditures	55,500	570,000	-	90,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000

Table D-2
Municipality of Wawa
Wastewater Service
Capital Budget Forecast (Inflated \$)

Description	Budget 2022	Total	Forecast																	
			2023	2024	2025	2026	2027	2028	2029	2030	2031	2032								
Capital Expenditures																				
Water and WW 10 yr Plan & Rate Study	10,500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer Jet / Vacuum Trailer	-	97,000	-	97,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Water & Wastewater Master Plan	45,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Asset Management Works	-	556,000	-	-	66,000	67,000	67,000	68,000	68,000	69,000	69,000	70,000	70,000	71,000	71,000	72,000	72,000	73,000	73,000	73,000
Total Capital Expenditures	55,500	653,000	-	97,000	66,000	67,000	67,000	68,000	68,000	69,000	69,000	70,000	70,000	71,000	71,000	72,000	72,000	73,000	73,000	73,000
Capital Financing																				
Provincial/Federal Grants	45,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Debt/Requirement	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operating Contributions	10,500	22,000	-	22,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rate Stabilization Reserve	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
General Capital Reserve	-	556,000	-	-	66,000	67,000	67,000	68,000	68,000	69,000	69,000	70,000	70,000	71,000	71,000	72,000	72,000	73,000	73,000	73,000
Equipment Reserve	-	75,000	-	75,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Capital Financing	55,500	653,000	-	97,000	66,000	67,000	67,000	68,000	68,000	69,000	69,000	70,000	70,000	71,000	71,000	72,000	72,000	73,000	73,000	73,000



Table D-3
Municipality of Wawa
Wastewater Service
Schedule of Debenture Repayments
Inflated \$

Debenture Year	2022	Principal (Inflated)	Forecast											
			2023	2024	2025	2026	2027	2028	2029	2030	2031	2032		
2023	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2024	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2026	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2027	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2028	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2029	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2030	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2031	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2032	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Annual Debt Charges	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table D-4
Municipality of Wawa
Wastewater Service
Wastewater Equipment Reserve Continuity
Inflated \$

Description	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Opening Balance	216,615	256,480	287,539	218,915	223,294	227,759	232,315	236,961	241,700	246,534	251,465
Transfer from Operating	30,000	20,000	-	-	-	-	-	-	-	-	-
Transfer to Capital	-	-	75,000	-	-	-	-	-	-	-	-
Transfer to Operating	-	-	-	-	-	-	-	-	-	-	-
Closing Balance	246,615	276,480	212,539	218,915	223,294	227,759	232,315	236,961	241,700	246,534	251,465
Interest	9,865	11,059	6,376	4,378	4,466	4,555	4,646	4,739	4,834	4,931	5,029



Table D-5
Municipality of Wawa
Wastewater Service
Wastewater Rate Stabilization Reserve Continuity
Inflated \$

Description	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Opening Balance	39,045	40,607	42,231	43,498	44,368	45,255	46,160	47,084	48,025	48,986	49,966
Transfer from Operating	-	-	-	-	-	-	-	-	-	-	-
Transfer to Capital	-	-	-	-	-	-	-	-	-	-	-
Transfer to Operating	-	-	-	-	-	-	-	-	-	-	-
Closing Balance	39,045	40,607	42,231	43,498	44,368	45,255	46,160	47,084	48,025	48,986	49,966
Interest	1,562	1,624	1,267	870	887	905	923	942	961	980	999

Table D-6
Municipality of Wawa
Wastewater Service
Wastewater General Capital Reserve Continuity
Inflated \$

Description	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Opening Balance	93,617	66,252	78,543	104,661	204,875	363,007	522,904	684,864	848,287	1,012,951	1,178,639
Transfer from Operating	250,723	199,492	196,089	217,493	218,015	217,644	217,531	216,790	215,802	214,578	213,102
Transfer to Capital	-	-	-	66,000	67,000	68,000	69,000	70,000	71,000	72,000	73,000
Transfer to Water Reserve	280,636	190,222	173,019	55,297	-	-	-	-	-	-	-
Transfer to Operating	-	-	-	-	-	-	-	-	-	-	-
Closing Balance	63,704	75,522	101,613	200,857	355,889	512,651	671,435	831,654	993,089	1,155,528	1,318,741
Interest	2,548	3,021	3,048	4,017	7,118	10,253	13,429	16,633	19,862	23,111	26,375



Table D-7 (Cont'd)

Description	Budget	Forecast										
	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	
Capital-Related												
Existing Debt (Principal)												
Existing Debt (Interest)												
New Debt (Principal)												
New Debt (Interest)												
Transfer to Capital	10,500		22,000									
Transfer to Rate Stabilization Reserve	-	20,000										
Transfer to Equipment Reserve	30,000											
Transfer to Capital Reserve	250,723	199,492	196,089	217,493	218,015	217,644	217,531	216,790	215,802	214,578	213,102	
Sub Total Capital Related	291,223	219,492	218,089	217,493	218,015	217,644	217,531	216,790	215,802	214,578	213,102	
Total Expenditures	572,967	514,996	526,132	537,304	548,507	559,118	570,290	581,235	592,334	603,598	615,021	
Revenues												
Base Charge	336,174	344,476	351,903	359,488	367,237	374,581	382,364	390,011	397,811	405,767	413,883	
W & S - Sewage Dumping Fees	80,000	10,000	10,400	10,710	10,920	11,140	11,360	11,590	11,820	12,060	12,300	
W & S - Reconnection Fees	300	320	330	340	350	360	370	380	390	400	410	
W & S - Penalty & Interest Other	1,950	2,050	2,130	2,190	2,230	2,270	2,320	2,370	2,420	2,470	2,520	
W & S - Miscellaneous Revenues	1,950	2,050	2,130	2,190	2,230	2,270	2,320	2,370	2,420	2,470	2,520	
Contributions from Rate Stabilization Reserve	-	-	-	-	-	-	-	-	-	-	-	
Contributions from Equipment Reserve	-	-	-	-	-	-	-	-	-	-	-	
Contributions from Capital Reserve	-	-	-	-	-	-	-	-	-	-	-	
Total Operating Revenue	420,374	358,896	366,893	374,918	382,967	390,621	398,734	406,721	414,861	423,167	431,633	
Wastewater Billing Recovery - Total	152,593	156,099	159,239	162,386	165,540	168,496	171,557	174,514	177,472	180,430	183,388	



Table D-8
Municipality of Wawa
Wastewater Rate Forecast
Inflated \$

Description	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Total Wastewater Billing Recovery	152,593	156,099	159,239	162,386	165,540	168,496	171,557	174,514	177,472	180,430	183,388
Total Volume (m ³)	293,447	294,527	294,887	295,247	295,607	295,607	295,787	295,787	295,787	295,787	295,787
Constant Rate	0.52	0.53	0.54	0.55	0.56	0.57	0.58	0.59	0.60	0.61	0.62
Annual Percentage Change		2%	2%	2%	2%	2%	2%	2%	2%	2%	2%



 **Watson
& Associates**
ECONOMISTS LTD.

Water Ontario Regulation 453/07 Financial Plan

Municipality of Wawa

Financial Plan # 231-301

January 20, 2023

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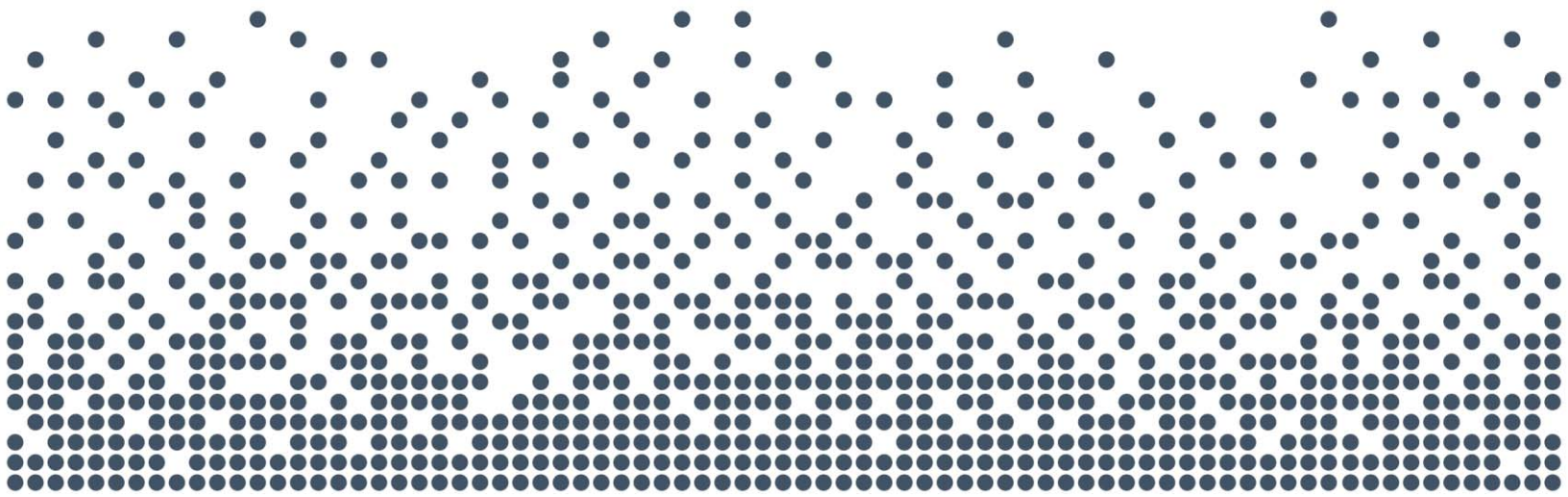
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List of Acronyms and Abbreviations

