

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:)
)
WATER QUALITY STANDARDS AND)
EFFLUENT LIMITATIONS FOR THE) R08-9
CHICAGO AREA WATERWAY SYSTEM) (Rulemaking - Water)
AND THE LOWER DES PLAINES RIVER:)
PROPOSED AMENDMENTS TO 35 Ill.)
Adm. Code Parts 301, 302, 303 and 304)

PRE-FILED TESTIMONY OF JOHN MASTRACCHIO

Economic Assessment for Disinfection Facilities

INTRODUCTION

My name is John Mastracchio. I am a senior associate with Malcolm Pirnie and have been a financial management, engineering, and rate consultant since 1994. My experience includes completing studies involving municipal utility economics and financial analysis. I hold a Master of Business Administration degree with a concentration in finance from Cornell University, a Masters of Engineering degree with a concentration in Civil and Environmental Engineering from Clarkson University, and a Bachelor of Arts degree from the State University of New York. I am a Registered Professional Engineer and have received the Chartered Financial Analyst designation from the Chartered Financial Analyst Institute. I am an active member of the American Water Works Association, the Water Environment Federation, and serve on the Finance, Accounting, and Management Controls Committee of the American Water Works Association. A resume detailing my education and experience is presented in Attachment 6.

PURPOSE

The purpose of my testimony is to explain the potential economic impacts of implementing either chlorination/dechlorination or ultraviolet disinfection processes at the

Metropolitan Water Reclamation District of Greater Chicago (District) water reclamation plants that would be necessary to meet an effluent limitation for fecal coliform of 400 colony forming units (CFU)/100 mL, which is the treatment standard proposed by the Illinois Environmental Protection Agency for discharges to the Chicago Area Waterway System. The results of this assessment are summarized in this testimony, and are documented in greater detail in the report entitled Economic Assessment of Infrastructure to Meet Proposed Water Quality Standards for Dissolved Oxygen and Plant Effluent Standards for Bacteria (Attachment 7). The economic impacts were assessed in terms of the District's statutory taxing authority and financial capabilities.

COST SUMMARY

The economic assessment of implementing chlorination/dechlorination processes at the Stickney, Calumet and Northside water reclamation plants was based on the District spending approximately \$419 million in capital infrastructure and annual maintenance and operations (M&O) costs of approximately \$26.0 million (expressed in 2008 dollars). The economic assessment of implementing ultraviolet disinfection processes was based on the District spending approximately \$491 million in capital infrastructure and annual M&O costs of approximately \$22.1 million (expressed in 2008 dollars). A summary of these costs are provided as Attachment 1. The basis for these costs is documented in Chlorination/Dechlorination Cost Study (*Chlorination/Dechlorination Disinfection Cost Study for Stickney, Calumet and North Side Water Reclamation Plants*, May 2008) and Ultraviolet Disinfection Cost Study reports (*UV Disinfection Cost Study – North Side Water Reclamation Plant*, January 2008; working results of the *Draft Stickney Water Reclamation Plant UV Cost Study* and the *Draft Hydraulic Evaluation Technical Memorandum*, June 2008) prepared by CTE and the testimony of David R. Zenz.

ECONOMIC ASSESSMENT

The District generates revenue to fund its operations through an ad valorem property tax, a personal property replacement tax, user charges, interest income, and other miscellaneous fees and charges. The District's primary source of operating revenue is the ad valorem property tax. Personal property replacement tax is primarily a tax on corporate income. User charge revenues are collected from large commercial and industrial customers and tax-exempt customers. A summary of the District's revenues and expenditures for the period 2002 through 2006 is provided as Attachment 2.

The District has several financial limitations and restrictions that directly impact its ability to take on additional projects or programs. First, in 1995, the Property Tax Extension Limitation Law was passed by the Illinois General Assembly, which limits the ability of the District to adopt future increases in the aggregate tax levy. In accordance with this Act, increases to the District's property tax levy are limited to the lesser of: (1) five percent or (2) the change in the national consumer price index plus allowable increases for new property. The aggregate levy is the total levy of all funds except the Bond Redemption and Interest Fund and the Stormwater Management Fund. In other words, debt service and stormwater management costs are not included under this limitation.

Second, the District's initial Tax Cap legislation restricted the District's non-referendum bond authority to only apply to projects initiated prior to October 1, 1991. There was a specific exemption, essentially to exclude Tunnel and Reservoir Plan projects from the more restrictive provisions of the Act which require referendum approval of all new debt. Public Act 89-385 provides the District with the authority to issue non-referendum "limited bonds" for capital projects initiated after October 1, 1991 at the same debt service level as it did in 1994. Limited bonds can be issued to the extent that the total debt service requirements of any new debt, when

combined with existing debt service, does not exceed the 1994 debt service extension base of \$141,463,920. Public Act 90-485 has provided a further modification by authorizing the exclusion of debt for Tunnel and Reservoir Plan projects from this debt service extension base.

Third, in 2003, the District received authority under Public Act 93-279 to issue \$150 million (previously \$100 million) of non-referendum bonds during any budget year plus authorized, but unissued bonds, during the previous three budget years through 2016.

A baseline scenario was prepared, which includes the District's currently planned capital projects that the District feels is necessary in order to maintain and upgrade its aging facilities and infrastructure, but excludes the costs associated with this proposed rulemaking. The estimated cost of the District's planned capital improvement projects were provided to Malcolm Pirnie in February 2008, and a discussion of these projects is provided in the testimony of Mr. Tom Kunetz of the District's Engineering Department. The baseline scenario indicates that the District would be able to generate sufficient revenues to satisfy the District's projected revenue requirements within the constraints of the legal limitations I just discussed. In addition, the District's debt financing needs will not exceed the Tax Cap legislation limits or the District's non-referendum bonding authority through fiscal year 2015. A summary of the District's projected results compared to the financial limitations and restrictions are provided as Attachment 3 (Figures 3-1, 3-2 and 3-3).

However, the District does not have sufficient financial resources to fund the capital expenditures and operation and maintenance costs necessary to disinfect its discharges to meet the IEPA proposed bacterial effluent standard, either through chlorination and dechlorination or through ultraviolet disinfection. The District cannot generate sufficient revenues within the constraints of the Property Tax Extension Limitation Act, and the remaining funds needed would

exceed the District's Tax Cap and non-referendum bonding authority. A summary of the District's projected financial results as compared to the financial limitations and restrictions is provided in Attachment 4 (Figures 4-1, 4-2 and 4-3) for the chlorination/dechlorination option and in Attachment 5 (Figures 5-1, 5-2 and 5-3) for the ultraviolet disinfection option.

It should be noted that effluent limits for phosphorus and total nitrogen may be imposed on the District's treatment plants in the future. The District's currently planned capital projects, which were used in the baseline analysis, do not include the costs to implement nutrient removal processes. As documented in a District cost summary table provided in Attachment 8, a rudimentary, order-of-magnitude cost estimate prepared by the District indicates that the capital costs to construct nutrient removal processes could be approximately \$2.8 billion dollars.

CONCLUSION

Full funding of the activities necessary to achieve compliance with IEPA's proposed rule would require an act of the state Legislature to amend the Property Tax Extension Limitation Act and provide additional non-referendum bonding authority; a voter referendum in support of additional bonding authority; or drastic reductions in the funding of other District programs. Furthermore, if implemented, disinfection would leave no financial capacity to fund other programs not currently included in the District's capital plan. One such project not currently included in the District's capital plan is nutrient removal facilities at its treatment plants, which could cost approximately \$2.8 billion if nutrient effluent limits are imposed in the future.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "John Mastracchio". The signature is written in a cursive style with a large initial "J" and a long, sweeping underline.

By: John Mastracchio

Testimony Attachments

1. Summary of Costs to Meet Newly Proposed Water Quality Standards in the Chicago Area Waterways
2. MWRD Summary of Financial Results
3. Baseline Financial Results Compared to Financial Limitations and Restrictions
4. Financial Results Including Chlorination/Dechlorination Disinfection Costs Compared to Financial Limitations and Restrictions
5. Financial Results Including Ultraviolet Disinfection Costs Compared to Financial Limitations and Restrictions
6. John Mastracchio Resume
7. Report entitled Economic Assessment of Infrastructure to Meet Proposed Water Quality Standards for Dissolved Oxygen and Plant Effluent Standards for Bacteria, prepared by Malcolm Pirnie, Inc.
8. Rudimentary, Order-of-Magnitude Cost Estimates for Nutrient Removal at District Water Reclamation Plants prepared by the District

Attachment 1

Summary of Costs to Meet Newly Proposed Effluent Standards in the Chicago Area Waterways

Project Description	Capital Cost	Annual O&M Cost	Total Present Value Cost
SWRP			
Chlorination/Dechlorination Disinfection	\$225,700,000	\$15,900,000	\$533,500,000
Ultraviolet Disinfection	267,200,000	12,600,000	511,200,000
CWRP			
Chlorination/Dechlorination Disinfection	\$79,100,000	\$5,020,000	\$176,500,000
Ultraviolet Disinfection	112,300,000	4,600,000	201,600,000
NSWRP			
Chlorination/Dechlorination Disinfection	\$114,200,000	\$5,040,000	\$212,000,000
Ultraviolet Disinfection	111,600,000	4,900,000	206,800,000
Total			
Chlorination/Dechlorination Disinfection	\$419,000,000	\$25,960,000	\$922,000,000
Ultraviolet Disinfection	491,100,000	22,100,000	919,600,000

All costs in 2008 dollars.

Source: *Chlorination/Dechlorination Disinfection Cost Study for Stickney, Calumet and North Side Water Reclamation Plants* (CTE, May 2008); *UV Disinfection Cost Study – North Side Water Reclamation Plant* (CTE, January 2008); working results of the *Draft Stickney Water Reclamation Plant UV Cost Study* and the *Draft Hydraulic Evaluation Technical Memorandum* (CTE, June 2008). Subsequently updated to June 2008 dollars. Present value costs over 20 years based on a 3.0% interest rate and a 3.0 percent inflation rate.

Attachment 2
- MWRD Summary of Financial Results
 (in \$ Thousands, Modified Accrual Basis)

	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>
Revenues					
Property Taxes	\$ 362,036	\$ 397,751	\$ 360,326	\$ 423,941	\$ 380,675
Personal Property Replacement Tax	22,285	24,048	25,961	36,031	37,743
User Charges	48,890	50,222	47,757	45,983	52,504
Interest on Investments	15,693	13,163	9,943	19,693	43,659
Other Revenues	<u>14,759</u>	<u>16,203</u>	<u>16,495</u>	<u>16,309</u>	<u>17,691</u>
Total Revenues	\$ 463,663	\$ 501,387	\$ 460,482	\$ 541,957	\$ 532,272
Expenditures					
General Administration	\$ 14,318	\$ 14,987	\$ 15,538	\$ 17,259	\$ 16,974
Personnel	27,610	30,916	35,877	32,900	35,162
Pension Costs	27,044	29,511	27,372	31,561	30,071
Research and Development	23,838	24,172	24,030	24,787	24,985
Information Technology	11,204	11,417	10,574	10,811	11,034
Maintenance and Operations	160,326	159,079	160,299	157,612	155,899
Other	32,843	22,563	27,637	31,522	26,931
Construction Costs	157,076	164,865	127,155	133,599	164,157
Debt Service	<u>145,831</u>	<u>158,626</u>	<u>156,025</u>	<u>169,019</u>	<u>171,869</u>
Total Expenditures	\$ 600,090	\$ 616,136	\$ 584,507	\$ 609,070	\$ 637,082
Revenues Over (Under) Expenditures	\$ (136,427)	\$ (114,749)	\$ (124,025)	\$ (67,113)	\$ (104,810)
Other Financing Sources (Uses)	<u>222,622</u>	<u>223,613</u>	<u>52,720</u>	<u>15,973</u>	<u>383,448</u>
Net Change in Fund Balance	\$ 86,195	\$ 108,864	\$ (71,305)	\$ (51,140)	\$ 278,638

Source: Comprehensive Annual Financial Reports (2003-2006).

Attachment 3

Baseline Financial Results Compared to Financial Limitations and Restrictions

Figure 3-1 - Capital Improvement Plan - Baseline

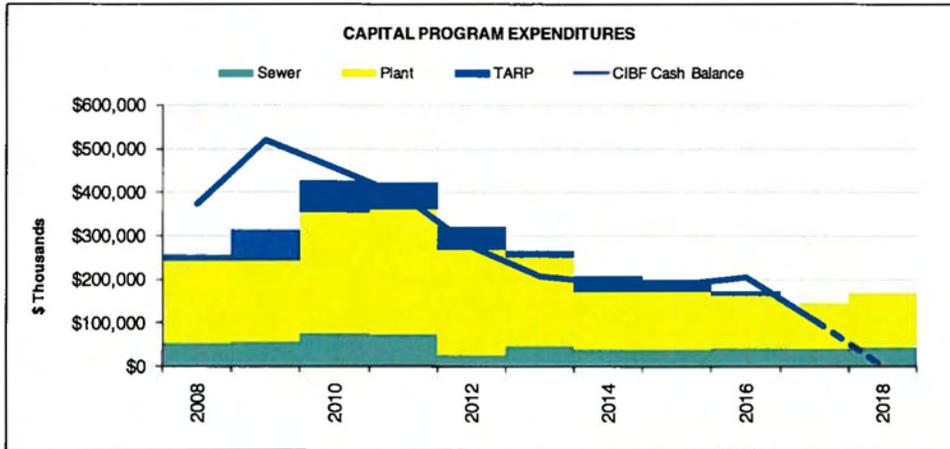


Figure 3-2

Forecasted Aggregate Tax Levy Requirement Compared to Tax Cap Limitation - Baseline

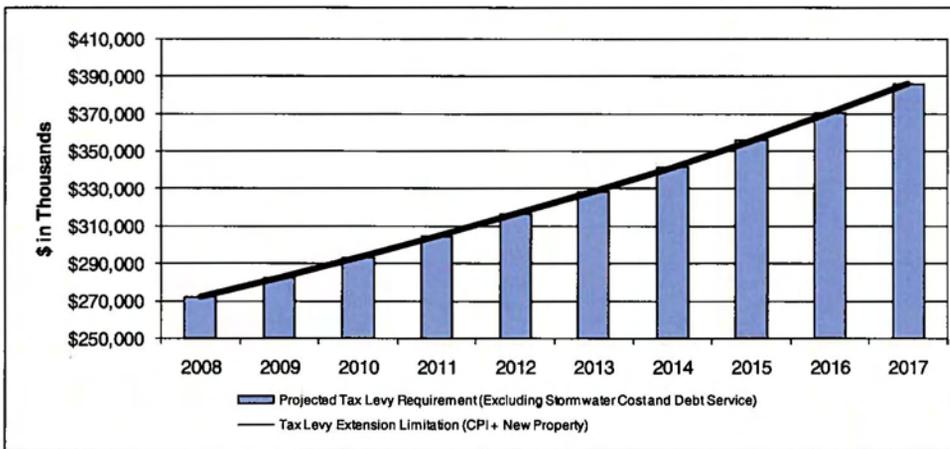
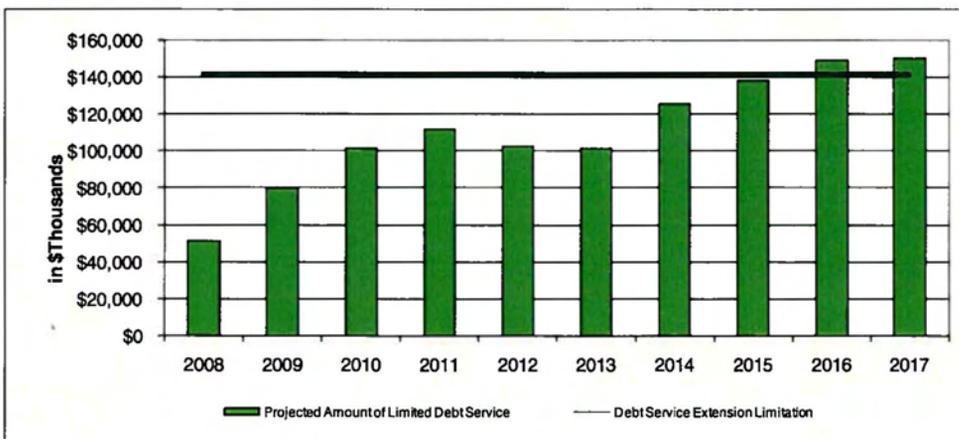


Figure 3-3

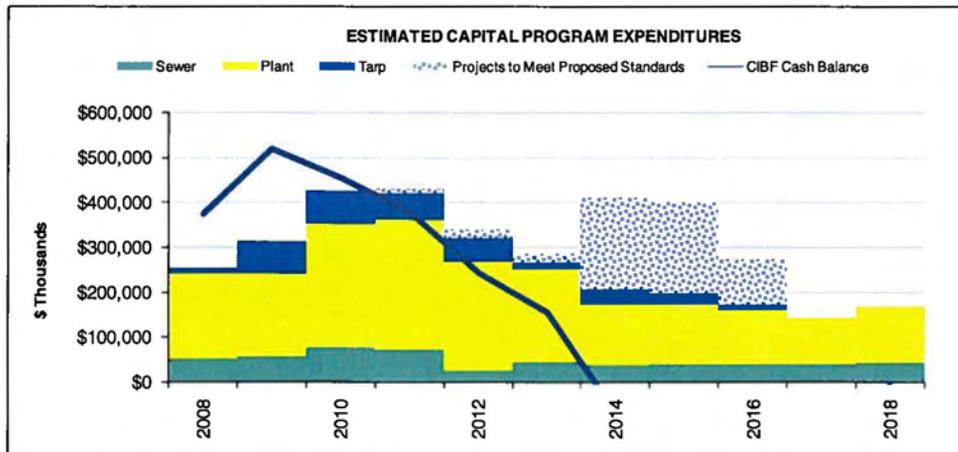
Forecasted Debt Service Compared to Debt Service Extension Base - Baseline



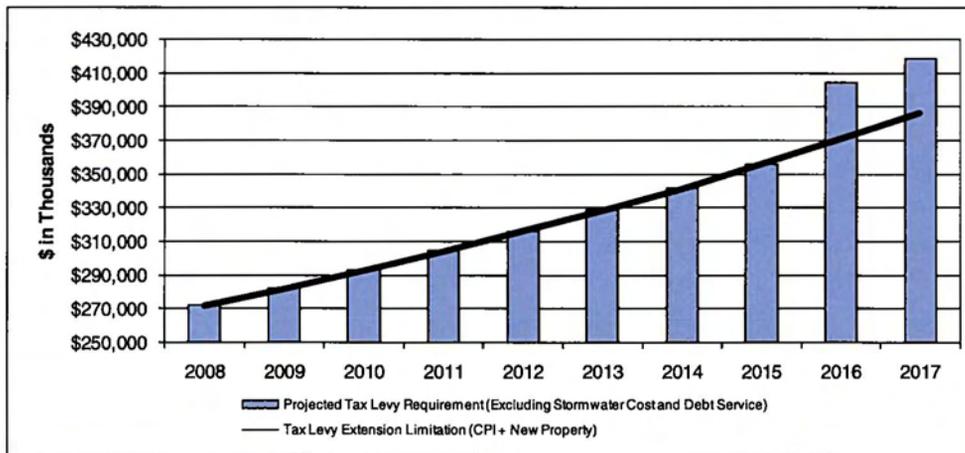
Attachment 4

Financial Results Including Chlorination/Dechlorination Disinfection Costs Compared to Financial Limitations and Restrictions