Acronym	Full Description of Acronym
I.J.P.A.	Infrastructure for Jobs and Prosperity Act
MECP	Ministry of the Environment, Conservation and Parks
MMAH	Ministry of Municipal Affairs and Housing
OCIF	Ontario Community Infrastructure Fund
O. Reg.	Ontario Regulation
PSAB	Public Sector Accounting Board
S.D.W.A.	Safe Drinking Water Act
T.C.A.	Tangible Capital Assets
W.O.A.	Water Opportunities Act



Report



Chapter 1

Introduction



1. Introduction

1.1 Study Purpose

Watson & Associates Economists Ltd. (Watson) was retained by the Municipality of Wawa (the Municipality) to prepare a water financial plan as part of the five submission requirements for the purposes of obtaining a municipal drinking water license as per the *Safe Drinking Water Act, 2002*. In general, a financial plan requires an in-depth analysis of capital and operating needs, a review of current and future demand versus supply, and consideration of available funding sources. This detailed financial planning and forecasting in regard to the Municipality's water system has already been completed and documented by Watson within the "Municipality of Wawa Water and Wastewater Rate Study, December 8, 2022" (2022 Rate Study). The objective of the report provided herein is to convert the findings of the 2022 Rate Study into the prescribed reporting requirements for a financial plan as defined by Ontario Regulation 453/07 (O.Reg. 453/07).

1.2 Background

The Safe Drinking Water Act (S.D.W.A.) was passed in December, 2002 in order to address some of the recommendations made by the Walkerton Inquiry Part II report. One of the main requirements of the Act is the mandatory licensing of municipal water providers. Section 31 (1) specifically states,

"No person shall,

- a) establish a new municipal drinking water system or replace or carry out an alteration to a municipal drinking water system except under the authority of and in accordance with an approval under this Part or a drinking water works permit; or
- b) use or operate a municipal drinking water system that was established before or after this section comes into force except under the authority of and in accordance with an approval under this Part or municipal drinking water licence."

In order to become licensed, a municipality must satisfy five key requirements as per section 44 (1):



1. Obtain a drinking water works permit.
2. Acceptance of the operational plan for the system based on the Drinking Water Quality Management Standard.
3. Accreditation of the Operating Authority.
4. Prepare and provide a financial plan.
5. Obtain permit to take water.

The preparation of a financial plan is a key requirement for licensing and as such, must be undertaken by all water providers.

1.2.1 Financial Plan Defined

Subsection 30 of the Act provides the following definition of financial plans:

"financial plans" means financial plans that satisfy the requirements prescribed by the Minister. 2017, c. 2, Sched. 11, s. 6 (3)

As of time of writing, the *Sustainable Water and Sewage Systems Act, 2002* has been repealed (see Section 2.2 of this report) however, the standards that it directs underpin the specific requirements of s.30 as they are outlined in O. Reg. 453/07 and which will be examined in detail below.

1.2.2 Financial Plan Requirements – Existing System

O.Reg. 453/07 also provides details with regards to s.30 (1) part b of the S.D.W.A. for existing water systems. The requirements for existing systems are summarized as follows:

- Financial plans must be approved by Council resolution (or governing body);
- Financial plans must include a statement that the financial impacts have been considered and apply for a minimum six-year period (commencing in the year of licence expiry);
- Financial plans must include detail regarding proposed or projected financial operations itemized by total revenues, total expenses, annual surplus/deficit and



accumulated surplus/deficit (i.e. the components of a “Statement of Operations” as per the P.S.A.B.) for each year in which the financial plans apply;

- Financial plans must present financial position itemized by total financial assets, total liabilities, net debt, non-financial assets, and tangible capital assets (i.e. the components of a “Statement of Financial Position” as per P.S.A.B.) for each year in which the financial plans apply;
- Gross cash receipts/payments itemized by operating transactions, capital transactions, investing transactions and financial transactions (i.e. the components of a “Statement of Cash Flow” as per P.S.A.B.) for each year in which the financial plans apply;
- Financial plans applicable to two or more solely-owned drinking water systems can be prepared as if they are for one drinking water system;
- Financial plans are to be made available to the public upon request and at no charge;
- If a website is maintained, financial plans are to be made available to the public through publication on the Internet at no charge;
- Notice of the availability of the financial plans is to be given to the public; and
- Financial plan is to be submitted to the Ministry of Municipal Affairs and Housing.

1.2.3 Financial Plan Requirements – General

Given that the requirements for a financial plan is legislated under the Act, a financial plan is mandatory for water systems. The financial plans shall be for a forecast period of at least six years but longer planning horizons are encouraged. The ten-year forecast goes above and beyond the minimum requirement. The financial plan is to be completed and approved by resolution of Council or the governing body in accordance with subsection 3 (1) 1 of O. Reg. 453/07. Confirmation of approval of the financial plan must be submitted at the time of municipal drinking water license renewal (i.e. six months prior to license expiry).

A copy of the financial plan will be submitted to the Ministry of Municipal Affairs and Housing (MMAH) and not the Ministry of the Environment, Conservation, and Parks (MECP); however, the MECP may request it in the course of review of the licence renewal. Financial plans may be amended and additional information beyond what is prescribed can be included if deemed necessary. The financial plan must contain on



the front page, the appropriate financial plan number as set out in Schedule A of the Municipal Drinking Water Licence.

1.2.4 Public Sector Accounting Board (P.S.A.B.) Requirements

The components of the financial plans indicated by the regulation are consistent with the requirements for financial statement presentation as set out in section PS1200 of the Canadian Institute of Chartered Accountants Public Sector Accounting Handbook:

“Financial statements should include a Statement of Financial Position, a Statement of Operations, a Statement of Change in Net Debt, and a Statement of Cash Flow.”

The format required is to conform to the requirements of PS1200 and PS3150. The financial statements are to be reported on a full accrual accounting basis. The accrual accounting method recognizes revenues and expenses in the same period as the activities that give rise to them regardless of when they are actually paid for. Since an exchange of cash is not necessary to report a financial transaction, the accrual method is meant to provide a more accurate picture of financial position.

The accounting treatment of tangible capital assets is prescribed under section PS3150. Tangible capital assets are to be capitalized to ensure an inventory of the assets owned are recorded and to account for their ability to provide future benefits.

The Statement of Cash Flow and the Statement of Change in Net Financial Assets/Debt are required statements. The Statement of Change in Net Financial Assets/Debt reports on whether enough revenue was generated in a period to cover the expenses in the period and whether sufficient resources have been generated to support current and future activities. The Statement of Cash Flow reports on how activities were financed for a given period providing a measure of the changes in cash for that period.

1.2.5 The Municipality's Financial Plan

The Municipality is currently in the process of renewing the drinking water license and the previous version of the financial plan no longer meets the requirements as it must apply to a period of a least six years beginning in the year that the licenses would otherwise expire. This financial plan provides for a 2022 start year and forecast period to 2031.



Chapter 2

Sustainable Financial Planning



2. Sustainable Financial Planning

2.1 Introduction

In general, sustainability refers to the ability to maintain a certain position over time. While the S.D.W.A. requires a declaration of the financial plan's sustainability, it does not give a clear definition of what would be considered sustainable. Instead, the MECP released a guideline ("Towards Financially Sustainable Drinking-Water") that provides possible approaches to achieving sustainability. The Province's Principles of Financially Sustainable Water Services are provided below:

Principle #1: Ongoing public engagement and transparency can build support for, and confidence in, financial plans and the system to which they relate.