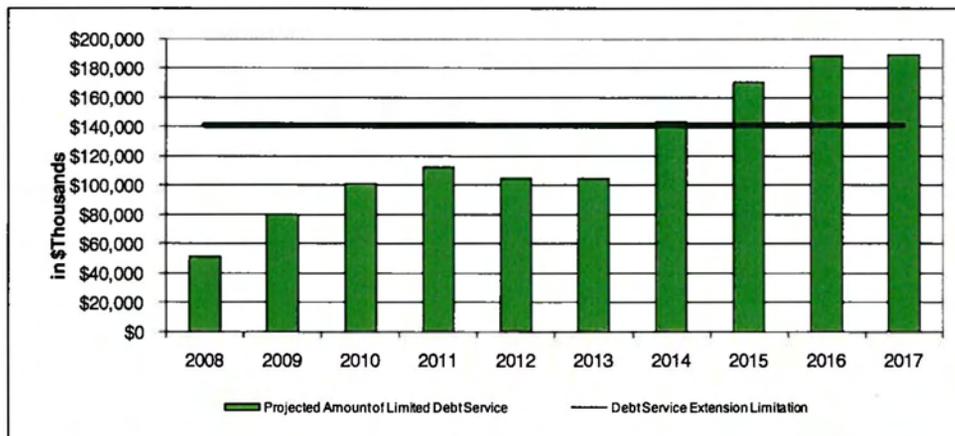
Figure 4-1 - Capital Improvement Plan



**Figure 4-2
Forecasted Aggregate Tax Levy Requirement Compared to Tax Cap Limitation**



**Figure 4-3
Forecasted Debt Service Compared to Debt Service Extension Base**



Attachment 5

Financial Results Including Ultraviolet Disinfection Costs Compared to Financial Limitations and Restrictions

Figure 5-1 - Capital Improvement Plan

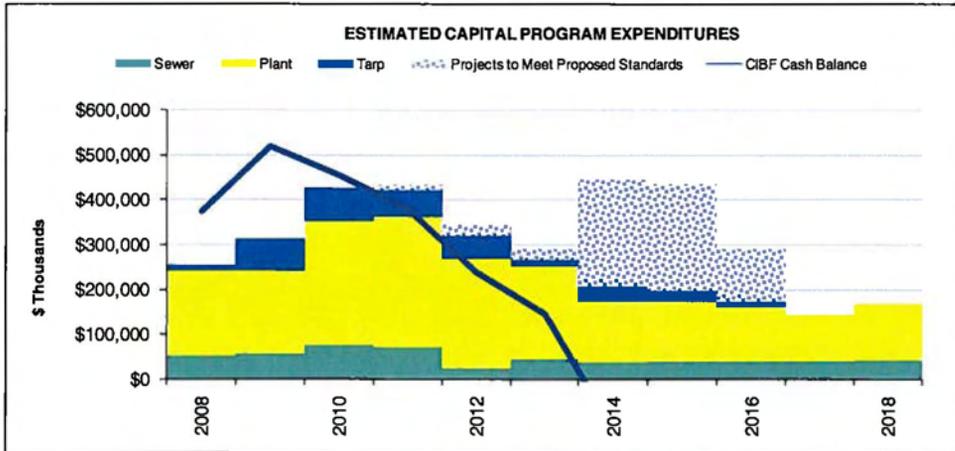


Figure 5-2

Forecasted Aggregate Tax Levy Requirement Compared to Tax Cap Limitation

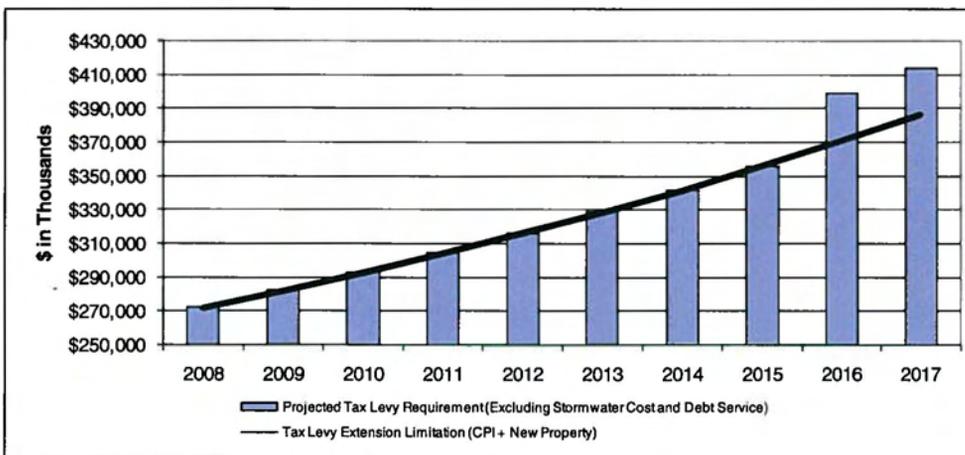
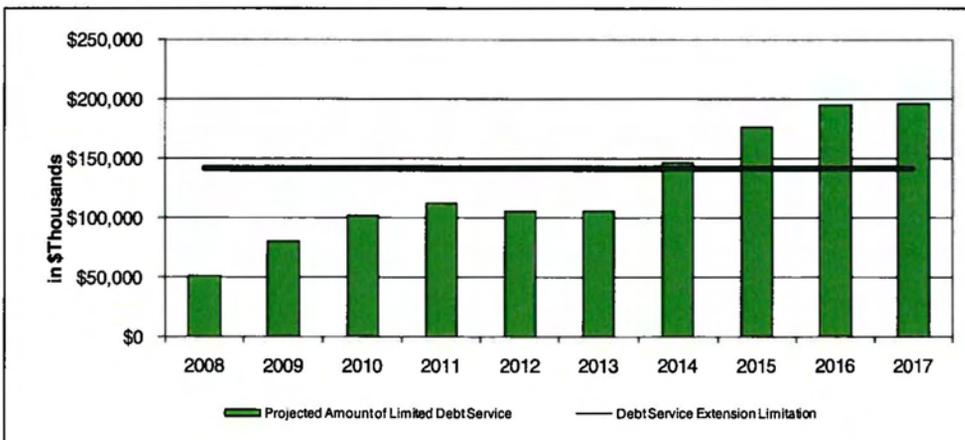


Figure 5-3

Forecasted Debt Service Compared to Debt Service Extension Base



ATTACHMENT 6

John Mastracchio CV

Mr. Mastracchio is a senior financial analyst specializing in municipal utility economics, financial analysis, capital and financial planning, cost of service evaluation, the design of rates, fees, and charges, and utility valuation. Mr. Mastracchio is a member of the Finance, Accounting & Management Controls committee of the American Water Works Association where he participates on the capital financing and valuation subcommittees, and is a member of the Water Environment Federation and the Chartered Financial Analyst Institute. He is a contributing author of the Utility Capital Financing Manual of Practice (M29) and routinely speaks at national and regional conferences and meetings on the topics of regionalization, financial planning, rate-setting, and valuation.

REPRESENTATIVE EXPERIENCE

- **Confidential Client: Due Diligence Review for Water System Acquisition / New York City NY.** Task Leader for the financial analysis as part of a due diligence investigation for the acquisition of a Water Company in the eastern U.S. Services included assistance in developing a long-term capital improvement plan, review and development of financial modeling assumptions regarding supply and demand, operation and maintenance costs, capital expenditures and general rate setting methodology in accordance with each state's rate setting requirements. Recommendations regarding the acquisition and future capital and operating requirements including projections of revenues and rate of return for each of five regulated utilities were presented.
- **City of Columbus: Comprehensive Rate and Charge Study / Columbus OH.** Completed a cost-of-service evaluation and rate, fee, and charge assessment to assist the City of Columbus generate sufficient revenues to pay for upcoming water and sewer capital improvement and operation and maintenance programs. The project included completing a cost-of-service evaluation to determine the cost responsibility of the city's customers, water and sewer asset valuations to support connection fee development, and a rate structure evaluation to identify water and sewer rate structures that were closely aligned with the cost of providing service and developing rate formulas for the city's future use. Based on the results of this study, the city changed its water rates from a declining block structure to a "lifeline" rate and an inclining block structure for residential customers. The city also implemented a separate charge to customers to pay for its upcoming \$2.5 billion wet weather capital program. This charge recovers the cost of the program based upon the impervious surface area of the city's customers. Presented study results to city staff, city council, and other stakeholders using interactive financial modeling tools that were developed for the client.
- **Credit Suisse First Boston: Columbia, SC.** Acting on behalf of several investment banking firms, reviewed of the estimates of environmental liability reported to the Securities and Exchange Commission by a publicly

John M. Mastracchio

Title/Firm:

Senior Associate
Red Oak Consulting, A Division of
Malcolm Pirnie, Inc.

Years of Experience

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Education

BA State University of New York at
Geneseo 1993
MS Civil and Environmental Engineering
Clarkson University 1994
MBA Finance Cornell University 2001

Licenses and Certifications

Professional Engineer
Chartered Financial Analyst

Societies

American Water Works Association,
Finance, Accounting & Management
Controls Committee
Chartered Financial Analyst Society of
Rochester
Government Financial Officers
Association
Water Environment Federation

Employment History

Red Oak Consulting, a Division of Malcolm
Pirnie, Inc. 2002 to present
Arthur Andersen, LLP. 2001 to 2002
Parsons Engineering Science, Inc. 1994 to
2000

traded, national, environmental services company. This project was accomplished by reviewing pertinent SEC filings, environmental liability reporting policies and procedures established by the Company, requirements of FASB Statement No. 5 and SFAS Statement No. 143 related to reporting of environmental contingent liabilities and asset retirement obligations, and information gathered through site visits, interviews with regulators, site assessments, Superfund site reviews, and landfill useful life estimates provided by other Malcolm Pirnie team members. This information was assessed and used to form an opinion about the reasonableness of the estimates of environmental liability prepared by the Company. Our clients, the investment banking firms, relied on our efforts as underwriters for the bonds to be issued by the Company and as agents and lenders with respect to a credit agreement entered into by the Company. In addition, other lenders participating in the syndicate also relied on our report from a credit agreement perspective.

- **Countryside Village North - City of Anderson: Anderson Utility System Valuation / Anderson IN.** Completed a valuation of the Countryside Village North sewer system to support the negotiated sale of the system to the City of Anderson. The sewer system consisted of approximately 3,000 linear feet of sewer, one lift station, 4,000 linear feet of force main, and associated appurtenances.
- **City of Delaware: Financial Services / Delaware OH.** Provided expert advice to the city in support of financing wastewater capital infrastructure improvements in anticipated future city growth. Reviewed and evaluated wastewater impact fee methodologies and fee levels. Recommended changes to the existing wastewater fee structure to address the city's concerns about rate equitability for multifamily and single-family residential customers, and to ensure that growth pays for itself.
- **Erie County Dept. of Environment and Planning: Utility Merger Feasibility Study and Asset Management Evaluation / Buffalo NY.** Managed the evaluation of the feasibility of consolidating three adjacent wastewater systems into Erie County Sewer Districts. Managed the financial evaluation of the impacts of consolidating included potential cost savings and impacts on customer taxes and user fee rates. Managed the completion of a financial impact analysis and sewer rate plan as part of an overall asset management program for the County. The project included evaluation of capital improvement program alternatives using an interactive financial model that supported the creation of an asset management plan.
- **Erie County Dept. of Environment and Planning: ECDEP Asset/Finac / Buffalo NY.** Managed the completion of a financial impact analysis and sewer rate plan as part of an overall asset management program for the County. The project included evaluation of capital improvement program alternatives using an interactive financial model, supporting the creation of an asset management plan, developing a baseline condition

assessment of major plant and buried assets, evaluation of strategic business drivers, development of project prioritization methodologies, and preparation of the final CIP document, including a detailed financial impact analysis and utility rate plan.

- **City of Fort Wayne: Valuation in Support of Utility Acquisition / Fort Wayne IN.** Completed a valuation of a private water and wastewater utility regulated by the Indiana Utilities Regulatory Commission using asset- and market-based valuation approaches. The valuation estimate was provided to the City's attorney to support settlement negotiations and condemnation.
- **City of Grand Forks: Rate Study and Cost-of-Service Evaluation/ Grand Forks, ND.** Completed a financial evaluation of the city's water, wastewater, solid waste, and stormwater utilities. The evaluations were conducted to ensure that the costs associated with planned capital infrastructure investment and the operations of each utility were allocated equitably to each customer class based on its service requirements. Evaluated the financial affordability of capital improvement plans. Developed cost allocation methodologies using sound engineering, financial, and rate-making practice. Developed nonproprietary revenue adequacy models to provide the city with a basis for the evaluation of alternative rate structures and to ensure that all of the appropriate costs of operating the utility were reflected in the rates.
- **Greene County: Capital Planning Study / Dayton OH.** Provided capital investment decision-making support and planning assistance for county municipality in Dayton, Ohio. Developed an affordable financial plan for paying for the capital infrastructure investments that were identified in the study. Developed an interactive financial model that was used during the project to assess the impact various capital improvement programs and financing alternatives on the County's wastewater rates. Conducted an in-depth evaluation of the parameters that impacted affordability, developed a financial plan that identified the most cost effective project financing alternatives, and presented 20-year pro forma financial projections for the County under several different scenarios and assumptions.
- **Borough of Haledon: Valuation in Support of Utility Acquisition / Haledon NJ.** Completed a valuation of a municipal water system in New Jersey to assist the client in making acquisition decisions. The valuation was completed to establish a baseline for the utility system and its negotiated sale.
- **The Harrisburg Authority: Financial Capability Assessment / Harrisburg PA.** Completed a Financial Capability Assessment to measure the impact that the Authority's Long-Term Control Plan will have on both the current and future financial health of the service area. Determined the service area's average wastewater treatment and CSO implementation cost per household, and evaluated debt, socioeconomic, and financial management indicators of financial capability.

Recommended a capital improvement implementation schedule that would minimize the financial impact to customers, based on the results of the assessment.

- **Henrico County: Water and Sewer Rate Study / Richmond VA.**
Completed a cost of service evaluation and rate, fee, and charge study to assist Henrico County develop a sustainable financial management plan, determine revenue requirements over the next ten years, and ensure equitable recovery of costs. The study also consisted of completing an asset valuation to support the development of impact fees to ensure that growth pays for itself over the planning period. The financial management plan was developed using an interactive forecast model that allowed alternative scenarios to be easily evaluated. Connection fees, fire protection charges, and local facility fees were established by determining the costs of providing these services and developing fees to equitably recover these costs from customers utilizing the services. Rate, fee, and charge formulas were developed for the County's \$80 million operating budget.
- **City of Kingston: Wastewater Rate Study / Kingston, NY.** Completed a wastewater rate study to assist the City pay for its capital improvement program, develop a sustainable financial management plan, and determine future revenue requirements. Developed an interactive rate model for forecasting revenue requirements and user rates. Presented rate recommendations to City officials.
- **Kinderhook Industries, LLC: Environmental Liability Assessment / Berwyn, PA.** Completed a financial evaluation in support of an environmental compliance/liability assessment to support acquisition of a firm in the remedial construction and Resource Conservation and Recovery Act (RCRA) hazardous waste management business with three RCRA treatment, storage, or disposal facilities (TSDFs). Financial evaluation consisted of reviewing the reporting requirements of FASB 5 and SFAS 143 to ensure environmental liability estimates prepared by Malcolm Pirnie satisfied accounting and reporting requirements. Utilized the expected cash flow approach for calculating environmental liabilities, compared liability estimates with those reported on the company's financial statements, and prepared cost and cash flow estimates.
- **City of Lorain: Wastewater Regionalization Study / Lorain, OH**
Managed the completion of a wastewater regionalization study to evaluate the feasibility of constructing a regional wastewater treatment plant and conveyance system to serve customers throughout Lorain County. Assessed the capital and O&M costs associated with the regional entity, developed financial models to project revenue requirements and rates under the regional approach and under status quo. Facilitated discussions with stakeholders pertaining to the costs and benefits of regionalization.
- **LS Power, LLC: Economic Impact Assessment / West Deptford, NJ.**
Assessed the potential economic impact of the construction and operation of a modern coal-fired power plant in West Deptford Township,

New Jersey. Utilized IMPLAN® software to assess the economic impacts of a 500 MW coal fired power plant on an 11 county region. Examined the direct and indirect economic benefits to the region, effects of the project on local employment and economic output, during construction and post construction, and evaluated the potential peak economic stimulus.

Prepared report that provided information to elected officials and other stakeholders to support a decision to proceed with the project.

- **City of Lancaster: Engineer's Feasibility Report and Rate Study / Lancaster OH.** Completed an Engineer's Feasibility Report to support the release of bond disclosure documentation for the issuance of \$8 million waterworks revenue bonds. Subsequently completed a sewer rate study consisting of projections of rate revenue requirements considering various capital improvement programs, and growth scenarios, development of sewer rate and connection fee recommendations, evaluation of customer affordability, and comparison of sewer rates in nearby communities.

Completed a comprehensive water rate and charge study to support the client's capital investment planning process. The project included assessing alternatives for financing water system capital investments and completing a cost-of-service evaluation to equitably recover utility costs from rate payers. In addition, a nonproprietary financial planning and rate design model was developed to assist in the pricing of utility services.

Detailed analyses of customer costs, usage characteristics, capital improvement program costs, and neighboring utility rate comparisons were conducted to support the design of the rate components.

- **Macomb County: Wastewater Treatment Plant Acquisition Evaluation / Mt Clemens, MI** Managed the completion of a preliminary evaluation of wastewater treatment plant ownership and joint use options for Macomb County. Completed a financial evaluation of alternatives that provided a projection of future capital and O&M costs, and assessed the future rate implications of each option. Estimated the value of wastewater system assets and evaluated asset transfer pricing that would result in a win-win for all involved parties. Served as a financial and technical resource for assessing asset transfer and deal structure alternatives.
- **Maricopa Water District: Wholesale Water Service Agreement Development / Phoenix AZ.** Assisted in the development and negotiation of a water treatment plant financing agreement with an investor-owned water company. Developed water and water rate and pricing formulas for inclusion into the capital lease and other supporting documentation. The capital lease agreement provided the client with a reasonable rate of return and ensured that financing requirements, such as legal debt service coverage and capital reserve requirements would be met under many foreseeable future scenarios. Developed and provided an interactive rate-setting and financial planning model for use during the development and negotiation of the agreements. Worked with the client's legal council in developing the terms and conditions of the agreement. Provided expert testimony before the Arizona Corporation Commission

regarding the financial impact of the District constructing and operating its own water treatment plant.

- **Milwaukee Metropolitan Sewerage District: MMSD O&M Options Analysis / Milwaukee WI.** Assisted MMSD in evaluating the feasibility of continued contract operations or the feasibility of District operation of their wastewater treatment facilities. Assisted in the evaluation of alternative forms of privatization as applied to a number of its service areas including wastewater treatment and sludge disposal. Assisted in the efforts to establish submittal requirements relating to financial capability and cost bids and participated in the review and evaluation of these areas for the submitted proposals.
- **City of Marysville: Wastewater Master Study / Marysville OH.** Completed financial planning studies in support of the development of water and wastewater capital investment plans and the issuance of revenue bonds. Analyzed the affordability of recommended capital investment alternatives and associated impacts to the city's long-term financial position. Developed an interactive financial planning model to guide the planning process and assist the city in making capital investment decisions. Completed a wastewater pricing evaluation to develop wastewater rates for the city that reflected the cost of providing service and ensured adequate funding for the city's upcoming \$200 million capital improvement program. Prepared a bond feasibility report supporting the issuance of approximately \$150 million in revenue bonds and bond anticipation notes.
- **Metropolitan District Commission: Valuation Assessments / Hartford CT.** Completed valuations of publicly-owned and investor-owned water utilities regulated by the Connecticut Department of Public Utility Control to assist our client in making utility acquisition decisions. The target utilities provide water service to more than 200,000 people in the northeastern US. The estimates of value were determined utilizing different valuation techniques to estimate the potential value of the water systems, including the asset and income approaches. Mr. Mastracchio's efforts and experience in valuating public utilities supported the client's strategic expansion objectives.
- **Metropolitan District Commission: Financial Analysis and Pricing for the Development of Inter-jurisdictional Agreements / Hartford CT.** Completed financial analyses and pricing of water service for intergovernmental water service agreements to allow the Metropolitan District Commission to maximize its utilization of its excess water supply capacity and generate additional revenues by selling this capacity to neighboring private water companies. The project involved developing terms and conditions of the agreement, as well as developing and recommending a wholesale water rate and capacity charge structure. The wholesale rate was developed by evaluating the costs of operating the water utility using a financial model. The capacity charge was based on the net value of the Commissions fixed assets and available water supply

capacity and was designed to recognize the value of the additional water supply capacity, which would be dedicated to the private water company.