Principle #2: An integrated approach to planning among water, wastewater, and storm water systems is desirable given the inherent relationship among these services.

Principle #3: Revenues collected for the provision of water services should ultimately be used to meet the needs of those services.

Principle #4: Life-cycle planning with mid-course corrections is preferable to planning over the short-term, or not planning at all.

Principle #5: An asset management plan is a key input to the development of a financial plan.

Principle #6: A sustainable level of revenue allows for reliable service that meets or exceeds environmental protection standards, while providing sufficient resources for future rehabilitation and replacement needs.

Principle #7: Ensuring users pay for the services they are provided leads to equitable outcomes and can improve conservation. In general, metering and the use of rates can help ensure users pay for services received.

Principle #8: Financial plans are "living" documents that require continuous improvement. Comparing the accuracy of financial projections with actual results can lead to improved planning in the future.



Principle #9: Financial plans benefit from the close collaboration of various groups, including engineers, accountants, auditors, utility staff, and municipal council.

2.2 Sustainable Water and Sewage Systems Act

The *Sustainable Water and Sewage Systems Act* (S.W.S.S.A.) was passed on December 13, 2002. The intent of the Act was to introduce the requirement for municipalities to undertake an assessment of the “full cost” of providing their water and the wastewater services. In total, there were 40 areas within the Act to which the Minister could have made Regulations. It is noted that, the regulations, which accompany the Act, were not issued and the Act was repealed on December 31, 2012.

2.3 Water Opportunities Act, 2010

Since the passage of the *Safe Drinking Water Act*, changes and refinements to the legislation have been introduced, including the *Water Opportunities Act* (W.O.A). W.O.A. was introduced into legislation on May 18, 2010 and received Royal Assent on November 29, 2010, as the W.O.A.

The purposes of the W.O.A. are to foster innovative water, wastewater and storm water technologies, services, and practices; create opportunities for economic development and clean-technology jobs; and conserve and sustain water resources. To achieve this, the W.O.A. provides for the creation of performance targets (financial, operational and maintenance related), which will vary by service type and location and the required submission of conservation and sustainability plans for water, wastewater, and stormwater.

The sustainability plan in the W.O.A. expands on interim legislation for financial plans included in O.Reg 453/07, to include the following:

- an asset management plan for the physical infrastructure;
- financial plan;
- water conservation plan (for water service only);
- a risk assessment;
- a strategy for maintaining and improving the services; and
- additional information considered advisable.



Where a Board has jurisdiction over a service, the plan (and any plan amendments) must be approved by the municipality in which the municipal service is provided, before submission to the Minister. The Minister may also direct preparation of joint or partially joint plans.

Regulations (still forthcoming) will prescribe details in regard to any time periods or time limits, contents of the plans, identifying which portions of the plan will require certification, the public consultation process (if required), limitations updates and refinements.

2.4 Infrastructure for Jobs and Prosperity Act (I.J.P.A.), 2015

On June 4, 2015, the Province passed the *Infrastructure for Jobs and Prosperity Act* (I.J.P.A.) which, over time, will require municipalities to undertake and implement asset management plans for all infrastructure they own. On December 27, 2017, the Province of Ontario released Ontario Regulation 588/17 under I.J.P.A. which has three phases that municipalities must meet. The timelines associated with the three phases were later extended by Ontario Regulation 193/21 which was filed on March 15, 2021.

Every municipality in Ontario will have to prepare a strategic asset management policy by July 1, 2019. Municipalities will be required to review their strategic asset management policies at least every five years and make updates, as necessary. The subsequent phases are as follows:

- Phase 1 – Asset Management Plan (by July 1, 2022):
 - For core assets – Municipalities must have the following:
 - Inventory of assets;
 - Current levels of service measured by standard metrics; and
 - Costs to maintain levels of service.
- Phase 2 – Asset Management Plan (by July 1, 2024):
 - Same steps as Phase 1 but for all assets.
- Phase 3 – Asset Management Plan (by July 1, 2025):
 - Builds on Phase 1 and 2 by adding:
 - Proposed levels of service; and
 - Lifecycle management and Financial strategy.



In relation to water (which is considered a core asset), municipalities will need to have an asset management plan that addresses the related infrastructure by July 1, 2022 (Phase 1). O.Reg. 588/17 specifies that the Municipality's asset management plan must include the following for each asset category:

- the current levels of service being provided;
 - determined in accordance with the following qualitative descriptions and technical metrics and based on data from at most the two calendar years prior to the year in which all information required under this section is included in the asset management plan.
- the current performance of each asset category;
- a summary of the assets in the category;
- the replacement cost of the assets in the category;
- the average age of the assets in the category, determined by assessing the average age of the components of the assets;
- the information available on the condition of the assets in the category;
- a description of the Municipality's approach to assessing the condition of the assets in the category, based on recognized and generally accepted good engineering practices where appropriate; and
- the lifecycle activities that would need to be undertaken to maintain the current levels of service.

2.5 Water Forecast

The Municipality has already completed their financial planning through its 2022 water budget and a forecasting exercise through the 2022 Rate Study. The budget and rate study are designed to address “full cost” principles and reflect the guiding principles toward sustainable financial planning.

As a result of employing this process, the 2022 Rate Study provides the basis for a financial plan for the Municipality's water system by including:

- A detailed assessment of current and future capital needs including an analysis of potential funding sources;
- An analysis of operating costs in order to determine how they will be impacted by evolving infrastructure needs and system growth;



- An analysis of required water rates that ensure revenues are equitable and sufficient to meet system needs; and
- A public process that involves consultation with the main stakeholders including the Municipal staff, Council, the general public (specifically the users of the system) and others with the aim of gaining input and collaboration on the sustainability of the water financial plan.

The details of the financial plan arising from the 2022 Rate Study are contained in Appendix A.



Chapter 3

Approach



3. Approach

3.1 Overview

The 2022 Rate Study has been used as a starting point to prepare the water financial plan. The Water forecast is prepared on a modified cash basis; therefore, a conversion is required in order to present a full accrual financial plan for the purposes of this report. The conversion process used will help to establish the structure of the financial plan along with the opening balances that will underpin the forecast. This chapter outlines the conversion process utilized and summarizes the adjustments made to prepare the financial plan.

3.2 Conversion Process

The conversion from the existing modified cash basis financial plan to the full accrual reporting format required under O.Reg. 453/07 can be summarized in the following steps:

1. Calculate Tangible Capital Asset Balances
2. Convert Statement of Operations
3. Convert Statement of Financial Position
4. Convert Statement of Cash Flow and Net Assets/Debt
5. Verification and Note Preparation

3.2.1 Calculate Tangible Capital Asset Balances

In calculating tangible capital asset balances, existing and future purchased, developed, and/or contributed assets will need to be considered. For existing water assets, an inventory has already been compiled and summarized within the 2022 Rate Study as well as part of the Municipality's annual P.S.A.B. 3150 compliance processes. Given the prospective nature of the 2022 Rate Study, replacement cost is provided for each asset. However, historical cost (which is the original cost to purchase, develop, or



construct each asset) is required for financial reporting purposes. Once historical cost is established, the following calculations are made to determine net book value:

- Accumulated amortization up to the year prior to the first forecast year.
- Amortization expense on existing assets for each year of the forecast period.
- Acquisition of new assets for each year of the forecast period.
- Disposals and related gains or losses for each year of forecast period.

Future water capital needs have also been determined and summarized within the 2022 Rate Study. However, these estimates only represent future assets that the Municipality anticipates purchasing or constructing without consideration for assets that are contributed by developers and other parties (at no or partial cost to the Municipality). These contributed assets could form a significant part of the infrastructure going forward in terms of the sustainability of the system as a whole and despite their non-monetary nature; the financial plan may need to be adjusted in order to properly account for these transactions. Once the sequence and total asset acquisition has been determined for the forecast period, annual amortization of these assets for each year is calculated in a similar manner as that used for existing assets.

Once the historical cost, accumulated amortization, and amortization expenses are calculated as described above, the total net book value of the tangible capital assets can be determined and recorded on the Statement of Financial Position.

3.2.2 Convert Statement of Operations

A wide range of adjustments will be considered, dependent on the size and complexity of the system, in order to convert from the cash to full accrual basis. For example, debt repayment costs relating to the principal payment portion only needs to be removed under the accrual basis, as they no longer qualify as an expense for reporting purposes. Principal payments are reported as a decrease in debt liability on the Statement of Financial Position. Transfers to and from reserves are removed as these transactions are represented by changes in cash and accumulated surplus. Finally, expenses relating to tangible capital assets, such as amortization, write-offs, and (gain)/loss on disposal of assets are reported on the Statement of Operations in order to capture the



allocation of the cost of these assets to operating activities over their useful lives and therefore are added in under the accrual basis.



Table 3-1
Conversion Adjustments
Statement of Operations (Water)

Modified Cash Basis	Budget 2022	Adjustments		Full Accrual Budget 2022	Accrual Basis
		DR	CR		
Revenues					
Base Charge Revenue	643,872			643,872	Base Charge Revenue
Rate Based Revenue	265,507			265,507	Rate Based Revenue
Transfers from Reserves	280,636	280,636			
Other Revenue	28,425		3,133,456	3,161,881	Other Revenue
Total Revenues	1,218,440			4,071,260	Total Revenues
Expenditures					
Operating Capital	696,674	129,500		826,174	Operating Expenses
Transfers to Reserves	80,000		80,000		
Transfers to Capital	284,500		284,500		
Debt Repayment (Principal & Interest)	157,266		33,967	123,299	Interest on Debt
		705,146		705,146	Amortization
		-		-	Loss on Disposal of Tangible Capital Assets
Total Expenditures	1,218,440			1,654,619	Total Expenses
Net Expenditures	-			2,416,641	Annual Surplus/(Deficit)
Increase (decrease) in amounts to be recovered	-			7,162,888	Accumulated Surplus/(Deficit), beginning of year
Change in Fund Balances	-	2,416,641	-	9,579,529	Accumulated Surplus/(Deficit), end of year
TOTAL ADJUSTMENTS		3,531,923	3,531,923		

Note: The combined adjustments above should be balanced and net to \$0 (i.e. Total DR = Total CR)



3.2.3 Convert Statement of Financial Position

Once the Statement of Operations has been converted and the net book value of tangible capital assets has been recorded, balances for the remaining items on the Statement of Financial Position are determined and recorded (see Figure 3-2). As noted earlier, the applicable balances from the Statement of Capital and the Statement of Reserve and Reserve Funds will need to be transferred to this statement. The opening/actual balances for the remaining accounts such as accounts receivable, inventory, accounts payable, outstanding debt (principal only), are recorded and classified according to the structure of the Statement of Financial Position as outlined in PS1200.

It is acknowledged that some of the balances required on the Statement of Financial Position will be consolidated across the Municipality and as such, it may be difficult to isolate the information that is relevant to water. An example of this is accounts receivable, which may be administered centrally by the Finance Department. Ontario Regulation 453/07 allows for the exclusion of these numbers if they are not known at the time of preparing the financial plan. Please refer to the Financial Plan Notes in Chapter 4 for more details.

3.2.4 Convert Statement of Cash Flow and Net Financial Assets/Debt

The Statement of Cash Flow summarizes how the Municipality financed its activities or in other words, how the costs of providing services were recovered. The statement is derived using comparative Statement of Financial Position, the current Statement of Operations and other available transaction data.

The Statement of Change in Net Financial Assets/Debt is a new statement which reconciles the difference between the surplus or deficit from current operations and the change in net financial assets/debt for the year. This is significant, as net debt provides an indication of future revenue requirements. In order to complete the Statement of Net Financial Assets/Debt, additional information regarding any gains/losses on disposals of assets, asset write-downs, acquisition/use of supplies inventory, and the acquisition use of prepaid expenses is necessary, (if applicable). Although the Statement of Change in Net Financial Assets/Debt is not required under O.Reg. 453/07, it has been included in this report as a further indicator of financial viability.



Table 3-2
Conversion Adjustments
Statements of Financial Position (Water)

Modified Cash Basis	Budget 2022	Adjustments		Full Accrual Budget 2022	Accrual Basis
		DR	CR		
ASSETS					ASSETS
Financial Assets					Financial Assets
Cash	684,517			684,517	Cash
Accounts Receivable	208,206			208,206	Accounts Receivable
Total Financial Assets	892,723			892,723	Total Financial Assets
LIABILITIES					Liabilities
Accounts Payable & Accrued Liabilities	91,944			91,944	Accounts Payable & Accrued Liabilities
Gross Long-term Liabilities	2,856,170			2,856,170	Debt (Principal only)
Total Liabilities	2,948,114			2,948,114	Total Liabilities
Net Assets/(Debt)	(2,055,391)			(2,055,391)	Net Financial Assets/(Debt)
					Non-Financial Assets
		11,764,420	129,500	11,634,920	Tangible Capital Assets
Municipal Position				11,634,920	Total Non-Financial Assets
Water Reserves	800,779				
Amounts to be Recovered	(2,856,170)				
		800,779	-		
		-	2,856,170		
Total Municipal Position	(2,055,391)			9,579,529	Accumulated Surplus/(Deficit), end of year
TOTAL ADJUSTMENTS		12,565,199	12,565,199		

Note: The combined adjustments above should be balanced and net to \$0 (i.e. Total DR = Total CR)



3.2.5 Verification and Note Preparation

The final step in the conversion process is to ensure that all of the statements created by the previous steps are in balance. The Statement of Financial Position summarizes the resources and obligations of the Municipality at a set point in time. The Statement of Operations summarizes how these resources and obligations changed over the reporting period. To this end, the accumulated surplus/deficit reported on the Statement of Financial Position should equal the accumulated surplus/deficit reported on the Statement of Operations.

The Statement of Change in Net Financial Assets/Debt and the Statement of Financial Position are also linked in terms of reporting on net financial assets/debt. On the Statement of Financial Position, net financial assets/debt is equal to the difference between financial assets and liabilities and should equal net financial assets/debt as calculated on the Statement of Net Financial Assets/Debt.

While not part of the financial plan, the accompanying notes are important to summarize the assumptions and estimates made in preparing the financial plan. Some of the significant assumptions that need to be addressed within the financial plan are as follows:

- a) Opening cash balances – Opening cash balances are necessary to complete the Statement of Cash Flows and balance the Statement of Financial Position. Preferably, opening cash balances should be derived from actual information contained within the Municipality’s ledgers. However, it may not be possible to extract this information from the ledgers for water alone; therefore, a reasonable proxy will be needed. One approach is to assume that opening cash balances equal ending reserve and reserve fund balances from the previous year adjusted for accrual-based transactions reflected by accounts receivable/payable balances. The following equation outlines this approach:

$$\begin{array}{l} \text{Ending Reserve/Reserve Fund Balance} \\ \text{Plus: Ending Accounts Payable Balance} \\ \text{Less: Ending Accounts Receivable Balance} \\ \text{Equals: Approximate Ending Cash Balance} \end{array}$$



- b) Amortization Expense – The method and timing of amortization should be based on the Municipality’s amortization policy. Otherwise, an assumption will need to be made and applied consistently throughout the financial plan.
- c) Accumulated Amortization – Will be based on the culmination of accumulated amortization expenses throughout the life of each asset however derived, along with information on construction/acquisition date and useful life obtained from the 2022 Rate Study.
- d) Contributed Assets – As noted earlier, contributed assets could represent a significant part of the Municipality’s infrastructure acquisitions. As such, a reasonable estimate of value and timing of acquisition/donation may be required in order to adequately capture these assets. In the case where contributed assets are deemed to be insignificant or unknown, an assumption of “no contributed assets within the forecast period” will be made.
- e) Accumulated Surplus – The magnitude of the surplus in this area may precipitate the need for additional explanation especially in the first year of reporting. This Accumulated Surplus captures the historical infrastructure investment which has not been reported in the past but has accumulated to significant levels. It also includes all water reserve and reserve fund balances.
- f) Other Revenues – Will represent the recognition of revenues previously deferred (i.e. development charge revenues) and/or accrued revenues (developer contributions), and/or other minor miscellaneous revenues.



Chapter 4

Financial Plan



4. Financial Plan

4.1 Introduction

The following tables provide the complete financial plan for the Municipality's water system. A brief description and analysis of each table is provided below. It is important to note that the financial plan that follows is a forward look at the financial position of the Municipality's water system. It is not an audited document¹ and contains various estimates as detailed in the "Notes to the Financial Plan" section below.