- **City of Miamisburg: Bond Engineering Report and Rate Study / Miamisburg OH.** Completed a bond feasibility report to support the issuance of \$2 million in 2004 waterworks revenue bonds. Bond feasibility analysis included a description of the system and the improvements, summary of historic and projected system demands, a cash flow analysis, a comparison of water rates with those of other cities, and an opinion of the adequacy of the rates and cash flows of the city. Completed a water and sewer rate study for the City consisting of projecting revenue requirements over a five year period, assessing the impact of various capital improvement program scenarios, developing cost justified water and sewer rates, and completing a survey of water and sewer rates of nearby communities.
- **Nassau County: Water Utility Consolidation Study / Mineola, NY.** Evaluated the feasibility of consolidating 46 water systems within Nassau County into one or more management organizations. Assessed the potential for cost savings and the impact on residential ad valorem taxes and user fees. Assessed the environmental benefits of a regional approach to water resources. Prepared reports and presented findings to the County Executive of Nassau County.
- **State of New Jersey, Department of the Public Advocate: Water Utility Valuation / Newark, NJ.** Served as a valuation expert and provided testimony in the matter of the Joint Petition of the City Trenton, New Jersey and New Jersey American Water Company, Inc. for authorization of the purchase and sale of the assets of the outside water utility system of the City of Trenton, New Jersey.
- **Newark Watershed Conservation and Development Corporation: Wastewater Asset Condition Assessment and Valuation / Newark, NJ.** Supported efforts to complete an asset condition assessment and valuation of the City of Newark's wastewater system to assist the Newark Watershed Conservation and Development Corporation (NWCDC) and the City of Newark in their consideration of the formation of a Municipal Utilities Authority.
- **City of Newark: Wastewater Rate Study / Newark, OH.** Project Manager for a wastewater rate and charge study. The project included an evaluation of the City's rate structure, development of a nonproprietary rate model, detailed analyses of customer costs, usage characteristics, and capital improvement program costs, and presentation of rate recommendations to City Council. In addition, neighboring utility rate comparisons were completed to support the design of the rate components.
- **City of Norwalk: Financial Planning and Rate Study / Norwalk CT.** Completed a financial planning study in support of a long-term wastewater master plan. Analyzed capital investment alternatives and associated impacts to City wastewater rates. Developed an interactive

financial planning model to utilize throughout the planning process and assisted the City in making capital investment decisions. Completed system asset valuation estimates to support connection fee development. Presented rate recommendations at budget hearings with the City Commission.

- **City of Painesville: Pricing of Utility Services / Painesville OH.** Developed an intergovernmental wastewater service agreement to allow the City of Painesville to maximize its utilization of its excess wastewater treatment capacity to neighboring county customers. The project involved developing terms and conditions of the agreement, as well as developing and recommending a wholesale rate and capacity charge structure. The wholesale rate was developed by evaluating the costs of operating the city's wastewater utility using a financial model. The capacity charge was based on the net value of the city's fixed assets and available wastewater treatment capacity and was designed to recognize the value of the city's additional system capacity, which will be sold to the county.
- **City of Reno: Wastewater Cost of Service Evaluation and Rate Study / Reno, NV.** Developed a financial plan and wastewater utility pricing schedules for the City of Reno. Project helped to ensure the funding and financing of the City's wastewater utility capital investment needs. Developed an interactive financial model that was used to evaluate future rate revenue requirements, determine the cost of providing wastewater service, and determine equitable connection fees based on the estimated value of fixed assets and the cost of wastewater system expansion. Advised the City in the design a rate structure that was aligned with the City's needs and financial objectives. Presented study results to City staff, city council and other stakeholders using interactive financial modeling tools that were developed for the client.
- **Saratoga County Water Authority: Water Bond Feasibility Report / Saratoga, NY.** Prepared an engineering and financial feasibility report for the issuance of \$40 million in water system revenue bonds to finance the construction of water treatment plant, raw water pipeline, pump station, and distribution mains.
- **Summit County: Comprehensive Rate and Charge Study / Akron OH.** Completed a cost of service evaluation and rate, fee, and charge assessment to assist the County to generate sufficient revenues to pay for upcoming sewer capital improvement and operation and maintenance programs. The project included completing a cost of service evaluation to determine the cost responsibility of the County customers, wastewater asset valuation estimates to support capacity fee development, and a rate structure evaluation to identify sewer rate structures that were closely aligned with the cost of providing service, and developing rate formulas for the County's future use.
- **U.S. Air Force Material Command: Hill AFB EUL / Ogden UT.** Senior Analyst for the valuation and financial analysis of a proposed Enhanced

Use Lease (EUL) at Hill Air Force Base. The analysis included evaluating real estate market conditions and land sales data, completing a life cycle cost analysis of Air Force office space procurement options and developing valuation models for potential site development scenarios. Other activities included developing the financial portion of the Business Case analysis, supporting presentations to leadership, responding to technical questions and developing potential site development scenarios.

- **Utilities Inc: Strategic Financial Consulting / Northbrook, IL.** Managed the completion of financial assessments, and projections of performance and value for more than 90 operating companies of an investor-owned utility located in Arizona, Florida, Georgia, Illinois, Indiana, Kentucky, Louisiana, Maryland, North Carolina, New Jersey, Nevada, Pennsylvania, South Carolina, Tennessee, and Virginia. Provided analysis results to the senior leadership team of Utilities, Inc.
- **City of Virginia Beach: Financial Services / Virginia Beach VA.** Served as project manager for a multi-year financial services contract for the City of Virginia Beach that included true-up evaluation, developing an interactive financial planning model, and completing a cost of service evaluation. The true-up evaluation consisted of reviewing the City of Norfolk's cost allocation model for allocating operation and maintenance expenses, reviewing the rate model for allocation of fixed assets, and the rate of return on rate base for reasonableness. The cost of service evaluation consisted of assessing future capital funding needs for the water and sewer utilities due to aging infrastructure, system expansion, and new regulations, determining revenue requirements over a five to ten year period, and developing rates, fees and charges to meet revenue requirements and other City rate-setting goals and objectives.
- **Virgin Islands Public Services Commission: Expert Testimony / St Thomas, VI.** Served as financial and rate expert for the U.S Virgin Islands Public Services Commission regarding Waste Management Authority's solid waste and wastewater utility rate cases. Reviewed financial and rate aspects of the Authority's filings, prepared written testimony, and presented oral testimony before the Public Services Commission. Application involved establishment of new Authority Environmental User Fees and Wastewater User Fees. Technical issues reviewed involved reasonableness of the rate revenue requirements, fairness and equitability of the rate structure, and affordability issues.
- **Westchester Joint Water Works: Water Rate Study / Westchester, NY.** Completed a comprehensive rate study for Westchester Joint Water Works and its member municipalities. Evaluated revenue requirements and the cost to serve wholesale and retail customers, developed rate models, and worked with Client and member municipalities to evaluate water rate structure alternatives.
- **Wayne County, Department of Environment: Comprehensive Assessment and Master Plan / Detroit MI.** Completed a financial evaluation in support of a comprehensive utility assessment and master

plan. Assessed the client's level of competitiveness, vulnerability to privatization, and degree of organizational alignment from a financial perspective. Developed a cost allocation model that was used throughout the project. Evaluated many aspects of the client's financial operations including a detailed evaluation of DOE's rate and fee structure, as well as a critical review of administration, finance, accounting, and general management policies and procedures. Based on the evaluation, recommended revising and consolidating DOE's fee structure.

EXPERT TESTIMONY

Valuation Expert in the Matter of the Joint Petition of the City Trenton, New Jersey and New Jersey American Water Company, Inc. for Authorization of the Purchase and Sale of the Assets of the Outside Water Utility System of the City of Trenton, New Jersey, BPU Docket No. WM08010063.

Municipal Utility Rate Expert in the Application for Approval of Environmental User Fee and Wastewater User Fee in the United States Virgin Islands by the Virgin Island Waste Management Authority, Docket Number 554, before the Government of the Virgin Islands Public Services Commission.

Rate Expert In the Matter of the Application of Arizona-American Water Company, Inc. for Approvals Associated with a Proposed Transaction with Maricopa Water Conservation District Number One To Allow the Construction of a Surface Water Treatment Facility Known as the White Tanks Project, Docket No. W-01303A-05-0718, before the Arizona Corporation Commission.

PUBLICATIONS AND PRESENTATIONS

Mastracchio, J.M., **Capital Project Funding, Improving Your Success Rate**, presented at the Greater Buffalo Environmental Conference, Buffalo, NY, March 18, 2008.

Mastracchio, J.M., et. al. **Water Capital Financing, Manual of Practice M29**, contributing author and workshop presenter at the American Water Works Association Annual Conference and Exposition, Toronto, Canada. June 23, 2007.

Mastracchio, J.M., **"Economic and Financial Elements of Water Utility Facilities Master Planning"**, presented at the Spring Meeting of the American Water Works Association, New York Section, Saratoga Springs NY, April 24-27, 2007.

Mastracchio, J.M., **"Budget Forecasting in the New Construction Cost Era - It's Not as Simple as the ENR Anymore,"** presented at the Conference of the United States Society of Dams, Pittsburgh PA, March 7, 2007.

Gangemi, A.N, Mastracchio, J.M., **"Dynamic Utility Financial Modeling - A Utility Manager's Crystal Ball,"** presented at the Annual Conference of the New England Water Works Association, Danvers MA, September 17-20, 2006.

Mastracchio, J.M., **"The Next Challenge in Eliminating Sewer Overflows: Who Pays?"** *Clearwaters*, Vol. 35, p. 26-27, Winter 2005. New York Water Environment Association, Inc.

Lockridge, R.L., Mastracchio, J.M., **"Dynamic Financial Modeling for Local Governments,"** *Proceedings*, 91st Annual Conference of the International City/County Management Association (ICMA), Minneapolis MN, September 25-28, 2005.

Mastracchio, J.M., **"Interactive Financial Modeling: An Effective Tool for Utility Management and Planning,"** *Proceedings*, 68th Annual Conference of the Indiana Water Environment Association, Indianapolis IN, November 15-17, 2004.

Mastracchio, J.M., **"The Use of Financial Modeling to Support Utility Management and Planning,"** presented at the 78th Annual Conference of the Ohio Water Environment Association, Columbus OH, June 21-24, 2004.

Mastracchio, J.M., **"Using Financial Models to Establish and Update Water and Sewer Rates,"** presented at the Winter Conference of the County Commissioners Association of Ohio, Columbus OH, December 1, 2003.

ATTACHMENT 7

**Economic Assessment of Infrastructure to Meet Proposed Water Quality
Standards for Dissolved Oxygen and Plant Effluent Standards for Bacteria
(Malcolm Pirnie, Inc., July 2008)**

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO
ECONOMIC ASSESSMENT OF INFRASTRUCTURE TO MEET PROPOSED WATER
QUALITY STANDARDS FOR DISSOLVED OXYGEN AND PLANT EFFLUENT
STANDARDS FOR BACTERIA

Economic Assessment
July 2008

Introduction

The purpose of this study is to examine the potential economic impacts of implementing processes at the Metropolitan Water Reclamation District of Greater Chicago (District) facilities and in the waterways necessary to meet the proposed water quality and plant effluent standards as proposed by the Illinois Environmental Protection Agency (IEPA) under R08-9. The assessment is composed of two sections; environmental and economic. This report presents the economic portion of the assessment. The environmental portion is provided under a separate cover.

The District's approach is to take a "holistic" view of the environmental impacts of the alternatives, including the potential economic impacts in terms of the District's statutory taxing authority and financial capability. A summary of the infrastructure costs, financial condition and limitations of the District, and financial forecast results under several alternatives is provided below. These alternatives consist of:

- Disinfection (Ultraviolet and Chlorination/Dechlorination) technology;
- Dissolved Oxygen technology;
- A combination of disinfection and dissolved oxygen technology.

Infrastructure Cost Summary

This study evaluates the costs and overall environmental impacts of potentially implementing processes to disinfect plant effluent and increase dissolved oxygen in the Chicago Area Waterway System (CAWS). Costs associated with several alternatives, including implementing chlorination/dechlorination disinfection, and ultraviolet disinfection at the three water reclamation plants is summarized in Table 1 below.

Table 1 – Summary of Costs to Meet Newly Proposed Water Quality and Effluent Standards in the Chicago Area Waterway System

Project Description	Capital Cost	Annual O&M Cost	Total Present Value Cost
SWRP			
Chlorination/Dechlorination Disinfection	\$225,700,000	\$15,900,000	\$533,500,000
Ultraviolet Disinfection	267,200,000	12,600,000	511,200,000
CWRP			
Chlorination/Dechlorination Disinfection	\$79,100,000	\$5,020,000	\$176,500,000
Ultraviolet Disinfection	112,300,000	4,600,000	201,600,000
NSWRP			
Chlorination/Dechlorination Disinfection	\$114,200,000	\$5,040,000	\$212,000,000
Ultraviolet Disinfection	111,600,000	4,900,000	206,800,000
Total			
Chlorination/Dechlorination Disinfection	\$419,000,000	\$25,960,000	\$922,000,000
Ultraviolet Disinfection	491,100,000	22,100,000	919,600,000
Dissolved Oxygen Infrastructure	\$524,800,000	\$6,870,000	\$656,600,000

All costs in 2008 dollars. Present value costs based on a 3.0% interest rate, and a 3% inflation rate for 20 years.

Sources:

Report entitled "Chlorination/Dechlorination Disinfection Cost Study for Stickney, Calumet, and North Side Water Reclamation Plants" prepared by CTE and dated May 12, 2008. Costs subsequently updated to 2008 dollars.

Report entitled "UV Disinfection Cost Study – Northside Water Reclamation Plant" prepared by CTE and dated January 31, 2008. Costs subsequently updated to 2008 dollars.

Dissolved Oxygen Infrastructure costs provided by CTE.

Financial Summary

The District generates revenue to fund its operations from ad valorem property taxes, personal property replacement tax (PPRT), user charge revenue, interest income, and other revenues. The District's primary source of operating revenue is ad valorem property taxes. PPRT revenue is primarily a tax on corporate income. The PPRT revenue is first distributed to fully fund the District's Retirement Fund, and subsequent receipts are distributed to other non-debt funds. User charge revenues are collected from large commercial and industrial classes, and tax-exempt customers. A summary of the District's revenues and expenditures for the period 2002 through 2006 is provided in Table 2 below.

Table 2 – MWRD Summary of Financial Results – All Governmental Funds
(in \$ Thousands, Modified Accrual Basis)

	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>
Revenues					
Property Taxes	\$ 362,036	\$ 397,751	\$ 360,326	\$ 423,941	\$ 380,675
Personal Property Replacement Tax	22,285	24,048	25,961	36,031	37,743
User Charges	48,890	50,222	47,757	45,983	52,504
Interest on Investments	15,693	13,163	9,943	19,693	43,659
Other Revenues	<u>14,759</u>	<u>16,203</u>	<u>16,495</u>	<u>16,309</u>	<u>17,691</u>
Total Revenues	\$ 463,663	\$ 501,387	\$ 460,482	\$ 541,957	\$ 532,272
Expenditures					
General Administration	\$ 14,318	\$ 14,987	\$ 15,538	\$ 17,259	\$ 16,974
Personnel	27,610	30,916	35,877	32,900	35,162
Pension Costs	27,044	29,511	27,372	31,561	30,071
Research and Development	23,838	24,172	24,030	24,787	24,985
Information Technology	11,204	11,417	10,574	10,811	11,034
Maintenance and Operations	160,326	159,079	160,299	157,612	155,899
Other	32,843	22,563	27,637	31,522	26,931
Construction Costs	157,076	164,865	127,155	133,599	164,157
Debt Service	<u>145,831</u>	<u>158,626</u>	<u>156,025</u>	<u>169,019</u>	<u>171,869</u>
Total Expenditures	\$ 600,090	\$ 616,136	\$ 584,507	\$ 609,070	\$ 637,082
Revenues Over (Under) Expenditures	\$ (136,427)	\$ (114,749)	\$ (124,025)	\$ (67,113)	\$ (104,810)
Other Financing Sources (Uses)	<u>222,622</u>	<u>223,613</u>	<u>52,720</u>	<u>15,973</u>	<u>383,448</u>
Net Change in Fund Balance	\$ 86,195	\$ 108,864	\$ (71,305)	\$ (51,140)	\$ 278,638

Source: Comprehensive Annual Financial Reports (2003-2006).

The expenditures shown in Table 2 were appropriated to the Corporate Fund, Construction Fund, Stormwater Fund, Capital Improvement Bond Fund, Bond Redemption and Interest Fund, Retirement Fund, and the Reserve Claim Fund. These funds are briefly summarized below:

- The Corporate Fund is the District's General Fund and includes appropriation requests for all day-to-day operational costs.
- The Construction Fund is utilized as a pay-as-you-go capital rehabilitation and modernization program, and to fund operations-related projects, where the useful life of the improvement is less than 20 years or when the values are less than \$1 million. Capital projects are financed by a tax levy sufficient to pay for project costs as they are constructed.
- The Stormwater Management Fund is used to minimize flooding damage by coordinating, planning, implementing, financing, and operating regional stormwater management projects, to foster stormwater improvements, and to educate the public with respect to sustainable growth concepts.
- The Capital Improvement Bond Fund includes major capital infrastructure projects whose useful lives extend beyond 20 years, and which will be financed by long-term debt, Federal and State grants, and State Revolving Fund loans.

- The Bond Redemption and Interest Fund is the District's debt service fund. Principal and interest payments on District general obligation bonds and SRF loans require an annual levy and appropriation.
- The Retirement Fund is used to account for pension costs as provided by specifically levied annual property taxes. The taxes are collected and recorded in this fund prior to their payment to the MWRD Retirement Fund.
- The Reserve Claim Fund acts as the District's Insurance Fund. The District is primarily self-insured and utilizes this fund for repair or replacement of damaged District property and claims implied against the District.

Financial Limitations

The District has several financial limitations and restrictions that directly impact its ability to take on additional projects or programs. When considering the potential economic impacts that the projected water quality improvement costs will have on the District's funding and bonding authority, several financial limitations were considered. First, in 1995, the Property Tax Extension Limitation Law (PTELL) was passed by the Illinois General Assembly, which limits the ability of the District to adopt future increases in the aggregate tax levy. In accordance with this Act, increases to the District's aggregate tax levy are limited to the lesser of: (1) five percent or (2) the change in the national consumer price index (CPI) plus allowable increases for new property. The aggregate levy is the total of all funds except the Bond Redemption and Interest and the Stormwater Management Funds.

Second, the District's initial Tax Cap legislation restricted the District's non-referendum bond authority to only apply to projects initiated prior to October 1, 1991. There was a specific exemption, essentially to exclude TARP projects from the more restrictive provisions of the Act which require referendum approval of all new debt. Public Act 89-385 provides the District with the authority to issue non-referendum "limited bonds" for capital projects initiated after October 1, 1991 at the same level as it did in 1994. Limited bonds can be issued to the extent that the total debt service requirements of any new debt when combined with existing debt service does not exceed the 1994 debt service extension base of \$141,463,920. Public Act 90-485 has provided a further modification by authorizing the exclusion of debt for Tunnel and Reservoir Plan (TARP) projects from this debt service extension base.