4.2 Water Financial Plan

4.2.1 *Statement of Financial Position (Table 4-1)*

The Statement of Financial Position provides information that describes the assets, liabilities, and accumulated surplus of the Municipality's water system. The first important indicator is net financial assets/(debt), which is defined as the difference between financial assets and liabilities. This indicator provides an indication of the system's "future revenue requirement." A net financial asset position is where financial assets are greater than liabilities and implies that the system has the resources to finance future operations. Conversely, a net debt position implies that the future revenues generated by the system will be needed to finance past transactions, as well as future operations. Table 4-1 indicates that for 2022, the Municipality's water system will be in a net financial debt position of approximately \$2.05 million. The Municipality's net financial debt position is projected to improve to \$0.75 million by the end of the forecast.

Another important indicator on the Statement of Financial Position is the tangible capital asset balance. As noted earlier, providing this information is a requirement for municipalities as part of PS3150 compliance and is significant from a financial planning perspective for the following reasons:

¹ O.Reg. 453/07 does not require an audited financial plan.



- Tangible capital assets such as water mains and treatment plants are imperative to water service delivery.
- These assets represent significant economic resources in terms of their historical and replacement costs. Therefore, ongoing capital asset management is essential to managing significant replacements and repairs.
- The annual maintenance required by these assets has an enduring impact on water operational budgets.

In general terms, an increase in the tangible capital asset balance indicates that assets may have been acquired either through purchase by the municipality or donation/contribution by a third party. A decrease in the tangible capital asset balance can indicate a disposal, write down, or use of assets. A use of assets is usually represented by an increase in accumulated amortization due to annual amortization expenses arising as a result of allocating the cost of the asset to operations over the asset's useful life. Table 4-1 shows tangible capital assets are expected to decrease by approximately \$2.92 million over the 10-year forecast period. This indicates that the Municipality's anticipated use of existing assets is higher than the investment into tangible capital assets over the forecast period.

4.2.2 Statement of Operations (Table 4-2)

The Statement of Operations summarizes the revenues and expenses generated by the water system for a given period. The annual surplus/deficit measures whether the revenues generated were sufficient to cover the expenses incurred and in turn, whether net financial assets have been maintained or depleted. Table 4-2 illustrates the ratio of expenses to revenues will peak at 147% and decrease to 93% over the forecast period. As a result, the annual deficit position will peak at \$563,146 and grows to an annual surplus of \$102,308 by the end of the forecast period. It is important to note that an annual surplus is beneficial to ensure funding is available to non-expense costs such as tangible capital asset acquisitions, reserve/reserve fund transfers and debt principal payments.

Another important indicator on this statement is accumulated surplus/deficit. An accumulated surplus indicates that the available net resources are sufficient to provide future water services. An accumulated deficit indicates that resources are insufficient to provide future services and that borrowing or rate increases are required to finance



annual deficits. From Table 4-2, the financial plan proposes to add approximately \$0.79 million to a 2022 accumulated surplus of \$7.16 million over the forecast period. This accumulated surplus, as indicated in Table 4-2, is predominantly made up of historical investments in tangible capital assets.

4.2.3 Statement of Change in Net Financial Assets/Debt (Table 4-3)

The Statement of Change in Net Financial Assets/Debt indicates whether revenue generated was sufficient to cover operating and non-financial asset costs (i.e., inventory supplies, prepaid expenses, tangible capital assets, etc.) and in so doing, explains the difference between the annual surplus/deficit and the change in net financial assets/debt for the period.

Table 4-3 indicates that in most years, forecasted annual surplus exceeds the forecasted tangible capital asset acquisitions (net of amortization for the year), resulting in decreases in the net debt asset balance. Therefore, an overall decrease to net debt balance is anticipated over the forecast period to 2031. This is a result of minimal capital asset acquisitions forecasted between 2022 and 2031. The ratio of cumulative annual surplus before amortization to cumulative tangible capital asset acquisitions is 0.83 in 2022 and increasing to 1.17 over the remainder of the forecast period (note: a desirable ratio is 1:1 or better).

4.2.4 Statement of Cash Flow (Table 4-4)

The Statement of Cash Flow summarizes how water systems are expected to generate and use cash resources during the forecast period. The transactions that provide/use cash are classified as operating, capital, investing, and financing activities as shown in Table 4-4. This statement focuses on the cash aspect of these transactions and thus is the link between cash- and accrual-based reporting. Table 4-4 indicates that cash from operations will be used to fund capital transactions (i.e., tangible capital asset acquisitions) and build internal reserves and reserve funds over the forecast period. The financial plan projects the cash position of the Municipality's water system to improve from a balance of approximately \$698,700 at the beginning of 2022, to approximately \$1.36 million by the end of 2031. For further discussion on projected cash balances please refer to the Notes to the Financial Plan.



Table 4-1
Statement of Financial Position: Water Services
UNAUDITED: For Financial Planning Purposes Only
2022-2031

	Notes	Forecast									
		2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Financial Assets											
Cash	1	684,517	809,245	916,424	906,426	906,163	926,616	980,069	1,067,858	1,191,581	1,356,026
Accounts Receivable	1	208,206	203,718	210,940	200,602	200,667	210,805	221,427	232,271	243,487	255,644
Total Financial Assets		892,723	1,012,963	1,127,364	1,107,028	1,106,830	1,137,421	1,201,496	1,300,129	1,435,068	1,611,670
Liabilities											
Bank Indebtedness	1	-	96,953	101,474	105,500	108,867	112,319	115,878	119,558	123,394	127,351
Accounts Payable & Accrued Liabilities	2	2,856,170	2,801,788	2,744,260	2,683,401	2,619,020	2,550,912	2,478,862	2,402,641	2,322,008	2,236,706
Debt (Principal only)		2,948,114	2,898,741	2,845,734	2,788,901	2,727,887	2,663,231	2,594,740	2,522,199	2,445,402	2,364,057
Total Liabilities		(2,055,391)	(1,885,778)	(1,718,370)	(1,681,873)	(1,621,057)	(1,525,810)	(1,393,244)	(1,222,070)	(1,010,334)	(752,387)
Net Financial Assets/(Debt)											
Non-Financial Assets											
Tangible Capital Assets	4	11,634,920	11,073,973	10,517,280	9,917,637	9,671,402	9,452,820	9,235,259	9,027,488	8,869,394	8,713,755
Total Non-Financial Assets		11,634,920	11,073,973	10,517,280	9,917,637	9,671,402	9,452,820	9,235,259	9,027,488	8,869,394	8,713,755
Accumulated Surplus/(Deficit)	5	9,579,529	9,188,195	8,798,910	8,235,764	8,050,345	7,927,010	7,842,015	7,805,418	7,859,060	7,961,368
Financial Indicators											
1) Increase/(Decrease) in Net Financial Assets		642,770	169,613	167,408	36,497	60,816	95,247	132,566	171,174	211,736	257,947
2) Increase/(Decrease) in Tangible Capital Assets		155,710	(560,947)	(556,693)	(599,643)	(246,235)	(218,582)	(217,561)	(207,771)	(158,094)	(155,639)
3) Increase/(Decrease) in Accumulated Surplus		798,480	(391,334)	(389,285)	(563,146)	(185,419)	(123,335)	(84,995)	(36,597)	53,642	102,308



Table 4-3
Statement of Changes in Net Financial Assets/Debt: Water Services
UNAUDITED: For Financial Planning Purposes Only
2022-2031

	Notes	Forecast									
		2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Annual Surplus/(Deficit)		2,416,641	(391,334)	(389,285)	(563,146)	(185,419)	(123,335)	(84,995)	(36,597)	53,642	102,308
Less: Acquisition of Tangible Capital Assets	4	(3,782,021)	(236,000)	(244,000)	(202,000)	(156,000)	(159,000)	(162,000)	(165,000)	(168,000)	(171,000)
Add: Amortization of Tangible Capital Assets	4	705,146	796,947	800,693	801,643	402,235	377,582	379,561	372,771	326,094	326,639
(Gain)/Loss on disposal of Tangible Capital Assets		-	-	-	-	-	-	-	-	-	-
Add: Proceeds on Sale of Tangible Capital Assets		-	-	-	-	-	-	-	-	-	-
Add: Write-downs of Tangible Capital Assets		-	-	-	-	-	-	-	-	-	-
		(3,076,875)	560,947	556,693	599,643	246,235	218,582	217,561	207,771	158,094	155,639
Less: Acquisition of Supplies Inventory		-	-	-	-	-	-	-	-	-	-
Less: Acquisition of Prepaid Expenses		-	-	-	-	-	-	-	-	-	-
Add: Consumption of Supplies Inventory		-	-	-	-	-	-	-	-	-	-
Add: Use of Prepaid Expenses		-	-	-	-	-	-	-	-	-	-
Increase/(Decrease) in Net Financial Assets/(Net Debt)		(660,234)	169,613	167,408	36,497	60,816	95,247	132,566	171,174	211,736	257,947
Net Financial Assets/(Net Debt), beginning of year		(1,395,157)	(2,055,391)	(1,885,778)	(1,718,370)	(1,681,873)	(1,621,057)	(1,525,810)	(1,393,244)	(1,222,070)	(1,010,334)
Net Financial Assets/(Net Debt), end of year		(2,055,391)	(1,885,778)	(1,718,370)	(1,681,873)	(1,621,057)	(1,525,810)	(1,393,244)	(1,222,070)	(1,010,334)	(752,387)
Financial Indicators		2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
1) Acquisition of Tangible Capital Assets (Cumulative)		3,782,021	4,018,021	4,262,021	4,464,021	4,620,021	4,779,021	4,941,021	5,106,021	5,274,021	5,445,021
2) Annual Surplus/Deficit before Amortization (Cumulative)		3,121,787	3,527,400	3,938,808	4,177,305	4,394,121	4,648,368	4,942,934	5,279,108	5,658,844	6,087,791
3) Ratio of Annual Surplus before Amortization to Acquisition of TCA's (Cumulative)		0.83	0.88	0.92	0.94	0.95	0.97	1.00	1.03	1.07	1.12



Table 4-4
Statement of Cash Flow – Indirect Method: Water Services
UNAUDITED: For Financial Planning Purposes Only
2022-2031

	Notes	Forecast																			
		2022	2023	2024	2025	2026	2027	2028	2029	2030	2031										
Operating Transactions																					
Annual Surplus/Deficit		2,416,641	(391,334)	(389,285)	(563,146)	(185,419)	(123,335)	(84,995)	(36,597)	53,642	102,308										
Add: Amortization of TCAs	4	705,146	796,947	800,693	801,643	402,235	377,582	379,561	372,771	326,094	326,639										
(Gain)/Loss on disposal of Tangible Capital Assets		-	-	-	-	-	-	-	-	-	-										
Less: Earned Deferred Revenue	3	-	4,487	(7,221)	10,337	(65)	(10,138)	(10,622)	(10,844)	(11,216)	(12,157)										
Change in A/R (Increase)/Decrease		-	5,009	4,521	4,026	3,367	3,452	3,559	3,680	3,836	3,957										
Change in A/P (Increase)/Decrease		(30,799)	(35,231)	(29,880)	(19,638)	(19,568)	(20,100)	(21,287)	(23,148)	(25,719)	(29,104)										
Less: Interest Proceeds		-	-	-	-	-	-	-	-	-	-										
Cash Provided by Operating Transactions		3,090,988	379,878	378,828	233,222	200,550	227,461	266,216	305,862	346,637	391,643										
Capital Transactions																					
Proceeds on sale of Tangible Capital Assets		-	-	-	-	-	-	-	-	-	-										
Less: Cash Used to acquire Tangible Capital Assets	4	(3,782,021)	(236,000)	(244,000)	(202,000)	(156,000)	(159,000)	(162,000)	(165,000)	(168,000)	(171,000)										
Cash Applied to Capital Transactions		(3,782,021)	(236,000)	(244,000)	(202,000)	(156,000)	(159,000)	(162,000)	(165,000)	(168,000)	(171,000)										
Investing Transactions																					
Proceeds from Investments		30,799	35,231	29,880	19,638	19,568	20,100	21,287	23,148	25,719	29,104										
Less: Cash Used to Acquire Investments		-	-	-	-	-	-	-	-	-	-										
Cash Provided by (applied to) Investing Transactions		30,799	35,231	29,880	19,638	19,568	20,100	21,287	23,148	25,719	29,104										
Financing Transactions																					
Proceeds from Debt Issue	2	680,000	-	-	-	-	-	-	-	-	-										
Less: Debt Repayment (Principal only)	2	(33,967)	(54,381)	(57,529)	(60,858)	(64,381)	(68,108)	(72,050)	(76,221)	(80,633)	(85,302)										
Cash Applied to Financing Transactions		646,033	(54,381)	(57,529)	(60,858)	(64,381)	(68,108)	(72,050)	(76,221)	(80,633)	(85,302)										
Increase in Cash and Cash Equivalents		(14,201)	124,728	107,179	(9,998)	(263)	20,453	53,453	87,789	123,723	164,445										
Cash and Cash Equivalents, beginning of year	1	698,718	684,517	809,245	916,424	906,426	906,163	926,616	990,069	1,067,858	1,191,581										
Cash and Cash Equivalents, end of year	1	684,517	809,245	916,424	906,426	906,163	926,616	990,069	1,067,858	1,191,581	1,356,026										



Water

Notes to Financial Plan

The financial plan format as outlined in Chapter 4 closely approximates the full accrual format used by municipalities (2009 onward) on their audited financial statements. However, the financial plan is not an audited document and contains various estimates. In this regard, Section 3 (2) of O.Reg. 453/07 states the following:

“Each of the following sub-subparagraphs applies only if the information referred to in the sub-subparagraph is known to the owner at the time the financial plans are prepared:

1. Sub-subparagraphs 4 i A, B and C of subsection (1)
2. Sub-subparagraphs 4 iii A, C, E and F of subsection (1).”

The information referred to in sub-subparagraphs 4 i A, B and C of subsection (1) includes:

- A. Total financial assets (i.e. cash and receivables);
- B. Total liabilities (i.e. payables, debt and deferred revenue);
- C. Net debt (i.e. the difference between A and B above).

The information referred to in sub-subparagraphs 4 iii A, C, E and F of subsection (1) includes:

- A. Operating transactions that are cash received from revenues, cash paid for operating expenses and finance charges
- B. Investing transactions that are acquisitions and disposal of investments
- C. Change in cash and cash equivalents during the year
- D. Cash and cash equivalents at the beginning and end of the year

In order to show a balanced financial plan in a full accrual format for the Municipality of Wawa, some of the items listed above have been estimated given that the Municipality does not maintain all financial asset and liability data separately for water. Usually, this type of data is combined with the financial assets and liabilities of other departments and services given that there is not a current obligation to disclose this data separately (as there is with revenue and expenses).



The assumptions used have been documented below:

1. Cash, Receivables and Payables

It is assumed that the opening cash balances required to complete the financial plan are equal to:

Ending Reserve/Reserve Fund Balance

Plus: Ending Accounts Payable Balance

Less: Ending Accounts Receivable Balance

Equals: Approximate Ending Cash Balance

Receivable and payable balances were estimated for each year of the forecast based on the following factors:

- a) Receivables: Based on historical levels of Municipal-wide receivables as a percentage of annual Municipal-wide revenue earned; and
- b) Payables: Based on historical levels of Municipal-wide payables as a percentage of annual Municipal-wide expenditures.

2. Debt

Outstanding water related debt at the end of 2021 was approximately \$2.2 million. It is anticipated that additional debentures will be required over the forecast period. Principal repayments over the forecast period are scheduled as follows:



Year	Principal Payments
2022	33,967
2023	54,381
2024	57,529
2025	60,858
2026	64,381
2027	68,108
2028	72,050
2029	76,221
2030	80,633
2031	85,302
Total	653,430

For financial reporting purposes, debt principal payments represent a decrease in debt liability and the interest payments represent a current year operating expense.

3. Deferred Revenue

Deferred revenue is typically made up of water development charge reserve fund balances which are considered to be a liability for financial reporting purposes until the funds are used to emplace the works for which they have been collected. As the Municipality does not currently impose development charges, these amounts are 0.

4. Tangible Capital Assets

- Opening net book value of tangible capital assets includes water related assets in the following categories:
 - i. Facilities;
 - ii. Water Mains;
 - iii. Water Meters;
 - iv. Hydrants;
 - v. Service Leads; and
 - vi. Valves.
- Amortization is calculated based on the straight-line approach with no amortization in the year of acquisition or construction.



- Given the planned asset replacement forecast in the 2022 Rate Study, useful life on acquisitions is assumed to be equal to the weighted average useful life for all assets on hand in each respective asset category.
- Write-offs are assumed to equal \$0 for each year in the forecast period.
- Tangible capital assets are shown on a net basis. It is assumed that disposals occur when the asset is being replaced, unless the asset is documented as a new asset. The value of each asset disposal is calculated by estimating the original purchase/construction date and deflating current replacement cost values to those estimated dates in order to calculate original historical cost.
- Gains/losses on disposal are assumed to be \$0 (it is assumed that historical cost is equal to accumulated amortization for all disposals).
- Residual value is assumed to be \$0 for all assets contained within the forecast period.
- Contributed Assets, as described in Section 3.2.1, are deemed to be insignificant/ unknown during the forecast period and are therefore assumed to be \$0.
- The Municipality is unaware of any specific lead service piping in the municipal water system.