Third, in 2003, the District received authority under Public Act 93-279 to issue \$150 million (previously \$100 million) of non-referendum bonds during any budget year plus authorized but unissued bonds during the previous three budget years through 2016.

These financial limitations and restrictions directly impact the District's ability to take on additional projects and/or programs, and the District is currently very near these limits without considering the implementation of disinfection or dissolved oxygen processes.

Baseline Financial Forecast

A baseline long-term financial forecast was prepared for the District based on its current estimated requirements to be used as a comparison with financial forecasts associated with meeting the proposed water quality and effluent standards. Revenue and expenditure projections were made based on the five-year forecast information contained within the 2008 budget, the capital improvement program information provided by the District, and discussions with the District's Administrative Services Manager. A summary of the current capital improvement plan, which does not include a disinfection program or projects needed to meet the newly proposed water quality standards, is provided in Table 3 below. The estimated cost of the District's planned capital improvement projects were provided to Malcolm Pirnie in February 2008.

Table 3 – Capital Improvement Plan (Other Projects)

Description	Yearly Dispersement Projection (in \$ Thousands)-->										
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	
Corporate Fund Program	\$ 177	\$ 329	\$ 189	\$ 206	\$ 219	\$ 386	\$ 399	\$ 413	\$ 427	\$ 441	
Construction Fund Program	14,651	14,547	11,818	6,720	4,927	5,949	6,849	7,796	9,249	10,512	
Limited Bond Fund Projects											
Plant	158,023	161,419	247,995	287,760	242,858	205,403	134,662	133,876	120,859	76,173	
Sewer	23,668	53,703	73,934	61,605	2,618	7,979	-	-	-	-	
TARP	1,016	3,668	10,822	8,524	4,838	-	-	-	-	-	
Unspecified	-	-	-	-	-	-	-	-	-	25,000	
Unlimited Bond Fund Projects (TARP)	10,355	67,535	61,816	50,972	46,709	15,898	35,425	24,053	10,619	-	
Limited SRF Projects											
Plant	29,453	24,654	29,049	-	-	-	-	-	-	-	
Sewer	28,680	2,125	1,831	1,705	-	-	-	-	-	-	
Unlimited SRF Projects (TARP)	1,553	-	-	-	-	-	-	-	-	-	
Stormwater Fund Projects	10,008	2,490	-	-	-	-	-	-	-	-	
Future Sewer Rehab Projects	-	-	-	9,229	22,511	36,503	37,489	38,501	39,541	40,608	
Future Plant Rehab Projects	-	-	-	-	-	-	-	-	-	27,072	
Total	\$ 277,584	\$ 330,470	\$ 437,454	\$ 426,721	\$ 324,680	\$ 272,119	\$ 214,824	\$ 204,638	\$ 180,695	\$ 179,807	

Source: The estimated cost of the District's planned capital improvement projects were provided to Malcolm Pirnie in February 2008.

It is important to note that the current CIP does not include future Stormwater Management fund projects as Detail Watershed Plans (DWPs) are not expected to be completed until 2010. In addition, the District's currently planned projects do not include the costs of implementing nutrient removal processes. As documented in a District summary cost table (provided as Table 4 below), a rudimentary order-of-magnitude cost estimate prepared by the District indicates that the capital costs to construct nutrient removal processes could be approximately \$2.8 billion.

Table 4 – Rudimentary, Order-of-Magnitude Cost Estimates for Nutrient Removal at District Water Reclamation Plants

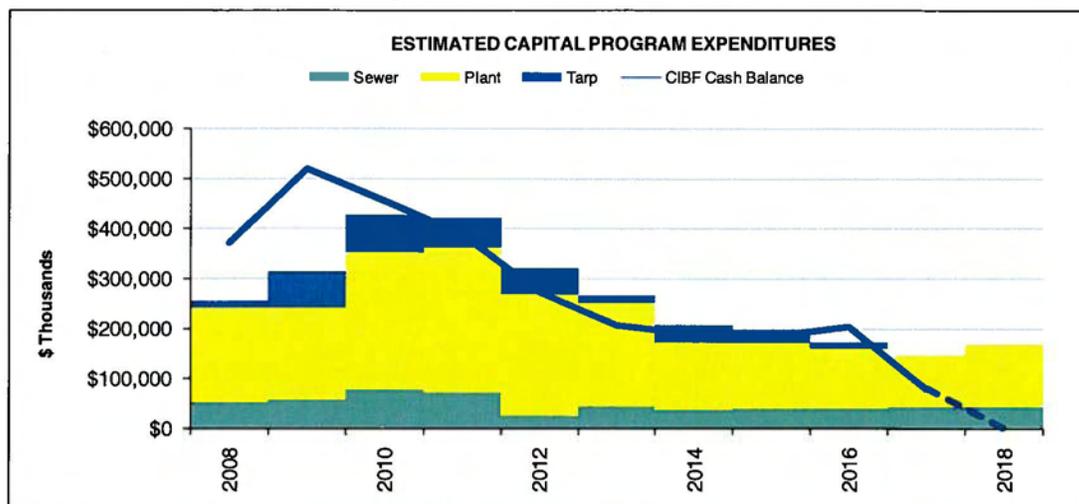
PLANT	CAPITAL COST	ANNUAL M&O
Stickney	\$1,666,000,000	\$100,000,000
Calumet	\$605,000,000	\$29,000,000
North Side	\$408,000,000	\$4,700,000
Kirie	\$83,000,000	\$1,000,000
Egan	\$38,000,000	\$2,500,000
Hanover Park	\$17,000,000	\$1,000,000
Total	\$2,817,000,000	\$138,200,000

NOTES:

1. Cost Estimate prepared by engineering department of MWRDGC.
2. Under the Master Plans for the Calumet and North Side WRPs, conceptual level cost estimates were performed for various nutrient removal processes. The purpose of the cost estimates was to compare various nutrient removal processes relative to each other. These estimates were used to generate a rudimentary, order-of-magnitude cost estimate for all seven WRPs. In short, North Side and Calumet estimates were used to arrive at capital and annual operating costs on a flow basis (i.e. dollars per million gallons of sewage treated). These ratios were used to extrapolate costs for the other four WRPs. The cost estimates that were derived assumed hypothetical effluent limits of 0.5 mg/L for total phosphorus and between 6 to 8 mg/L for total nitrogen.
3. All costs are given in 2008 dollars.
4. Lemont Water Reclamation Plant is not included as it is planned to be converted to a sewage pumping station.

The baseline capital improvement plan and projected cash balance in the Capital Improvement Bond Fund is shown graphically in Figure 1 below. As shown in this figure, the cash balance in the Capital Improvement Bond Fund is expected to gradually decrease as a result of funding these capital projects until 2016 when the District's authority to issue non-referendum bonds expires.

Figure 1
Capital Improvement Plan - Baseline



In addition to these planned capital expenditures, maintenance and operations (M&O) costs were projected over the forecast period. The projection was based on historical results, the District's existing five-year forecast projections, and discussions with District staff. The projections of M&O costs are included in the forecasted property tax levy increases summarized below. Additional details are provided in the tables and calculations provided in Appendix A.

A ten-year projection of funding and tax levy requirements (for the years 2008 through 2017) was developed to provide a baseline scenario of current estimated requirements in which to compare scenarios incorporating capital and M&O costs that would be necessary to meet proposed water quality standards. The baseline financial projection results are summarized in Figures 2 and 3 below and detailed in Appendix A. Figure 2 shows the annual increase in the property tax levy necessary to fund projected capital and M&O costs, excluding those costs necessary to meet the proposed water quality standards, as compared to the property tax levy limitation. The property tax limitation limits the property tax levy increase to the lessor of (1) five percent or (2) the change in CPI plus the increase in new property. The baseline scenario results indicate that the District will stay at or below the tax levy limitation over the forecast period.

Figure 3 shows the projected annual "limited" debt service associated with existing and proposed District debt, excluding debt that would be necessary to fund capital projects associated with the proposed water quality standards, as compared to the debt service limitation. The baseline analysis indicates that the District will stay at or below the debt service extension base limitation through fiscal year 2015 and exceed the limitation slightly in fiscal years 2016 and 2017. This means that in 2016, the District's non-referendum bond authority, which expires at the end of 2016, will be further limited so as not to exceed the debt service extension base.

Figure 2
Forecasted Aggregate Tax Levy Requirement Compared to Tax Cap Limitation - Baseline

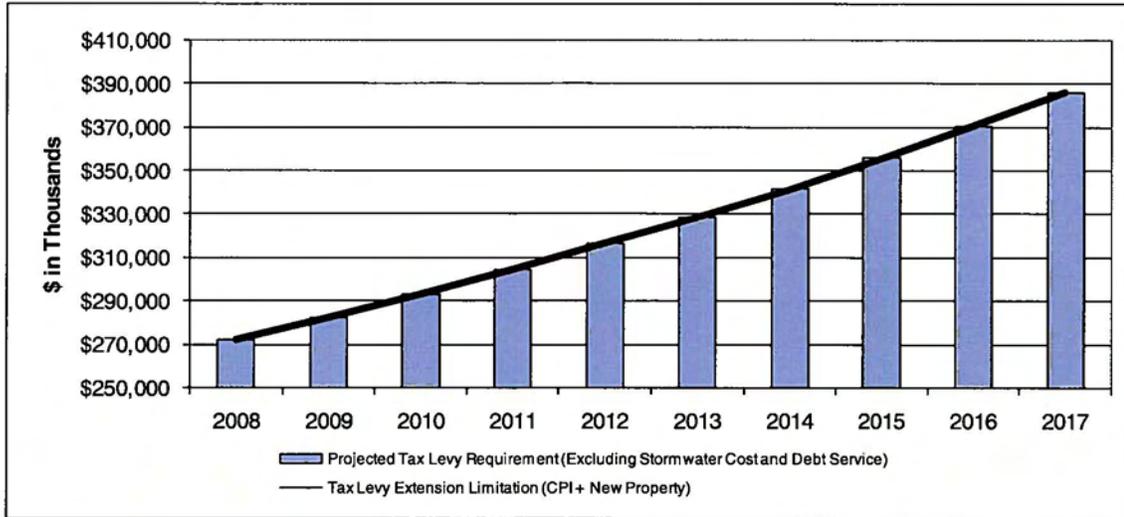
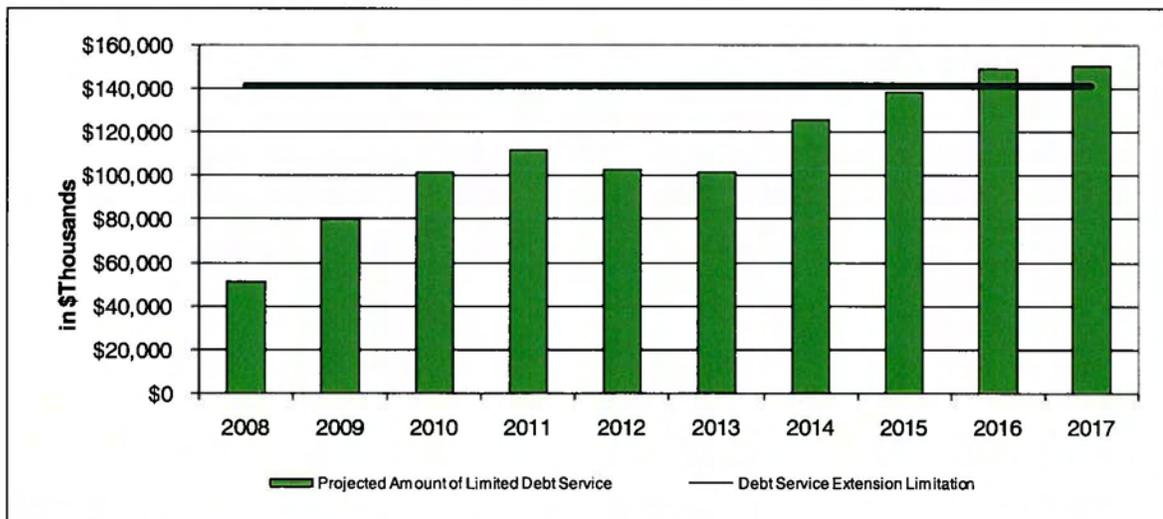


Figure 3
Forecasted Debt Service Compared to Debt Service Extension Base

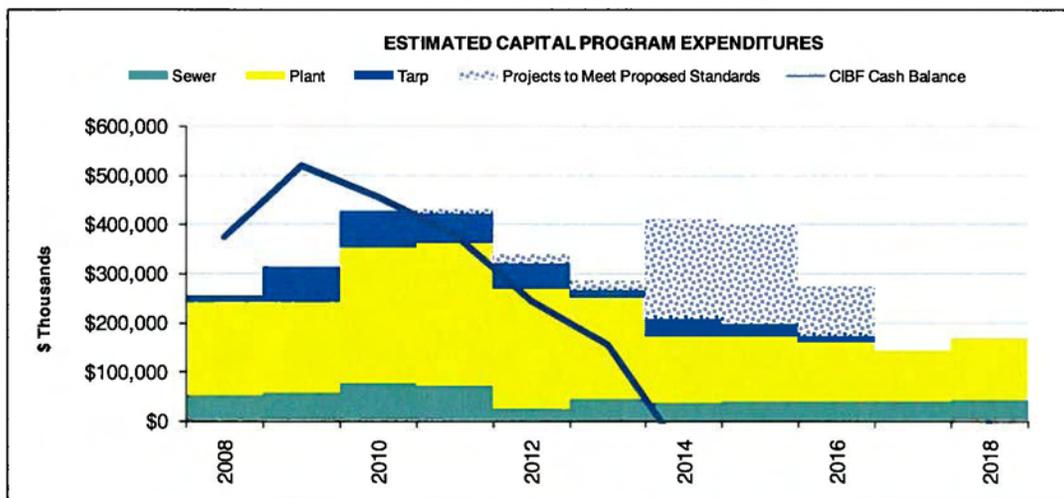


Scenario 1 (Chlorination/Dechlorination Disinfection)

Scenario 1 consists of adding the capital and annual M&O costs associated with chlorination / dechlorination disinfection (as shown in Table 1) to the baseline financial forecast. For the purposes of this scenario, it was assumed that design of the disinfection processes would occur in 2011 through 2013 and construction would occur in 2014 through 2016.

The capital improvement plan and projected cash balance in the Capital Improvement Bond Fund for Scenario 1 is shown graphically in Figure 4 below. As shown in this figure, additional capital costs would be incurred to meet the proposed water quality standards, and the cash balance in the Capital Improvement Bond Fund would decrease more rapidly than the baseline forecast as a result of funding these capital projects until 2016 when the District's authority to issue non-referendum bonds expires. The analysis indicates that the projected cash balance in the Capital Improvement Bond Fund would be insufficient to fund current projects and the projects associated with the proposed water quality standards due to the District's current authority and limitation of issuing no more than \$150 million of non-referendum bonds during any budget year. Furthermore, in order to fund the capital projects, the District would have to receive additional non-referendum bonding authority or issue a voter referendum.

Figure 4
Capital Improvement Plan – Scenario 1



In addition to the capital expenditures associated with Scenario 1, M&O costs associated with this scenario were projected over the forecast period. The projections of M&O costs associated with implementing the chlorination / dechlorination disinfection processes are included in the forecasted property tax levy increases summarized below. Additional details are provided in the tables and calculations provided in Appendix A.

A ten-year projection of funding and tax levy requirements necessary to meet proposed plant effluent standards was developed for Scenario 1. The results are summarized in

Figures 5 and 6 below and detailed in Appendix A. Figure 5 shows the annual aggregate property tax levy requirement necessary to fund projected capital and M&O costs, including those costs necessary to meet the proposed plant effluent standards, as compared to the aggregate tax levy limitation. The Scenario 1 results indicate that the District will exceed the aggregate tax levy limitation once the disinfection processes have been constructed and operations commence in 2016. Furthermore, in order to fund the improvements, the District would have to request an amendment to the Property Tax Extension Limitation Law or obtain voter approval via referendum to increase the aggregate extension limitation and/or the limiting rate.

**Figure 5
Forecasted Aggregate Tax Levy Requirement Compared to Tax Cap Limitation – Scenario 1**

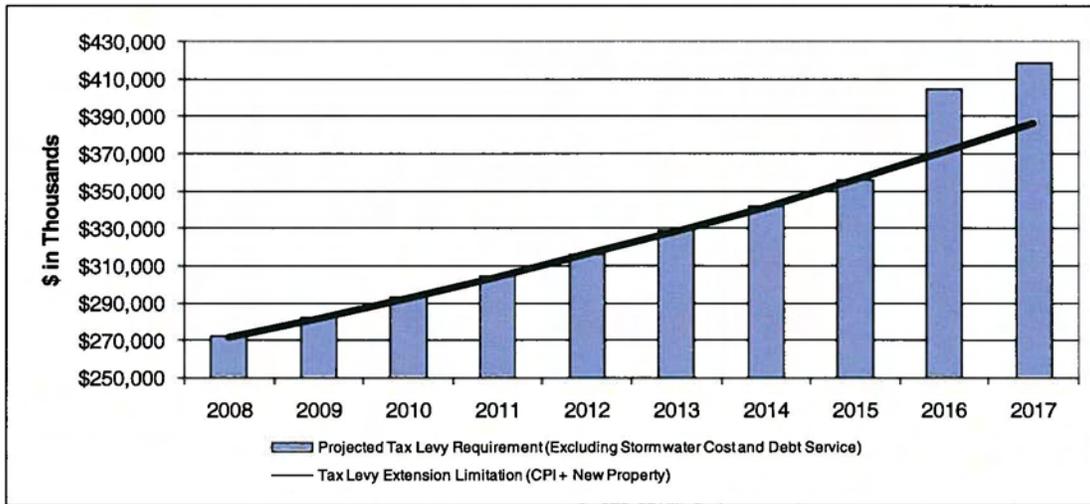
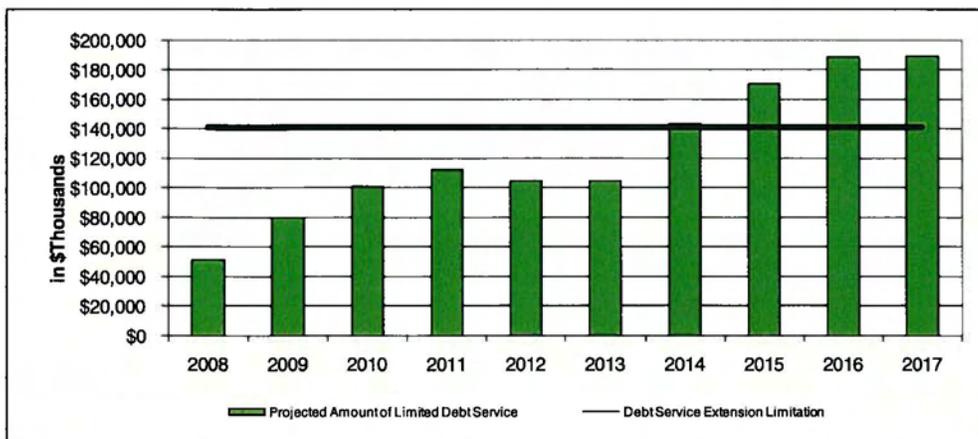


Figure 6 shows the projected annual “limited” debt service associated with existing and proposed District debt, including debt service that would be necessary to fund capital projects associated with the proposed plant effluent standards, as compared to the debt service extension base. The Scenario 1 analysis indicates that the District would significantly exceed the debt service extension base beginning in fiscal year 2014 if the Scenario 1 projects associated with meeting the proposed plant effluent standards were implemented.