The balance of tangible capital assets is summarized as follows:



Asset Historical Cost	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Opening Tangible Capital Asset Balance	21,508,283	24,289,768	24,469,311	24,653,578	24,849,119	24,999,820	25,152,864	25,307,989	25,465,707	25,625,952
Acquisitions	3,782,021	236,000	244,000	202,000	156,000	159,000	162,000	165,000	168,000	171,000
Disposals	1,000,536	56,457	59,733	6,459	5,299	5,956	6,875	7,282	7,755	8,907
Closing Tangible Capital Asset Balance	24,289,768	24,469,311	24,653,578	24,849,119	24,999,820	25,152,864	25,307,989	25,465,707	25,625,952	25,788,045
Opening Accumulated Amortization	12,950,238	12,654,848	13,395,338	14,136,298	14,931,482	15,328,418	15,700,044	16,072,730	16,438,219	16,756,558
Amortization Expense	705,146	796,947	800,693	801,643	402,235	377,582	379,561	372,771	326,094	326,639
Amortization on Disposal	1,000,536	56,457	59,733	6,459	5,299	5,956	6,875	7,282	7,755	8,907
Ending Accumulated Amortization	12,654,848	13,395,338	14,136,298	14,931,482	15,328,418	15,700,044	16,072,730	16,438,219	16,756,558	17,074,290
Net Book Value	11,634,920	11,073,973	10,517,280	9,917,637	9,671,402	9,452,820	9,235,259	9,027,488	8,869,394	8,713,755



5. Accumulated Surplus

Opening accumulated surplus for the forecast period is reconciled as follows:

Water	2022 Opening Accumulated Surplus
Reserve Balances	
Reserves: Capital/Other	814,980
Total Reserves Balance	814,980
Less: Debt Obligations and Deferred Revenue	(2,210,137)
Add: Tangible Capital Assets	8,558,045
Total Opening Balance	7,162,888

The accumulated surplus reconciliation for all years within the forecast period is contained in Table 4-2.

6. Other Revenue

Other revenue includes interest and other non-operating general revenues (fire hose charge, reconnection fees, penalties, solar energy revenue, and other miscellaneous revenues) and proceeds from capital grants.

7. Operating Expenses

Capital expenditures for items not meeting the definition of tangible capital assets have been reclassified as operating expenses and have been expensed in the year in which they occur.



Chapter 5

Process for Financial Plan Approval and Submission to the Province



5. Process for Financial Plan Approval and Submission to the Province

As mentioned in section 1.2, preparation of and approval of a financial plan for water assets that meets the requirements of the Act is mandatory for municipal water providers. Proof of the plan preparation and approval is a key submission requirement for municipal drinking water licensing and, upon completion, must be submitted to the MECP. The process established for plan approval, public circulation and filing is set out in O. Reg. 453/07 and can be summarized as follows:

1. The financial plan must be approved by resolution of Council of the municipality who owns the drinking water system or the governing body of the owner. (O. Reg. 453/07, section 3 (1) 1).
2. The owner of the drinking water system must provide notice advertising the availability of the financial plan. The plans will be made available to the public upon request and without charge. The plans must also be made available to the public on the municipality's website. (O. Reg. 453/07, section 3 (1) 5).
3. The owner of the drinking water system must provide a copy of the financial plan to the Director of Policy Branch, Ministry of Municipal Affairs and Housing. (O. Reg. 453/07, section 3 (1) 6).
4. The owner of the drinking water system must provide proof satisfactory to the Director that the financial plans for the system satisfy the requirements under the *Safe Drinking Water Act*. (S.D.W.A. section 32 (5) 2. ii.).



Chapter 6

Recommendations



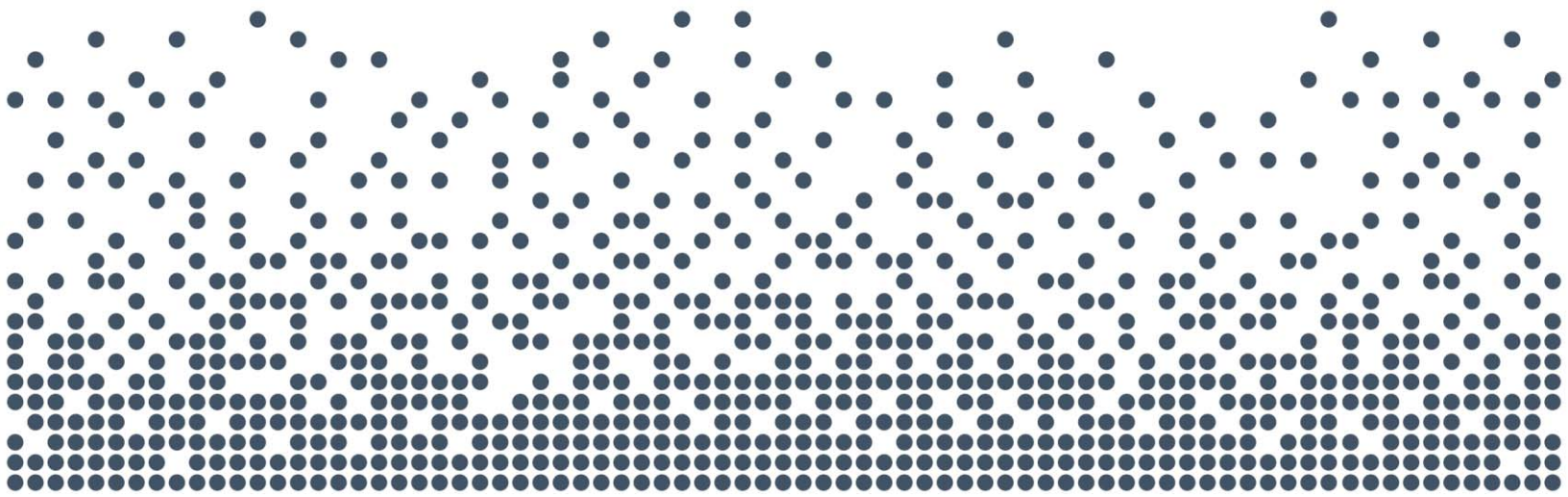
6. Recommendations

This report presents the water financial plan for the Municipality of Wawa in accordance with the mandatory reporting formats for water systems as detailed in O.Reg. 453/07. It is important to note that while mandatory, the financial plan is provided for Council's interest and approval however, for decision making purposes, it may be more informative to rely on the information contained within the 2022 Rate Study.

Nevertheless, Council is required to pass certain resolutions with regard to this plan and regulations and it is recommended that:

1. The Municipality of Wawa's Water Financial Plan prepared by Watson & Associates Economists Ltd. dated January 20, 2023 be approved.
2. Notice of availability of the Financial Plan be advertised.
3. The Financial Plan, the Council Resolution approving the Financial Plan, and the Water Rate Study underpinning the Financial Plan be submitted to the Ministry of Municipal Affairs and Housing. (O.Reg. 453/07, Section 3 (1) 6)
4. The Council Resolution approving the Financial Plan be submitted to the Ministry of the Environment, Conservation, and Parks satisfying the requirements under the Safe Drinking Water Act. (S.D.W.A. Section 32 (5) 2 ii))¹

¹ Note: The Ministry of the Environment, Conservation, and Parks does not require the Council Resolution for the initial financial plan submission. We encourage the Municipality to contact the Ministry of the Environment, Conservation, and Parks to verify all requirements have been met.