**Figure 6
Forecasted Debt Service Compared to Debt Service Extension Base – Scenario 1**

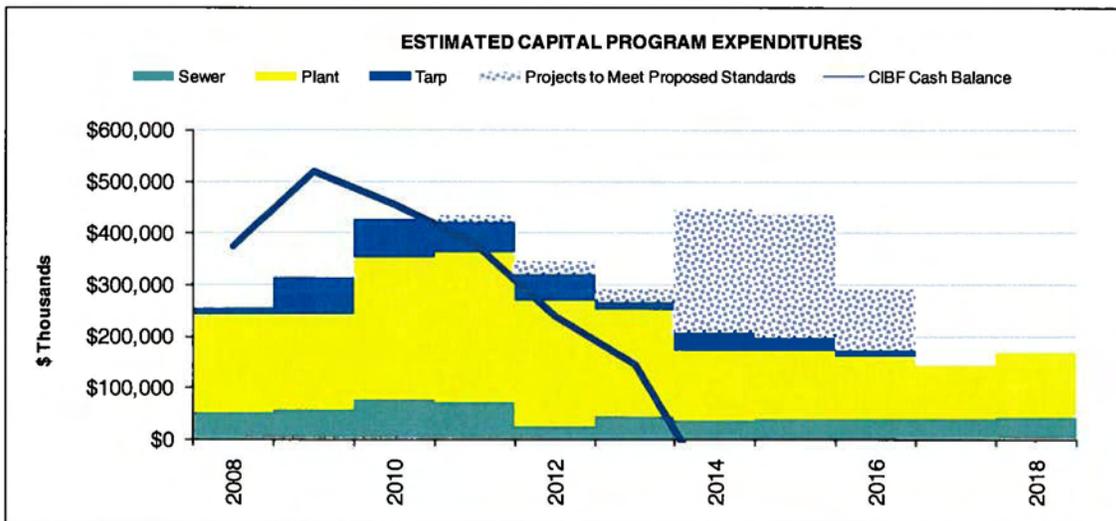


Scenario 2 (Ultraviolet Disinfection)

Scenario 2 consists of adding the capital and annual M&O costs associated with ultraviolet disinfection (as shown in Table 1) to the baseline financial forecast. For the purposes of this scenario, it was assumed that design of the disinfection processes would occur in 2011 through 2013 and construction would occur in 2014 through 2016.

The capital improvement plan and projected cash balance in the Capital Improvement Bond Fund for Scenario 2 is shown graphically in Figure 7 below. As shown in this figure, additional capital costs would be incurred to meet the proposed water quality standards, and the cash balance in the Capital Improvement Bond Fund would decrease more rapidly than the baseline forecast as a result of funding these capital projects until 2016 when the District's authority to issue non-referendum bonds expires. The analysis indicates that the projected cash balance in the Capital Improvement Bond Fund would be insufficient to fund current projected projects and the projects associated with the proposed water quality standards due to the District's current authority and limitation of issuing no more than \$150 million of non-referendum bonds during any budget year. Furthermore, in order to fund the capital projects, the District would have to receive additional non-referendum bonding authority or issue a voter referendum.

Figure 7
Capital Improvement Plan – Scenario 2



In addition to the capital expenditures associated with Scenario 2, M&O costs associated with this scenario were projected over the forecast period. The projections of M&O costs associated with implementing the ultraviolet disinfection processes are included in the forecasted property tax levy increases summarized below. Additional details are provided in the tables and calculations provided in Appendix A.

A ten-year projection of funding and tax levy requirements necessary to meet proposed plant effluent standards was developed for Scenario 2. The results are summarized in Figures 8 and 9 below and detailed in Appendix A. Figure 8 shows the annual aggregate property tax levy requirement necessary to fund projected capital and M&O costs,

including those costs necessary to meet the proposed plant effluent standards, as compared to the aggregate property tax levy limitation. The Scenario 2 results indicate that the District will exceed the aggregate tax levy limitation once the disinfection processes have been constructed and operations commence in 2016. Furthermore, in order to fund the improvements, the District would have to request an amendment to the Property Tax Extension Limitation Law or obtain voter approval via referendum to increase the aggregate extension limitation and/or the limiting rate.

Figure 8
Forecasted Aggregate Tax Levy Requirement Compared to Tax Cap Limitation – Scenario 2

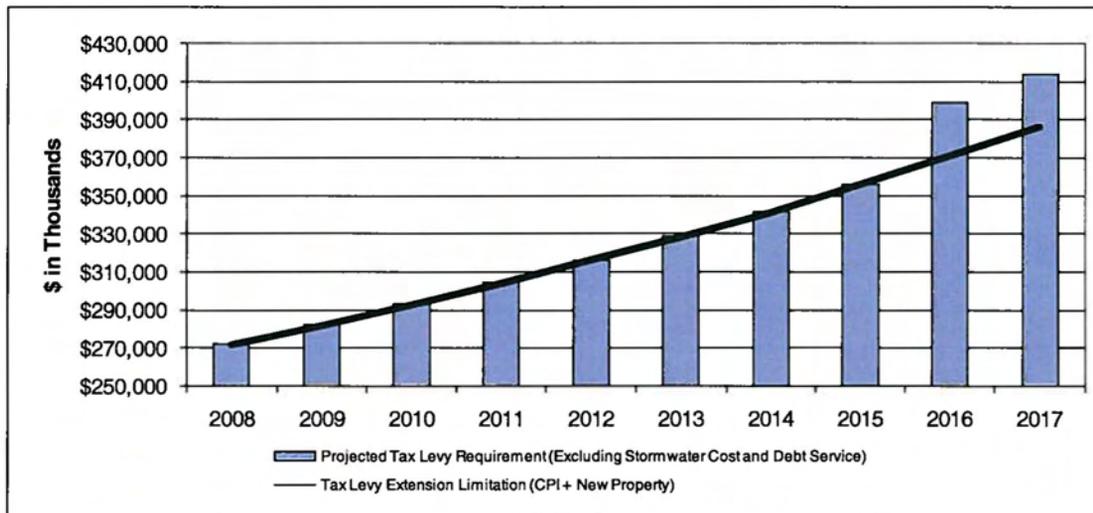
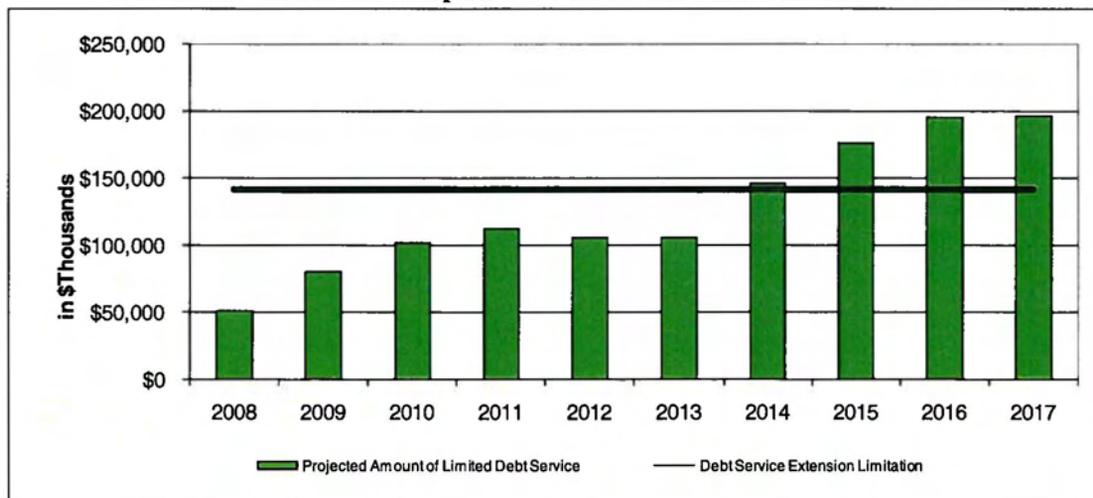


Figure 9 shows the projected annual “limited” debt service associated with existing and proposed District debt, including debt service that would be necessary to fund capital projects associated with the proposed plant effluent standards, compared to the debt service extension base. The Scenario 2 analysis indicates that the District would significantly exceed the debt service extension base beginning in fiscal year 2014 if the Scenario 2 projects associated with meeting the proposed plant effluent standards were implemented.

Figure 9
Forecasted Debt Service Compared to Debt Service Extension Base – Scenario 2

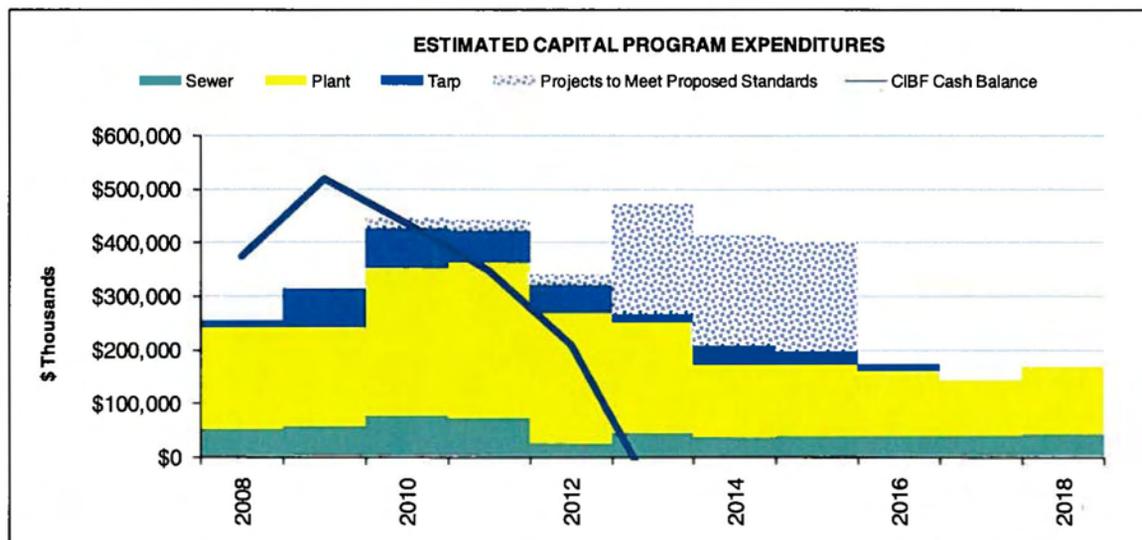


Scenario 3 (Dissolved Oxygen)

Scenario 3 consists of adding the capital and annual M&O costs that are anticipated to be required to meet the proposed Dissolved Oxygen Water Quality Standards in the CAWS (as shown in Table 1) to the baseline financial forecast. While it is possible that the dissolved oxygen enhancement facilities would be required in addition to either the ultraviolet or chlorination/dechlorination disinfection processes, the costs associated with the dissolved oxygen processes are shown herein as a stand alone scenario in order to demonstrate its financial impact separately from the other scenarios. For the purposes of this scenario, it was assumed that design of the dissolved oxygen enhancement facilities would occur in 2010 through 2012 and construction would occur in 2013 through 2015.

The capital improvement plan and projected cash balance in the Capital Improvement Bond Fund for Scenario 3 is shown graphically in Figure 10 below. As shown in this figure, additional capital costs would be incurred to implement the processes, and the cash balance in the Capital Improvement Bond Fund would decrease more rapidly than the baseline forecast as a result of funding these capital projects until 2016 when the District's authority to issue non-referendum bonds expires. The analysis indicates that the projected cash balance in the Capital Improvement Bond Fund would be insufficient to fund current projects and the projects associated with the proposed water quality standards due to the District's current authority and limitation of issuing no more than \$150 million of non-referendum bonds during any budget year. Furthermore, in order to fund the capital projects, the District would have to receive additional non-referendum bonding authority or issue a voter referendum.

Figure 10
Capital Improvement Plan – Scenario 3



In addition to the capital expenditures associated with Scenario 3, M&O costs associated with this scenario were projected over the forecast period. The projections of M&O costs associated with implementing the dissolved oxygen processes are included in the

forecasted property tax levy increases summarized below. Additional details are provided in the tables and calculations provided in Appendix A.

A ten-year projection of funding and tax levy requirements necessary to meet proposed water quality standards was developed for Scenario 3. The results are summarized in Figures 11 and 12 below and detailed in Appendix A. Figure 11 shows the annual property tax levy requirement necessary to fund projected capital and M&O costs, including those costs necessary to meet the proposed water quality standards, as compared to the aggregate property tax levy limitation. The Scenario 3 results indicate that the District will exceed the tax levy limitation once the dissolved oxygen enhancement facilities have been constructed and operations commence in 2016. Furthermore, in order to fund the improvements, the District would have to request an amendment to the Property Tax Extension Limitation Law or obtain voter approval via referendum to increase the aggregate extension limitation and/or the limiting rate.

Figure 11
Forecasted Aggregate Tax Levy Requirement Compared to Tax Cap Limitation – Scenario 3

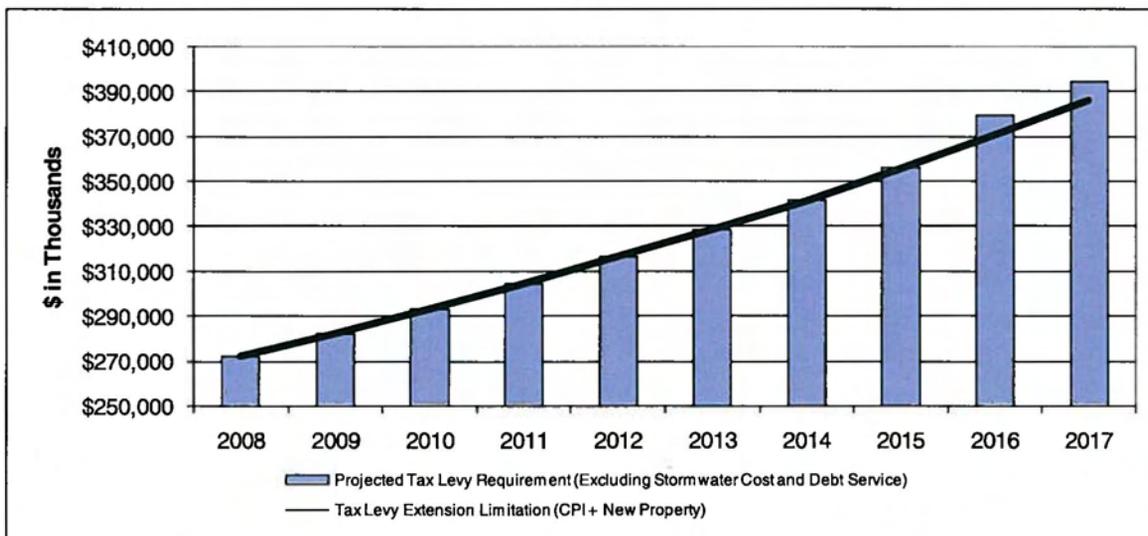
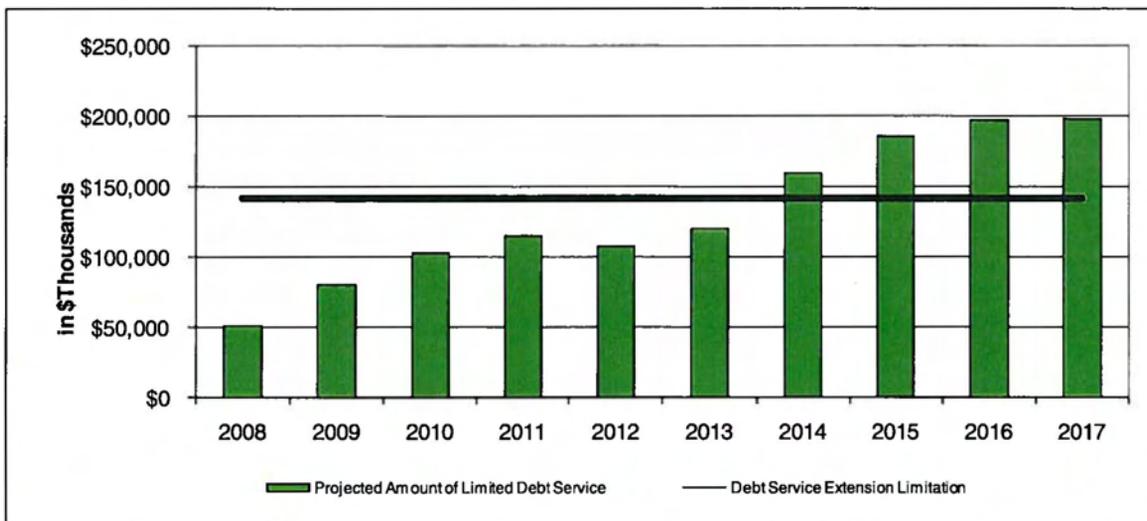


Figure 12 shows the projected annual “limited” debt service associated with existing and proposed District debt, including debt service that would be necessary to fund current projected projects and capital projects associated with the proposed water quality standards, compared to the debt service extension base. The Scenario 3 analysis indicates that the District would significantly exceed the debt service extension base beginning in fiscal year 2014 if the Scenario 3 projects associated with the proposed water quality improvements were implemented.

Figure 12
Forecasted Debt Service Compared to Debt Service Extension Base – Scenario 3

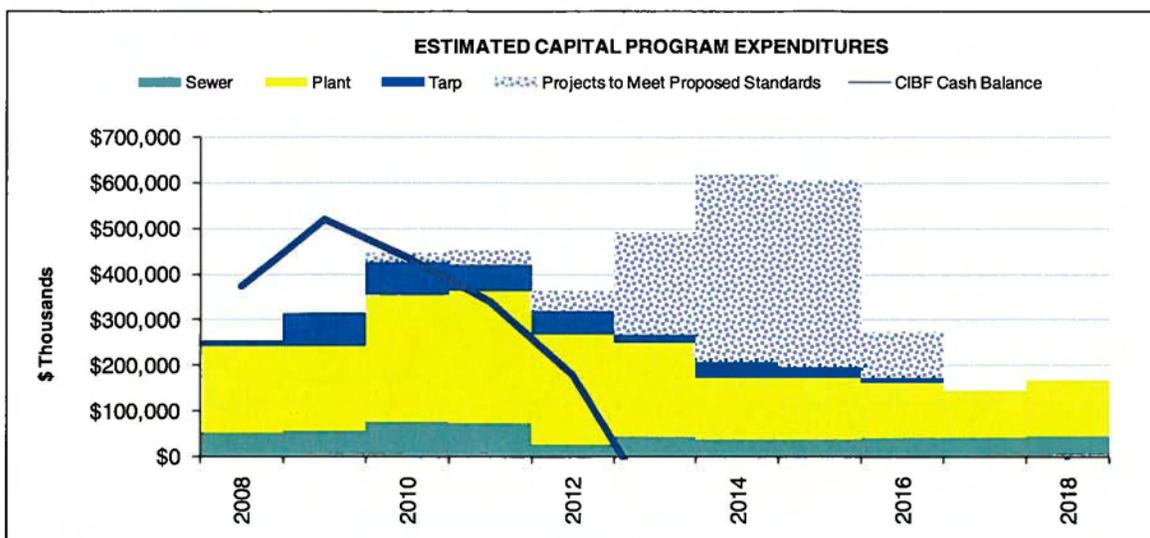


Scenario 4 (Chlorination / Dechlorination and Dissolved Oxygen)

Scenario 4 consists of adding the capital and annual M&O costs associated with both chlorination / dechlorination and dissolved oxygen (as shown in Table 1) to the baseline financial forecast.