Appendices



Appendix A

Water Budget and Forecast Summary Tables



Appendix A-1 Water Service Capital Forecast

Description	Budget 2022	Total	Forecast															
			2023	2024	2025	2026	2027	2028	2029	2030	2031	2032						
Capital Expenditures																		
Water Main and Hydrant - MRV	75,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Water and WW 10 Yr Plan & Rate Study	24,500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrant Rehabilitation	45,000	145,000	47,000	49,000	49,000	-	-	-	-	-	-	-	-	-	-	-	-	-
Water Treatment Plant - Filters	180,000	384,000	189,000	195,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Water Intake Valve	250,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Water & Wastewater Master Plan	105,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Water Intake	3,232,021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Asset Management Works	-	1,308,000	-	-	153,000	156,000	159,000	162,000	165,000	168,000	171,000	174,000	-	-	-	-	-	-
Total Capital Expenditures	3,911,521	1,837,000	236,000	244,000	202,000	156,000	159,000	162,000	165,000	168,000	171,000	174,000						
Capital Financing																		
Provincial/Federal Grants	2,657,021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OCIF Reserve Fund	165,000	150,000	75,000	75,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Debtenture Requirements	680,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operating Contributions	284,500	378,000	161,000	169,000	48,000	-	-	-	-	-	-	-	-	-	-	-	-	-
Rate Stabilization Reserve	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Water General Capital Reserve	-	669,000	-	-	74,000	76,000	79,000	82,000	85,000	88,000	91,000	94,000	-	-	-	-	-	-
Water Equipment Reserve	125,000	640,000	-	-	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	-	-	-	-	-	-
Total Capital Financing	3,911,521	1,837,000	236,000	244,000	202,000	156,000	159,000	162,000	165,000	168,000	171,000	174,000						

Appendix A-2 Schedule of Non-Growth-Related Debtenture Repayments

Debtenture Year	2022	Principal (Inflated)	Forecast															
			2023	2024	2025	2026	2027	2028	2029	2030	2031	2032						
2022	-	680,000	59,285	59,285	59,285	59,285	59,285	59,285	59,285	59,285	59,285	59,285	59,285	59,285	59,285	59,285	59,285	59,285
2023	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2024	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2026	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2027	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2028	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2029	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2030	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2031	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2032	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Annual Debt Charges	-	680,000	59,285	59,285	59,285	59,285	59,285	59,285	59,285	59,285	59,285	59,285	59,285	59,285	59,285	59,285	59,285	59,285



Appendix A-3 Water Equipment Reserve Continuity

Description	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Opening Balance	505,436	478,853	581,207	681,043	725,264	658,170	589,733	519,928	448,726	376,101	302,023
Transfer from Operating	80,000	80,000	80,000	110,000	-	-	-	-	-	-	-
Transfer to Capital	125,000	-	-	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000
Transfer to Operating	-	-	-	-	-	-	-	-	-	-	-
Closing Balance	460,436	558,853	661,207	711,043	645,264	578,170	509,733	439,928	368,726	296,101	222,023
Interest	18,417	22,354	19,836	14,221	12,905	11,563	10,195	8,799	7,375	5,922	4,440

Appendix A-4 Water Rate Stabilization Reserve Continuity

Description	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Opening Balance	91,105	94,749	98,539	101,495	103,525	105,596	107,708	109,862	112,059	114,300	116,586
Transfer from Operating	-	-	-	-	-	-	-	-	-	-	-
Transfer to Capital	-	-	-	-	-	-	-	-	-	-	-
Transfer to Operating	-	-	-	-	-	-	-	-	-	-	-
Closing Balance	91,105	94,749	98,539	101,495	103,525	105,596	107,708	109,862	112,059	114,300	116,586
Interest	3,644	3,790	2,956	2,030	2,071	2,112	2,154	2,197	2,241	2,286	2,332

Appendix A-5 Water General Capital Reserve Continuity

Description	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Opening Balance	218,439	227,177	236,264	243,352	172,739	234,198	327,662	455,830	619,788	821,274	1,065,711
Transfer from Operating	-	-	-	-	132,867	166,039	201,229	236,805	273,383	314,541	357,214
Transfer from Wastewater Reserve	280,636	190,222	173,019	55,297	-	-	-	-	-	-	-
Transfer to Capital	-	-	-	74,000	76,000	79,000	82,000	85,000	88,000	91,000	94,000
Transfer to Operating	280,636	190,222	173,019	55,297	-	-	-	-	-	-	-
Closing Balance	218,439	227,177	236,264	169,352	229,606	321,238	446,892	607,635	805,171	1,044,815	1,328,925
Interest	8,738	9,087	7,088	3,387	4,592	6,425	8,938	12,153	16,103	20,896	26,578



Appendix A-6 (con't) Water Operating Forecast

Description	Budget 2022	Forecast									
		2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Pump - Materials / Supplies	2,500	2,600	2,700	2,780	2,840	2,900	2,960	3,020	3,080	3,140	3,200
Pump - Taxes	2,996	3,100	3,220	3,320	3,390	3,460	3,530	3,600	3,670	3,740	3,810
Pump - Consulting / Professional Fees	1,000	1,100	1,140	1,170	1,190	1,210	1,230	1,250	1,280	1,310	1,340
Pump - Insurance	233	245	255	263	268	278	284	290	296	296	302
18Chev - Gasoline / Diesel	2,700	2,900	3,100	3,300	3,500	3,700	3,900	4,100	4,300	4,500	4,700
18Chev - Insurance	487	500	520	540	550	560	570	580	590	600	610
18Chev - Licenses	72	76	79	81	83	85	87	89	91	93	95
18Chev - Maintenance & Repairs	300	300	310	320	330	340	350	360	370	380	390
08 F350 - Gasoline / Diesel	2,700	2,900	3,100	3,300	3,500	3,700	3,900	4,100	4,300	4,500	4,700
08 F350 - Insurance	487	500	520	540	550	560	570	580	590	600	610
08 F350 - Licenses	159	167	174	179	183	187	191	195	199	203	207
08 F350 - Maintenance & Repairs	600	600	620	640	650	660	670	680	690	700	710
Sub Total Operating	696,674	734,625	768,886	799,392	824,904	851,056	878,028	905,911	934,974	964,957	995,950
Capital-Related											
Existing Debt (Principal)	33,967	35,896	37,934	40,088	42,365	44,770	47,312	49,999	52,838	55,838	59,009
Existing Debt (Interest)	123,299	121,370	119,332	117,178	114,901	112,496	109,963	107,267	104,428	101,427	98,257
New Debt (Principal)		18,485	19,595	20,770	22,017	23,337	24,738	26,222	27,795	29,463	31,231
New Debt (Interest)		40,800	39,691	38,515	37,269	35,948	34,548	33,063	31,490	29,822	28,055
Transfer to Capital	284,500	161,000	169,000	48,000	-	-	-	-	-	-	-
Transfer to Rate Stabilization Reserve											
Transfer to Equipment Reserve	80,000	80,000	80,000	110,000	-	-	-	-	-	-	-
Transfer to Capital Reserve					132,867	166,039	201,229	236,805	273,383	314,541	357,214
Sub Total Capital Related	521,766	457,551	465,551	374,551	349,419	382,591	417,781	453,357	489,934	531,092	573,765
Total Expenditures	1,218,440	1,192,176	1,234,437	1,173,943	1,174,323	1,233,647	1,295,809	1,359,268	1,424,908	1,496,049	1,569,615
Revenues											
Base Charge	643,872	679,896	715,399	752,225	790,945	830,492	872,627	916,259	962,072	1,010,175	1,060,684
W & S - Fire Hydrant Rentals	11,125	11,700	12,170	12,540	12,790	13,050	13,310	13,580	13,850	14,130	14,410
W & S - Reconnection Fees	700	740	770	790	810	830	850	870	890	910	930
W & S - Penalty & Interest Other	4,550	4,800	4,990	5,140	5,240	5,340	5,450	5,560	5,670	5,780	5,900
W & S - Miscellaneous Revenues	4,550	4,800	4,990	5,140	5,240	5,340	5,450	5,560	5,670	5,780	5,900
WTP - Solar Energy Revenue	7,500	7,900	8,220	8,470	8,640	8,810	8,990	9,170	9,350	9,540	9,730
Contributions from Reserves / Reserve Funds	280,636	190,222	173,019	55,297	-	-	-	-	-	-	-
Total Operating Revenue	952,933	900,058	919,558	839,602	823,665	863,862	906,677	950,999	997,502	1,046,315	1,097,554
Water Billing Recovery - Total	265,507	292,118	314,879	334,341	350,658	369,785	389,131	408,269	427,406	449,734	472,061



Appendix A-7 Water Rate Forecast

Description	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Total Water Billing Recovery	265,507	292,118	314,879	334,341	350,658	369,785	389,131	408,269	427,406	449,734	472,061
Total Volume (m ³)	316,080	317,520	318,060	318,420	318,780	318,780	318,960	318,960	318,960	318,960	318,960
Constant Rate	0.84	0.92	0.99	1.05	1.10	1.16	1.22	1.28	1.34	1.41	1.48
Annual Percentage Change		10%	8%	6%	5%	5%	5%	5%	5%	5%	5%