The capital improvement plan and projected cash balance in the Capital Improvement Bond Fund for Scenario 4 is shown graphically in Figure 13 below. As shown in this figure, additional capital costs would be incurred to implement the processes, and the cash balance in the Capital Improvement Bond Fund would decrease more rapidly than the baseline forecast and the scenarios showing either disinfection or dissolved oxygen processes, as a result of funding these capital projects until 2016 when the District's authority to issue non-referendum bonds expires. The analysis indicates that the projected cash balance in the Capital Improvement Bond Fund would be insufficient to fund the current projected projects and projects associated with the proposed plant effluent and water quality standards due to the District's current authority and limitation of issuing no more than \$150 million of non-referendum bonds during any budget year. Furthermore, in order to fund the capital projects, the District would have to receive additional non-referendum bonding authority or issue a voter referendum.

Figure 13
Capital Improvement Plan – Scenario 4



In addition to the capital expenditures associated with Scenario 4, M&O costs associated with this scenario were projected over the forecast period. The projections of M&O costs associated with implementing the dissolved oxygen and chlorination/dechlorination disinfection processes are included in the forecasted property tax levy increases summarized below. Additional details are provided in the tables and calculations provided in Appendix A.

A ten-year projection of funding and tax levy requirements necessary to meet proposed plant effluent and water quality standards was developed for Scenario 4. The results are summarized in Figures 14 and 15 below and detailed in Appendix A. Figure 14 shows the annual aggregate property tax levy requirement necessary to fund projected capital and M&O costs, including those costs necessary to meet the proposed standards, as compared to the aggregate property tax levy limitation. The Scenario 4 results indicate that the District will exceed the tax levy limitation once the dissolved oxygen processes and chlorination / dechlorination disinfection improvements have been constructed and operations commence in 2016. Furthermore, in order to fund the projects, the District would have to request an amendment to the Property Tax Extension Limitation Law or obtain voter approval via referendum to increase the aggregate extension limitation and/or the limiting rate.

Figure 14
Forecasted Aggregate Tax Levy Requirement Compared to Tax Cap Limitation – Scenario 4

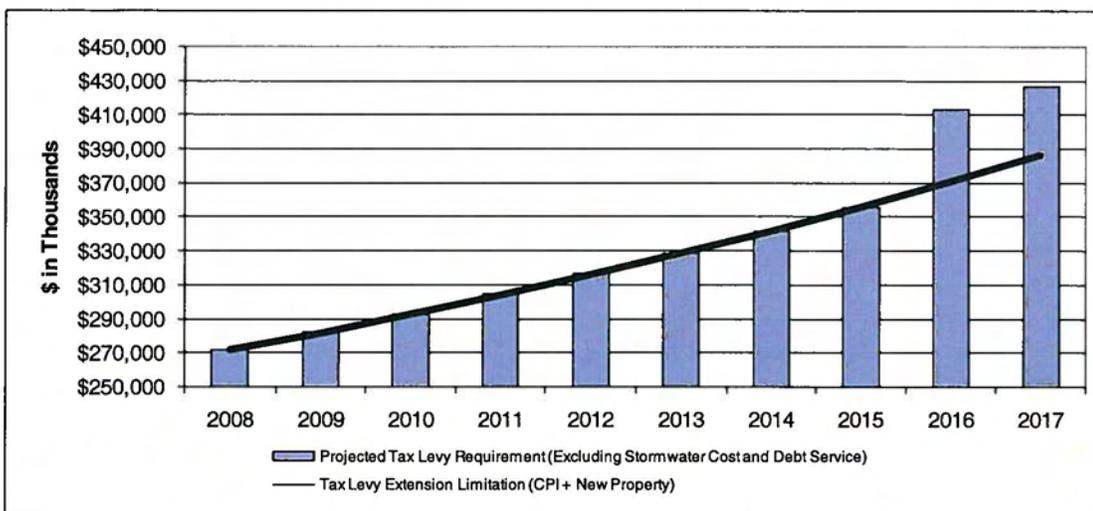
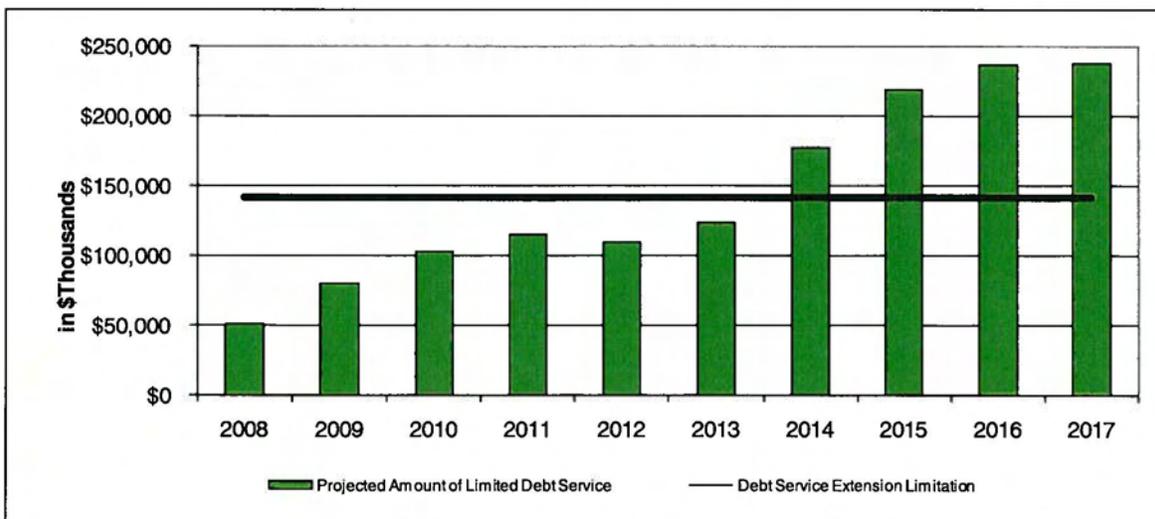


Figure 15 shows the projected annual “limited” debt service associated with existing and proposed District debt, including debt service that would be necessary to fund current projected projects and capital projects associated with the proposed plant effluent and water quality standards, compared to the debt service extension base. The Scenario 4 analysis indicates that the District would significantly exceed the debt service extension base beginning in fiscal year 2014 if the Scenario 4 projects associated with meeting the proposed standards were implemented.

Figure 15
Forecasted Debt Service Compared to Debt Service Extension Base – Scenario 4

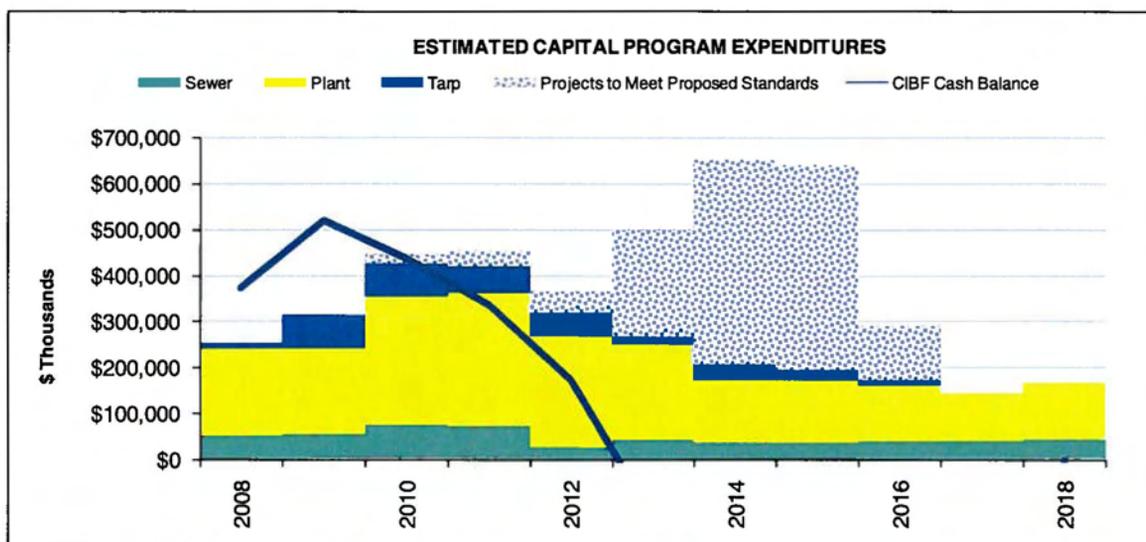


Scenario 5 (UV Disinfection and Dissolved Oxygen)

Scenario 5 consists of adding the capital and annual M&O costs associated with both UV disinfection and dissolved oxygen (as shown in Table 1) to the baseline financial forecast.

The capital improvement plan and projected cash balance in the Capital Improvement Bond Fund for Scenario 5 is shown graphically in Figure 16 below. As shown in this figure, additional capital costs would be incurred to implement the processes, and the cash balance in the Capital Improvement Bond Fund would decrease more rapidly than the baseline forecast and the scenarios showing either disinfection or dissolved oxygen processes, as a result of funding these capital projects until 2016 when the District's authority to issue non-referendum bonds expires. The analysis indicates that the projected cash balance in the Capital Improvement Bond Fund would be insufficient to fund current projected projects and the projects associated with the proposed water quality standards due to the District's current authority and limitation of issuing no more than \$150 million of non-referendum bonds during any budget year. Furthermore, in order to fund the capital projects, the District would have to receive additional non-referendum bonding authority or issue a voter referendum.

Figure 16
Capital Improvement Plan – Scenario 5



In addition to the capital expenditures associated with Scenario 5, M&O costs associated with this scenario were projected over the forecast period. The projections of M&O costs associated with implementing the dissolved oxygen and ultraviolet disinfection processes are included in the forecasted property tax levy increases summarized below. Additional details are provided in the tables and calculations provided in Appendix A.

A ten-year projection of funding and tax levy requirements necessary to meet proposed plant effluent and water quality standards was developed for Scenario 5. The results are summarized in Figures 17 and 18 below and detailed in Appendix A. Figure 17 shows the annual aggregate property tax levy requirement necessary to fund projected capital

and M&O costs, including those costs necessary to meet the proposed standards, as compared to the aggregate property tax levy limitation. The Scenario 5 results indicate that the District will exceed the tax levy limitation once the dissolved oxygen processes and ultraviolet disinfection improvements have been constructed and operations commence in 2016. Furthermore, in order to fund the projects, the District would have to request an amendment to the Property Tax Extension Limitation Law or obtain voter approval via referendum to increase the aggregate extension limitation and/or the limiting rate.

Figure 17
Forecasted Aggregate Tax Levy Requirement Compared to Tax Cap Limitation – Scenario 5

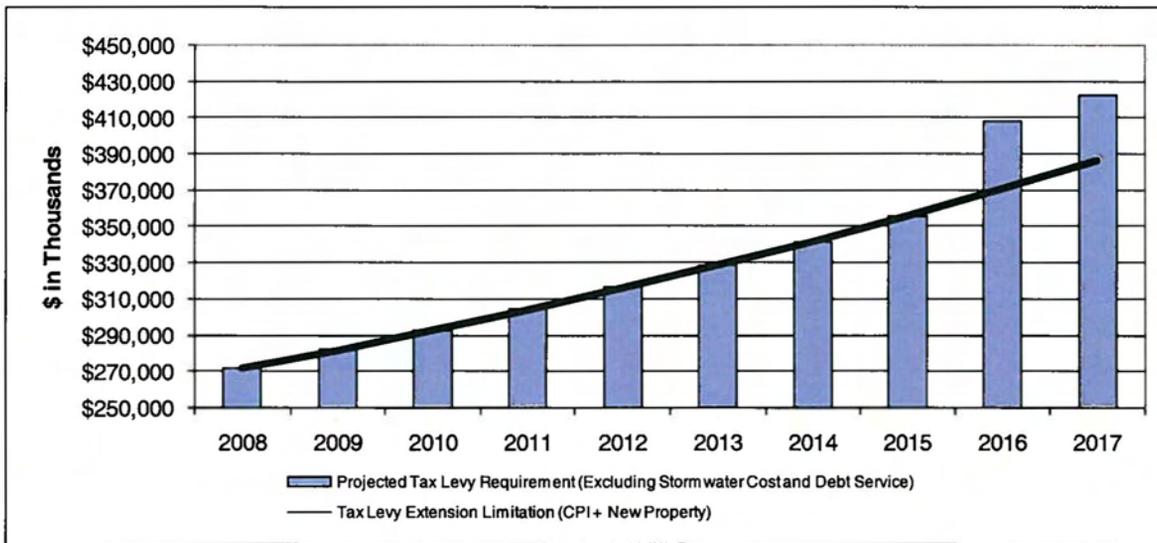
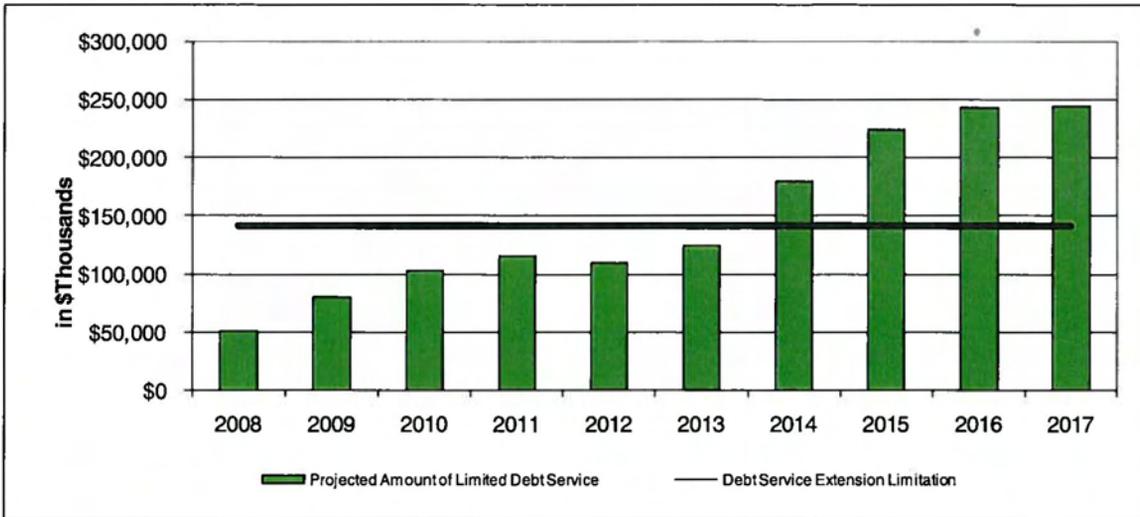


Figure 18 shows the projected annual “limited” debt service associated with existing and proposed District debt, including debt service that would be necessary to fund current projected projects and capital projects associated with the proposed plant effluent and water quality standards, compared to the debt service extension base. The Scenario 5 analysis indicates that the District would significantly exceed the debt service extension base beginning in fiscal year 2014 if the Scenario 5 projects associated with meeting the proposed standards were implemented.

Figure 18
Forecasted Debt Service Compared to Debt Service Extension Base – Scenario 5



Appendix A
Backup Tables and Calculations

**Table A-1
Tax Levy Requirement Forecast Summary – Baseline Scenario**

Description	Projection (in \$ Thousands)-->									
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Projected Levy:										
Corporate Fund	\$ 239,262	\$ 243,031	\$ 251,304	\$ 268,826	\$ 278,106	\$ 286,957	\$ 297,344	\$ 309,412	\$ 321,991	\$ 334,848
Construction Fund	1	5,523	8,385	1,272	2,830	5,213	6,561	7,635	8,747	10,090
Stormwater Fund	15,211	18,802	12,443	15,878	17,023	18,145	18,387	19,123	20,126	20,410
Debt Service - Existing	141,601	122,409	119,829	116,727	121,793	123,152	109,793	108,674	101,013	99,594
Debt Service - Proposed	-	31,204	55,313	79,422	92,888	106,555	120,223	133,890	147,558	150,583
Retirement Fund	25,665	26,450	26,023	26,726	27,447	28,188	28,949	29,818	30,712	31,634
Reserve Claim Fund	7,073	7,062	7,345	7,639	7,944	8,262	8,593	8,936	9,294	9,666
Total Projected Gross Levy (in \$ thousands)	\$ 428,814	\$ 454,481	\$ 480,642	\$ 516,489	\$ 548,031	\$ 576,473	\$ 589,851	\$ 617,489	\$ 639,442	\$ 656,823

**Table A-2
Property Tax Extension Limitation – Baseline Scenario**

Description	Projection (in \$ Thousands)-->									
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Property Tax Levy Constraint (Property Tax Extension Limitation Law)¹:										
Adjusted Aggregate Gross Property Tax Levy (Excluding Debt Service and Stormwater)	272,001	282,066	293,057	304,462	316,327	328,620	341,447	355,801	370,744	386,237
Projected Increase in Aggregate Tax Levy	0%	3.70%	3.90%	3.89%	3.90%	3.89%	3.90%	4.20%	4.20%	4.18%
Estimated Change in Consumer Price Index	3.00%	2.80%	2.70%	2.70%	2.70%	2.70%	2.70%	3.00%	3.00%	3.00%
Estimated New Property (Growth)	<u>0.80%</u>	<u>0.90%</u>	<u>1.20%</u>							
Total Allowable Increase in Adjusted Tax Levy	3.80%	3.70%	3.90%	3.90%	3.90%	3.90%	3.90%	4.20%	4.20%	4.20%
Total Allowable Aggregate Tax Levy	272,001	282,065	293,066	304,495	316,370	328,709	341,529	355,873	370,819	386,394
Gap between Allowable and Projected Tax levy Increase		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

¹The Property Tax Extension Limitation Act, Tax Cap limits future increases in property tax levies, except debt service to the lesser of 5 percent or the change in the national consumer price index plus allowable increases for new property.

Table A-3 – Debt Service Projection and Debt Service Extension Limitation – Baseline Scenario

Description	Historical		Projection (in \$ Thousands)-->									
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<i>Capital Improvement Bond Fund Program Expenditures</i>												
Limited Bond Funds	8,862	31,250	\$ 183,040	\$ 220,164	\$ 337,931	\$ 369,596	\$ 260,514	\$ 223,362	\$ 148,729	\$ 146,689	\$ 135,726	\$ 106,446
Unlimited Bond Funds	51,066	22,712	10,355	67,535	61,816	50,972	46,709	15,898	35,425	24,053	10,619	-
Limited Bond and SRF	15,276	8,357	58,133	26,779	30,881	1,705	-	-	-	-	-	-
Unlimited Bond and SRF	-	1,201	1,553	-	-	-	-	-	-	-	-	-
Future Sewer Rehab Projects	-	-	-	-	-	9,229	22,511	36,503	37,489	38,501	39,541	40,608
Future Plant Rehab Projects	-	-	-	-	-	-	-	-	-	-	-	27,072
Compliance with Proposed Water Quality Standards	-	-	-	-	-	-	-	-	-	-	-	-
<i>CIBF Program Expenditures</i>	75,204	63,520	\$ 253,081	\$ 314,478	\$ 430,627	\$ 431,501	\$ 329,734	\$ 275,764	\$ 221,642	\$ 209,243	\$ 185,886	\$ 174,127
<i>Bond Fund Revenues (Debt Sizing)</i>												
Proposed limited Bonds	300,000	150,000	\$ -	\$ 150,000	\$ 300,000	\$ 150,000	\$ 150,000	\$ 100,000	\$ 150,000	\$ 150,000	\$ 150,000	-
Proposed unlimited	-	-	-	250,000	-	150,000	-	50,000	-	-	-	-
Proposed SRF	40,000	42,000	42,000	42,000	42,000	42,000	45,000	45,000	45,000	45,000	45,000	40,000
Investment income	4,618	14,297	27,767	18,602	25,908	22,772	19,436	13,671	10,316	9,500	9,262	10,181
<i>Bond Fund Revenues</i>	344,618	206,297	\$ 69,767	\$ 460,602	\$ 367,908	\$ 364,772	\$ 214,436	\$ 208,671	\$ 205,316	\$ 204,500	\$ 204,262	\$ 50,181
CIBF Cash Balance	285,935	555,349	372,035	518,159	455,440	388,711	273,412	206,318	189,992	185,249	203,625	79,680
<i>Debt Service</i>												
Existing limited	31,632	46,800	51,228	\$ 66,463	\$ 63,894	\$ 60,792	\$ 38,331	\$ 26,574	\$ 37,302	\$ 36,183	\$ 33,219	\$ 31,450
Existing unlimited (w/ SRF)	101,795	88,930	90,373	55,946	55,935	55,935	83,462	96,577	72,491	72,491	67,794	68,143
Proposed Limited Bond Funds	-	-	-	10,643	31,929	42,571	53,214	60,310	70,952	81,595	92,238	92,238
Proposed Unlimited Bond Funds	-	-	-	17,738	17,738	28,381	28,381	31,929	31,929	31,929	31,929	31,929
Proposed Limited Bond and SRF	-	-	-	2,823	5,646	8,469	11,292	14,317	17,342	20,366	23,391	26,416
Proposed Limited Bond DS for Water Quality Projects	-	-	-	-	-	-	-	-	-	-	-	-
Proposed Unlimited Bond and SRF	-	-	-	-	-	-	-	-	-	-	-	-
<i>Debt service</i>	133,427	135,730	141,601	153,613	175,142	196,149	214,681	229,707	230,016	242,565	248,571	250,176
Debt issuance capacity unissued	600,000	400,000	550,000	300,000	150,000	-	-	-	-	-	-	-
<i>Debt Service Extension Limitation</i>												
Total Limited Bond Debt Service	31,632	46,800	51,228	79,929	101,469	111,833	102,838	101,201	125,596	138,145	148,849	150,104
Debt Service Extension Base	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464

**Table A-4
Tax Revenue Requirement Forecast Summary – Scenario 1**

Description	Projection (in \$ Thousands)-->									
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Projected Levy:										
Corporate Fund	\$ 239,262	\$ 243,031	\$ 251,304	\$ 268,826	\$ 278,106	\$ 286,957	\$ 297,344	\$ 309,412	\$ 355,511	\$ 366,886
Construction Fund	1	5,523	8,385	1,272	2,830	5,213	6,561	7,635	8,747	10,090
Stormwater Fund	15,211	18,802	12,443	15,878	17,023	18,145	18,387	19,123	20,126	20,410
Debt Service - Existing	141,601	122,409	119,829	116,727	121,793	123,152	109,793	108,674	101,013	99,594
Debt Service - Proposed	-	31,204	55,313	80,141	95,045	110,152	138,205	166,258	187,118	190,143
Retirement Fund	25,665	26,450	26,023	26,726	27,447	28,188	28,949	29,818	30,712	31,634
Reserve Claim Fund	7,073	7,062	7,345	7,639	7,944	8,262	8,593	8,936	9,294	9,666
Total Projected Gross Levy (in \$ thousands)	\$ 428,814	\$ 454,481	\$ 480,642	\$ 517,208	\$ 550,189	\$ 580,069	\$ 607,832	\$ 649,856	\$ 712,521	\$ 728,421

**Table A-5
Property Tax Extension Limitation – Scenario 1**

Description	Projection (in \$ Thousands)-->									
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Property Tax Levy Constraint (Property Tax Extension Limitation Law)¹:										
Adjusted Aggregate Gross Property Tax Levy (Excluding Debt Service and Stormwater)	272,001	282,066	293,057	304,462	316,327	328,620	341,447	355,801	404,264	418,275
Projected Increase in Aggregate Tax Levy	0%	3.70%	3.90%	3.89%	3.90%	3.89%	3.90%	4.20%	13.62%	3.47%
Estimated Change in Consumer Price Index	3.00%	2.80%	2.70%	2.70%	2.70%	2.70%	2.70%	3.00%	3.00%	3.00%
Estimated New Property (Growth)	<u>0.80%</u>	<u>0.90%</u>	<u>1.20%</u>							
Total Allowable Increase in Adjusted Tax Levy	3.80%	3.70%	3.90%	3.90%	3.90%	3.90%	3.90%	4.20%	4.20%	4.20%
Total Allowable Aggregate Tax Levy	272,001	282,065	293,066	304,495	316,370	328,709	341,529	355,873	370,819	386,394
Gap between Allowable and Projected Tax levy Increase		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	9.02%	8.25%

¹The Property Tax Extension Limitation Act, Tax Cap limits future increases in property tax levies, except debt service to the lesser of 5 percent or the change in the national consumer price index plus allowable increases for new property.

Table A-6 – Debt Service Projection and Non-Referendum Bonding Authority Limitation – Scenario 1

Description	Historical		Projection (in \$ Thousands)-->									
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<i>Capital Improvement Bond Fund Program Expenditures</i>												
Limited Bond Funds	8,862	31,250	\$ 183,040	\$ 220,164	\$ 337,931	\$ 369,596	\$ 260,514	\$ 223,362	\$ 148,729	\$ 146,689	\$ 135,726	\$ 106,446
Unlimited Bond Funds	51,066	22,712	10,355	67,535	61,816	50,972	46,709	15,898	35,425	24,053	10,619	-
Limited Bond and SRF	15,276	8,357	58,133	26,779	30,881	1,705	-	-	-	-	-	-
Unlimited Bond and SRF	-	1,201	1,553	-	-	-	-	-	-	-	-	-
Future Sewer Rehab Projects	-	-	-	-	-	9,229	22,511	36,503	37,489	38,501	39,541	40,608
Future Plant Rehab Projects	-	-	-	-	-	-	-	-	-	-	-	27,072
Compliance with Proposed Water Quality Standards	-	-	-	-	-	10,137	20,275	20,275	202,748	202,748	101,374	-
<i>CIBF Program Expenditures</i>	75,204	63,520	\$ 253,081	\$ 314,478	\$ 430,627	\$ 441,639	\$ 350,009	\$ 296,039	\$ 424,390	\$ 411,991	\$ 287,260	\$ 174,127
<i>Bond Fund Revenues (Debt Sizing)</i>												
Proposed limited Bonds	300,000	150,000	\$ -	\$ 150,000	\$ 300,000	\$ 150,000	\$ 150,000	\$ 100,000	\$ 150,000	\$ 150,000	\$ 150,000	-
Proposed unlimited	-	-	-	250,000	-	150,000	-	50,000	-	-	-	-
Proposed SRF	40,000	42,000	42,000	42,000	42,000	42,000	45,000	45,000	45,000	45,000	45,000	40,000
Investment income	4,618	14,297	27,767	18,602	25,908	22,772	18,929	12,125	7,679	(3,407)	(14,427)	(19,761)
<i>Bond Fund Revenues</i>	344,618	206,297	\$ 69,767	\$ 460,602	\$ 367,908	\$ 364,772	\$ 213,929	\$ 207,125	\$ 202,679	\$ 191,593	\$ 180,573	\$ 20,239
CIBF Cash Balance	285,935	555,349	372,035	518,159	455,440	378,573	242,493	153,579	(68,133)	(288,530)	(395,217)	(549,104)
<i>Debt Service</i>												
Existing limited	31,632	46,800	51,228	\$ 66,463	\$ 63,894	\$ 60,792	\$ 38,331	\$ 26,574	\$ 37,302	\$ 36,183	\$ 33,219	\$ 31,450
Existing unlimited (w/ SRF)	101,795	88,930	90,373	55,946	55,935	55,935	83,462	96,577	72,491	72,491	67,794	68,143
Proposed Limited Bond Funds	-	-	-	10,643	31,929	42,571	53,214	60,310	70,952	81,595	92,238	92,238
Proposed Unlimited Bond Funds	-	-	-	17,738	17,738	28,381	28,381	31,929	31,929	31,929	31,929	31,929
Proposed Limited Bond and SRF	-	-	-	2,823	5,646	8,469	11,292	14,317	17,342	20,366	23,391	26,416
Proposed Limited Bond DS for Water Quality Projects	-	-	-	-	-	719	2,158	3,596	17,982	32,367	39,560	39,560
Proposed Unlimited Bond and SRF	-	-	-	-	-	-	-	-	-	-	-	-
<i>Debt service</i>	133,427	135,730	141,601	153,613	175,142	196,868	216,839	233,303	247,998	274,932	288,131	289,736
Debt issuance capacity unissued	600,000	400,000	550,000	300,000	150,000	-	-	-	-	-	-	-
<i>Debt Service Extension Limitation</i>												
Total Limited Bond Debt Service	31,632	46,800	51,228	79,929	101,469	112,552	104,996	104,797	143,578	170,512	188,409	189,664
Debt Service Extension Base	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464

**Table A-7
Tax Revenue Requirement Forecast Summary – Scenario 2**

Description	Projection (in \$ Thousands)-->									
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Projected Levy:										
Corporate Fund	\$ 239,262	\$ 243,031	\$ 251,304	\$ 268,826	\$ 278,106	\$ 286,957	\$ 297,344	\$ 309,412	\$ 350,527	\$ 362,122
Construction Fund	1	5,523	8,385	1,272	2,830	5,213	6,561	7,635	8,747	10,090
Stormwater Fund	15,211	18,802	12,443	15,878	17,023	18,145	18,387	19,123	20,126	20,410
Debt Service - Existing	141,601	122,409	119,829	116,727	121,793	123,152	109,793	108,674	101,013	99,594
Debt Service - Proposed	-	31,204	55,313	80,265	95,417	110,770	141,299	171,827	193,925	196,950
Retirement Fund	25,665	26,450	26,023	26,726	27,447	28,188	28,949	29,818	30,712	31,634
Reserve Claim Fund	7,073	7,062	7,345	7,639	7,944	8,262	8,593	8,936	9,294	9,666
Total Projected Gross Levy (in \$ thousands)	\$ 428,814	\$ 454,481	\$ 480,642	\$ 517,332	\$ 550,560	\$ 580,688	\$ 610,927	\$ 655,426	\$ 714,344	\$ 730,464

**Table A-8
Property Tax Extension Limitation – Scenario 2**

Description	Projection (in \$ Thousands)-->									
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Property Tax Levy Constraint (Property Tax Extension Limitation Law)¹:										
Adjusted Aggregate Gross Property Tax Levy (Excluding Debt Service and Stormwater)	272,001	282,066	293,057	304,462	316,327	328,620	341,447	355,801	399,280	413,511
Projected Increase in Aggregate Tax Levy	0%	3.70%	3.90%	3.89%	3.90%	3.89%	3.90%	4.20%	12.22%	3.56%
Estimated Change in Consumer Price Index	3.00%	2.80%	2.70%	2.70%	2.70%	2.70%	2.70%	3.00%	3.00%	3.00%
Estimated New Property (Growth)	0.80%	0.90%	1.20%	1.20%	1.20%	1.20%	1.20%	1.20%	1.20%	1.20%
Total Allowable Increase in Adjusted Tax Levy	3.80%	3.70%	3.90%	3.90%	3.90%	3.90%	3.90%	4.20%	4.20%	4.20%
Total Allowable Aggregate Tax Levy	272,001	282,065	293,066	304,495	316,370	328,709	341,529	355,873	370,819	386,394
Gap between Allowable and Projected Tax levy Increase		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	7.68%	7.02%

¹The Property Tax Extension Limitation Act, Tax Cap limits future increases in property tax levies, except debt service to the lesser of 5 percent or the change in the national consumer price index plus allowable increases for new property.

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Description	Historical		Projection (in \$ Thousands)-->									
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<i>Capital Improvement Bond Fund Program Expenditures</i>												
Limited Bond Funds	8,862	31,250	\$ 183,040	\$ 220,164	\$ 337,931	\$ 369,596	\$ 260,514	\$ 223,362	\$ 148,729	\$ 146,689	\$ 135,726	\$ 106,446
Unlimited Bond Funds	51,066	22,712	10,355	67,535	61,816	50,972	46,709	15,898	35,425	24,053	10,619	-
Limited Bond and SRF	15,276	8,357	58,133	26,779	30,881	1,705	-	-	-	-	-	-
Unlimited Bond and SRF	-	1,201	1,553	-	-	-	-	-	-	-	-	-
Future Sewer Rehab Projects	-	-	-	-	-	9,229	22,511	36,503	37,489	38,501	39,541	40,608
Future Plant Rehab Projects	-	-	-	-	-	-	-	-	-	-	-	27,072
Compliance with Proposed Water Quality Standards	-	-	-	-	-	11,882	23,764	23,764	237,636	237,636	118,818	-
<i>CIBF Program Expenditures</i>	75,204	63,520	\$ 253,081	\$ 314,478	\$ 430,627	\$ 443,383	\$ 353,498	\$ 299,528	\$ 459,279	\$ 446,879	\$ 304,704	\$ 174,127
<i>Bond Fund Revenues (Debt Sizing)</i>												
Proposed limited Bonds	300,000	150,000	\$ -	\$ 150,000	\$ 300,000	\$ 150,000	\$ 150,000	\$ 100,000	\$ 150,000	\$ 150,000	\$ 150,000	-
Proposed unlimited	-	-	-	250,000	-	150,000	-	50,000	-	-	-	-
Proposed SRF	40,000	42,000	42,000	42,000	42,000	42,000	45,000	45,000	45,000	45,000	45,000	40,000
Investment income	4,618	14,297	27,767	18,602	25,908	22,772	18,841	11,859	7,225	(5,628)	(18,503)	(24,913)
<i>Bond Fund Revenues</i>	344,618	206,297	\$ 69,767	\$ 460,602	\$ 367,908	\$ 364,772	\$ 213,841	\$ 206,859	\$ 202,225	\$ 189,372	\$ 176,497	\$ 15,087
CIBF Cash Balance	285,935	555,349	372,035	518,159	455,440	376,829	237,172	144,503	(112,550)	(370,057)	(498,263)	(657,303)
<i>Debt Service</i>												
Existing limited	31,632	46,800	51,228	\$ 66,463	\$ 63,894	\$ 60,792	\$ 38,331	\$ 26,574	\$ 37,302	\$ 36,183	\$ 33,219	\$ 31,450
Existing unlimited (w/ SRF)	101,795	88,930	90,373	55,946	55,935	55,935	83,462	96,577	72,491	72,491	67,794	68,143
Proposed Limited Bond Funds	-	-	-	10,643	31,929	42,571	53,214	60,310	70,952	81,595	92,238	92,238
Proposed Unlimited Bond Funds	-	-	-	17,738	17,738	28,381	28,381	31,929	31,929	31,929	31,929	31,929
Proposed Limited Bond and SRF	-	-	-	2,823	5,646	8,469	11,292	14,317	17,342	20,366	23,391	26,416
Proposed Limited Bond DS for Water Quality Projects	-	-	-	-	-	843	2,529	4,215	21,076	37,937	46,367	46,367
Proposed Unlimited Bond and SRF	-	-	-	-	-	-	-	-	-	-	-	-
<i>Debt service</i>	133,427	135,730	141,601	153,613	175,142	196,992	217,210	233,922	251,092	280,502	294,938	296,544
Debt issuance capacity unissued	600,000	400,000	550,000	300,000	150,000	-	-	-	-	-	-	-
<i>Debt Service Extension Limitation</i>												
Total Limited Bond Debt Service	31,632	46,800	51,228	79,929	101,469	112,676	105,367	105,416	146,672	176,082	195,216	196,472
Debt Service Extension Base	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464

Table A-9 – Debt Service Projection and Non-Referendum Bonding Authority Limitation – Scenario 2

**Table A-10
Tax Revenue Requirement Forecast Summary – Scenario 3**

Description	Projection (in \$ Thousands)-->									
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Projected Levy:										
Corporate Fund	\$ 239,262	\$ 243,031	\$ 251,304	\$ 268,826	\$ 278,106	\$ 286,957	\$ 297,344	\$ 309,412	\$ 330,862	\$ 343,326
Construction Fund	1	5,523	8,385	1,272	2,830	5,213	6,561	7,635	8,747	10,090
Stormwater Fund	15,211	18,802	12,443	15,878	17,023	18,145	18,387	19,123	20,126	20,410
Debt Service - Existing	141,601	122,409	119,829	116,727	121,793	123,152	109,793	108,674	101,013	99,594
Debt Service - Proposed	-	31,204	56,771	82,337	97,261	125,506	153,751	181,996	195,664	198,689
Retirement Fund	25,665	26,450	26,023	26,726	27,447	28,188	28,949	29,818	30,712	31,634
Reserve Claim Fund	7,073	7,062	7,345	7,639	7,944	8,262	8,593	8,936	9,294	9,666
Total Projected Gross Levy (in \$ thousands)	\$ 428,814	\$ 454,481	\$ 482,100	\$ 519,405	\$ 552,404	\$ 595,423	\$ 623,379	\$ 665,595	\$ 696,418	\$ 713,407

**Table A-11
Property Tax Extension Limitation – Scenario 3**

Description	Projection (in \$ Thousands)-->									
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Property Tax Levy Constraint (Property Tax Extension Limitation Law)¹:										
Adjusted Aggregate Gross Property Tax Levy (Excluding Debt Service and Stormwater)	272,001	282,066	293,057	304,462	316,327	328,620	341,447	355,801	379,615	394,715
Projected Increase in Aggregate Tax Levy	0%	3.70%	3.90%	3.89%	3.90%	3.89%	3.90%	4.20%	6.69%	3.98%
Estimated Change in Consumer Price Index	3.00%	2.80%	2.70%	2.70%	2.70%	2.70%	2.70%	3.00%	3.00%	3.00%
Estimated New Property (Growth)	<u>0.80%</u>	<u>0.90%</u>	<u>1.20%</u>							
Total Allowable Increase in Adjusted Tax Levy	3.80%	3.70%	3.90%	3.90%	3.90%	3.90%	3.90%	4.20%	4.20%	4.20%
Total Allowable Aggregate Tax Levy	272,001	282,065	293,066	304,495	316,370	328,709	341,529	355,873	370,819	386,394
Gap between Allowable and Projected Tax levy Increase		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.37%	2.15%

¹The Property Tax Extension Limitation Act, Tax Cap limits future increases in property tax levies, except debt service to the lesser of 5 percent or the change in the national consumer price index plus allowable increases for new property.

Table A-12 – Debt Service Projection and Non-Referendum Bonding Authority Limitation – Scenario 3

Description	Historical		Projection (in \$ Thousands)-->									
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<i>Capital Improvement Bond Fund Program Expenditures</i>												
Limited Bond Funds	8,862	31,250	\$ 183,040	\$ 220,164	\$ 337,931	\$ 369,596	\$ 260,514	\$ 223,362	\$ 148,729	\$ 146,689	\$ 135,726	\$ 106,446
Unlimited Bond Funds	51,066	22,712	10,355	67,535	61,816	50,972	46,709	15,898	35,425	24,053	10,619	-
Limited Bond and SRF	15,276	8,357	58,133	26,779	30,881	1,705	-	-	-	-	-	-
Unlimited Bond and SRF	-	1,201	1,553	-	-	-	-	-	-	-	-	-
Future Sewer Rehab Projects	-	-	-	-	-	9,229	22,511	36,503	37,489	38,501	39,541	40,608
Future Plant Rehab Projects	-	-	-	-	-	-	-	-	-	-	-	27,072
Compliance with Proposed Water Quality Standards	-	-	-	-	20,546	20,546	20,546	205,456	205,456	205,456	-	-
<i>CIBF Program Expenditures</i>	75,204	63,520	\$ 253,081	\$ 314,478	\$ 451,173	\$ 452,047	\$ 350,280	\$ 481,220	\$ 427,098	\$ 414,698	\$ 185,886	\$ 174,127
<i>Bond Fund Revenues (Debt Sizing)</i>												
Proposed limited Bonds	300,000	150,000	\$ -	\$ 150,000	\$ 300,000	\$ 150,000	\$ 150,000	\$ 100,000	\$ 150,000	\$ 150,000	\$ 150,000	-
Proposed unlimited	-	-	-	250,000	150,000	150,000	50,000	50,000	50,000	50,000	50,000	50,000
Proposed SRF	40,000	42,000	42,000	42,000	42,000	42,000	45,000	45,000	45,000	45,000	45,000	40,000
Investment income	4,618	14,297	27,767	18,602	25,908	21,745	17,330	10,432	(3,357)	(15,130)	(26,871)	(27,759)
<i>Bond Fund Revenues</i>	344,618	206,297	\$ 69,767	\$ 460,602	\$ 367,908	\$ 363,745	\$ 212,330	\$ 205,432	\$ 191,643	\$ 179,870	\$ 168,129	\$ 12,241
CIBF Cash Balance	285,935	555,349	372,035	518,159	434,894	346,592	208,642	(67,146)	(302,601)	(537,429)	(555,186)	(717,073)
<i>Debt Service</i>												
Existing limited	31,632	46,800	51,228	\$ 66,463	\$ 63,894	\$ 60,792	\$ 38,331	\$ 26,574	\$ 37,302	\$ 36,183	\$ 33,219	\$ 31,450
Existing unlimited (w/ SRF)	101,795	88,930	90,373	55,946	55,935	55,935	83,462	96,577	72,491	72,491	67,794	68,143
Proposed Limited Bond Funds	-	-	-	10,643	31,929	42,571	53,214	60,310	70,952	81,595	92,238	92,238
Proposed Unlimited Bond Funds	-	-	-	17,738	17,738	28,381	28,381	31,929	31,929	31,929	31,929	31,929
Proposed Limited Bond and SRF	-	-	-	2,823	5,646	8,469	11,292	14,317	17,342	20,366	23,391	26,416
Proposed Limited Bond DS for Water Quality Projects	-	-	-	-	1,458	2,916	4,373	18,951	33,528	48,106	48,106	48,106
Proposed Unlimited Bond and SRF	-	-	-	-	-	-	-	-	-	-	-	-
<i>Debt service</i>	133,427	135,730	141,601	153,613	176,600	199,065	219,054	248,658	263,544	290,671	296,677	298,282
Debt issuance capacity unissued	600,000	400,000	550,000	300,000	150,000	-	-	-	-	-	-	-
<i>Debt Service Extension Limitation</i>												
Total Limited Bond Debt Service	31,632	46,800	51,228	79,929	102,926	114,748	107,211	120,152	159,125	186,251	196,955	198,210
Debt Service Extension Base	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464

Table A-13
Tax Revenue Requirement Forecast Summary – Scenario 4

Description	Projection (in \$ Thousands)-->									
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Projected Levy:										
Corporate Fund	\$ 239,262	\$ 243,031	\$ 251,304	\$ 268,826	\$ 278,106	\$ 286,957	\$ 297,344	\$ 309,412	\$ 364,381	\$ 375,364
Construction Fund	1	5,523	8,385	1,272	2,830	5,213	6,561	7,635	8,747	10,090
Stormwater Fund	15,211	18,802	12,443	15,878	17,023	18,145	18,387	19,123	20,126	20,410
Debt Service - Existing	141,601	122,409	119,829	116,727	121,793	123,152	109,793	108,674	101,013	99,594
Debt Service - Proposed	-	31,204	56,771	83,056	99,419	129,102	171,733	214,364	235,224	238,249
Retirement Fund	25,665	26,450	26,023	26,726	27,447	28,188	28,949	29,818	30,712	31,634
Reserve Claim Fund	7,073	7,062	7,345	7,639	7,944	8,262	8,593	8,936	9,294	9,666
Total Projected Gross Levy (in \$ thousands)	\$ 428,814	\$ 454,481	\$ 482,100	\$ 520,124	\$ 554,562	\$ 599,020	\$ 641,361	\$ 697,962	\$ 769,498	\$ 785,005

Table A-14
Property Tax Extension Limitation – Scenario 4

Description	Projection (in \$ Thousands)-->									
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Property Tax Levy Constraint (Property Tax Extension Limitation Law)¹:										
Adjusted Aggregate Gross Property Tax Levy (Excluding Debt Service and Stormwater)	272,001	282,066	293,057	304,462	316,327	328,620	341,447	355,801	413,134	426,753
Projected Increase in Aggregate Tax Levy	0%	3.70%	3.90%	3.89%	3.90%	3.89%	3.90%	4.20%	16.11%	3.30%
Estimated Change in Consumer Price Index	3.00%	2.80%	2.70%	2.70%	2.70%	2.70%	2.70%	3.00%	3.00%	3.00%
Estimated New Property (Growth)	<u>0.80%</u>	<u>0.90%</u>	<u>1.20%</u>							
Total Allowable Increase in Adjusted Tax Levy	3.80%	3.70%	3.90%	3.90%	3.90%	3.90%	3.90%	4.20%	4.20%	4.20%
Total Allowable Aggregate Tax Levy	272,001	282,065	293,066	304,495	316,370	328,709	341,529	355,873	370,819	386,394
Gap between Allowable and Projected Tax levy Increase		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	11.41%	10.45%

¹The Property Tax Extension Limitation Act, Tax Cap limits future increases in property tax levies, except debt service to the lesser of 5 percent or the change in the national consumer price index plus allowable increases for new property.

Table A-15 – Debt Service Projection and Non-Referendum Bonding Authority Limitation – Scenario 4

Description	Historical		Projection (in \$ Thousands)-->									
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<i>Capital Improvement Bond Fund Program Expenditures</i>												
Limited Bond Funds	8,862	31,250	\$ 183,040	\$ 220,164	\$ 337,931	\$ 369,596	\$ 260,514	\$ 223,362	\$ 148,729	\$ 146,689	\$ 135,726	\$ 106,446
Unlimited Bond Funds	51,066	22,712	10,355	67,535	61,816	50,972	46,709	15,898	35,425	24,053	10,619	-
Limited Bond and SRF	15,276	8,357	58,133	26,779	30,881	1,705	-	-	-	-	-	-
Unlimited Bond and SRF	-	1,201	1,553	-	-	-	-	-	-	-	-	-
Future Sewer Rehab Projects	-	-	-	-	-	9,229	22,511	36,503	37,489	38,501	39,541	40,608
Future Plant Rehab Projects	-	-	-	-	20,546	30,683	40,820	225,730	408,204	408,204	101,374	27,072
Compliance with Proposed Water Quality Standards	-	-	-	-	20,546	30,683	40,820	225,730	408,204	408,204	101,374	-
<i>CIBF Program Expenditures</i>	75,204	63,520	\$ 253,081	\$ 314,478	\$ 451,173	\$ 462,184	\$ 370,555	\$ 501,494	\$ 629,846	\$ 617,446	\$ 287,260	\$ 174,127
<i>Bond Fund Revenues (Debt Sizing)</i>												
Proposed limited Bonds	300,000	150,000	\$ -	\$ 150,000	\$ 300,000	\$ 150,000	\$ 150,000	\$ 100,000	\$ 150,000	\$ 150,000	\$ 150,000	-
Proposed unlimited	-	-	-	250,000	-	150,000	-	50,000	-	-	-	-
Proposed SRF	40,000	42,000	42,000	42,000	42,000	42,000	45,000	45,000	45,000	45,000	45,000	40,000
Investment income	4,618	14,297	27,767	18,602	25,908	21,745	16,823	8,886	(5,994)	(28,036)	(50,560)	(57,701)
<i>Bond Fund Revenues</i>	344,618	206,297	\$ 69,767	\$ 460,602	\$ 367,908	\$ 363,745	\$ 211,823	\$ 203,886	\$ 189,006	\$ 166,964	\$ 144,440	\$ (17,701)
CIBF Cash Balance	285,935	555,349	372,035	518,159	434,894	336,455	177,723	(119,885)	(560,726)	(1,011,208)	(1,154,028)	(1,345,857)
<i>Debt Service</i>												
Existing limited	31,632	46,800	51,228	\$ 66,463	\$ 63,894	\$ 60,792	\$ 38,331	\$ 26,574	\$ 37,302	\$ 36,183	\$ 33,219	\$ 31,450
Existing unlimited (w/ SRF)	101,795	88,930	90,373	55,946	55,935	55,935	83,462	96,577	72,491	72,491	67,794	68,143
Proposed Limited Bond Funds	-	-	-	10,643	31,929	42,571	53,214	60,310	70,952	81,595	92,238	92,238
Proposed Unlimited Bond Funds	-	-	-	17,738	17,738	28,381	28,381	31,929	31,929	31,929	31,929	31,929
Proposed Limited Bond and SRF	-	-	-	2,823	5,646	8,469	11,292	14,317	17,342	20,366	23,391	26,416
Proposed Limited Bond DS for Water Quality Projects	-	-	-	-	1,458	3,635	6,531	22,547	51,510	80,473	87,666	87,666
Proposed Unlimited Bond and SRF	-	-	-	-	-	-	-	-	-	-	-	-
<i>Debt service</i>	133,427	135,730	141,601	153,613	176,600	199,784	221,212	252,254	281,526	323,038	336,237	337,842
Debt issuance capacity unissued	600,000	400,000	550,000	300,000	150,000	-	-	-	-	-	-	-
<i>Debt Service Extension Limitation</i>												
Total Limited Bond Debt Service	31,632	46,800	51,228	79,929	102,926	115,468	109,369	123,748	177,106	218,618	236,515	237,770
Debt Service Extension Base	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464

Table A-16
Tax Revenue Requirement Forecast Summary – Scenario 5

Description	Projection (in \$ Thousands)-->									
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Projected Levy:										
Corporate Fund	\$ 239,262	\$ 243,031	\$ 251,304	\$ 268,826	\$ 278,106	\$ 286,957	\$ 297,344	\$ 309,412	\$ 359,397	\$ 370,600
Construction Fund	1	5,523	8,385	1,272	2,830	5,213	6,561	7,635	8,747	10,090
Stormwater Fund	15,211	18,802	12,443	15,878	17,023	18,145	18,387	19,123	20,126	20,410
Debt Service - Existing	141,601	122,409	119,829	116,727	121,793	123,152	109,793	108,674	101,013	99,594
Debt Service - Proposed	-	31,204	56,771	83,180	99,790	129,721	174,827	219,933	242,031	245,056
Retirement Fund	25,665	26,450	26,023	26,726	27,447	28,188	28,949	29,818	30,712	31,634
Reserve Claim Fund	7,073	7,062	7,345	7,639	7,944	8,262	8,593	8,936	9,294	9,666
Total Projected Gross Levy (in \$ thousands)	\$ 428,814	\$ 454,481	\$ 482,100	\$ 520,248	\$ 554,934	\$ 599,639	\$ 644,455	\$ 703,532	\$ 771,321	\$ 787,049

Table A-17
Property Tax Extension Limitation – Scenario 5

Description	Projection (in \$ Thousands)-->									
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Property Tax Levy Constraint (Property Tax Extension Limitation Law)¹:										
Adjusted Aggregate Gross Property Tax Levy (Excluding Debt Service and Stormwater)	272,001	282,066	293,057	304,462	316,327	328,620	341,447	355,801	408,150	421,989
Projected Increase in Aggregate Tax Levy	0%	3.70%	3.90%	3.89%	3.90%	3.89%	3.90%	4.20%	14.71%	3.39%
Estimated Change in Consumer Price Index	3.00%	2.80%	2.70%	2.70%	2.70%	2.70%	2.70%	3.00%	3.00%	3.00%
Estimated New Property (Growth)	0.80%	0.90%	1.20%	1.20%	1.20%	1.20%	1.20%	1.20%	1.20%	1.20%
Total Allowable Increase in Adjusted Tax Levy	3.80%	3.70%	3.90%	3.90%	3.90%	3.90%	3.90%	4.20%	4.20%	4.20%
Total Allowable Aggregate Tax Levy	272,001	282,065	293,066	304,495	316,370	328,709	341,529	355,873	370,819	386,394
Gap between Allowable and Projected Tax levy Increase		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	10.07%	9.21%

¹The Property Tax Extension Limitation Act, Tax Cap limits future increases in property tax levies, except debt service to the lesser of 5 percent or the change in the national consumer price index plus allowable increases for new property.

Table A-18 – Debt Service Projection and Non-Referendum Bonding Authority Limitation – Scenario 5

Description	Historical		Projection (in \$ Thousands)-->									
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<i>Capital Improvement Bond Fund Program Expenditures</i>												
Limited Bond Funds	8,862	31,250	\$ 183,040	\$ 220,164	\$ 337,931	\$ 369,596	\$ 260,514	\$ 223,362	\$ 148,729	\$ 146,689	\$ 135,726	\$ 106,446
Unlimited Bond Funds	51,066	22,712	10,355	67,535	61,816	50,972	46,709	15,898	35,425	24,053	10,619	-
Limited Bond and SRF	15,276	8,357	58,133	26,779	30,881	1,705	-	-	-	-	-	-
Unlimited Bond and SRF	-	1,201	1,553	-	-	-	-	-	-	-	-	-
Future Sewer Rehab Projects	-	-	-	-	-	9,229	22,511	36,503	37,489	38,501	39,541	40,608
Future Plant Rehab Projects	-	-	-	-	-	-	-	-	-	-	-	27,072
Compliance with Proposed Water Quality Standards	-	-	-	-	20,546	32,427	44,309	229,219	443,092	443,092	118,818	-
<i>CIBF Program Expenditures</i>	75,204	63,520	\$ 253,081	\$ 314,478	\$ 451,173	\$ 463,929	\$ 374,044	\$ 504,983	\$ 664,734	\$ 652,335	\$ 304,704	\$ 174,127
<i>Bond Fund Revenues (Debt Sizing)</i>												
Proposed limited Bonds	300,000	150,000	\$ -	\$ 150,000	\$ 300,000	\$ 150,000	\$ 150,000	\$ 100,000	\$ 150,000	\$ 150,000	\$ 150,000	-
Proposed unlimited	-	-	-	250,000	150,000	150,000	50,000	50,000	50,000	50,000	50,000	50,000
Proposed SRF	40,000	42,000	42,000	42,000	42,000	42,000	45,000	45,000	45,000	45,000	45,000	40,000
Investment income	4,618	14,297	27,767	18,602	25,908	21,745	16,736	8,620	(6,448)	(30,257)	(54,637)	(62,854)
<i>Bond Fund Revenues</i>	344,618	206,297	\$ 69,767	\$ 460,602	\$ 367,908	\$ 363,745	\$ 211,736	\$ 203,620	\$ 188,552	\$ 164,743	\$ 140,363	\$ (22,854)
CIBF Cash Balance	285,935	555,349	372,035	518,159	434,894	334,710	172,402	(128,961)	(605,143)	(1,092,735)	(1,257,075)	(1,454,056)
<i>Debt Service</i>												
Existing limited	31,632	46,800	51,228	\$ 66,463	\$ 63,894	\$ 60,792	\$ 38,331	\$ 26,574	\$ 37,302	\$ 36,183	\$ 33,219	\$ 31,450
Existing unlimited (w/ SRF)	101,795	88,930	90,373	55,946	55,935	55,935	83,462	96,577	72,491	72,491	67,794	68,143
Proposed Limited Bond Funds	-	-	-	10,643	31,929	42,571	53,214	60,310	70,952	81,595	92,238	92,238
Proposed Unlimited Bond Funds	-	-	-	17,738	17,738	28,381	28,381	31,929	31,929	31,929	31,929	31,929
Proposed Limited Bond and SRF	-	-	-	2,823	5,646	8,469	11,292	14,317	17,342	20,366	23,391	26,416
Proposed Limited Bond DS for Water Quality Projects	-	-	-	-	1,458	3,759	6,902	23,166	54,605	86,043	94,473	94,473
Proposed Unlimited Bond and SRF	-	-	-	-	-	-	-	-	-	-	-	-
<i>Debt service</i>	133,427	135,730	141,601	153,613	176,600	199,908	221,583	252,873	284,620	328,608	343,044	344,650
Debt issuance capacity unissued	600,000	400,000	550,000	300,000	150,000	-	-	-	-	-	-	-
<i>Debt Service Extension Limitation</i>												
Total Limited Bond Debt Service	31,632	46,800	51,228	79,929	102,926	115,591	109,740	124,367	180,201	224,188	243,322	244,578
Debt Service Extension Base	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464

Attachment 8

Rudimentary, Order-of-Magnitude Cost Estimates for Nutrient Removal at District Water Reclamation Plants

Rudimentary, Order-of-Magnitude Cost Estimates for Nutrient Removal at District Water Reclamation Plants

PLANT	CAPITAL COST	ANNUAL M&O
Stickney	\$1,666,000,000	\$100,000,000
Calumet	\$605,000,000	\$29,000,000
North Side	\$408,000,000	\$4,700,000
Kirie	\$83,000,000	\$1,000,000
Egan	\$38,000,000	\$2,500,000
Hanover Park	\$17,000,000	\$1,000,000
Total	\$2,817,000,000	\$138,200,000

NOTES:

1. Cost Estimate prepared by engineering department of MWRDGC.
2. Under the Master Plans for the Calumet and North Side WRPs, conceptual level cost estimates were performed for various nutrient removal processes. The purpose of the cost estimates was to compare various nutrient removal processes relative to each other. These estimates were used to generate a rudimentary, order-of-magnitude cost estimate for all seven WRPs. In short, North Side and Calumet estimates were used to arrive at capital and annual operating costs on a flow basis (i.e. dollars per million gallons of sewage treated). These ratios were used to extrapolate costs for the other four WRPs. The cost estimates that were derived assumed hypothetical effluent limits of 0.5 mg/L for total phosphorus and between 6 to 8 mg/L for total nitrogen.
3. All costs are given in 2008 dollars.
4. Lemont Water Reclamation Plant is not included as it is planned to be converted to a sewage pumping station.

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:)
)
WATER QUALITY STANDARDS AND)
EFFLUENT LIMITATIONS FOR THE) R08-9
CHICAGO AREA WATERWAY SYSTEM) (Rulemaking - Water)
AND THE LOWER DES PLAINES RIVER:)
PROPOSED AMENDMENTS TO 35 Ill.)
Adm. Code Parts 301, 302, 303 and 304)

PRE-FILED TESTIMONY OF JOHN MASTRACCHIO

Economic Assessment for Dissolved Oxygen Enhancement Facilities

INTRODUCTION

My name is John Mastracchio. I am a senior associate with Malcolm Pirnie and have been a financial management, engineering, and rate consultant since 1994. My experience includes completing studies involving municipal utility economics and financial analysis. I hold a Master of Business Administration degree with a concentration in finance from Cornell University, a Masters of Engineering degree with a concentration in Civil and Environmental Engineering from Clarkson University, and a Bachelor of Arts degree from the State University of New York. I am a Registered Professional Engineer and have received the Chartered Financial Analyst designation from the Chartered Financial Analyst Institute. I am an active member of the American Water Works Association, the Water Environment Federation, and serve on the Finance, Accounting, and Management Controls Committee of the American Water Works Association. A resume detailing my education and experience is presented in Attachment 7.

PURPOSE

I was asked to examine the potential economic impacts of constructing and operating dissolved oxygen enhancement facilities that would be necessary to meet the Illinois Environmental Protection Agency's proposed water quality standards in the Chicago Area Waterway System. The results of this assessment are summarized in this testimony and are documented in greater detail in the report entitled Economic Assessment of Infrastructure to Meet Proposed Water Quality Standards for Dissolved Oxygen and Plant Effluent Standards for Bacteria (Attachment 6). The economic impacts were assessed in terms of the District's statutory taxing authority and financial capability.

COST SUMMARY

The economic assessment of implementing dissolved oxygen enhancement processes was based on the District spending approximately \$525 million in capital infrastructure and annual maintenance and operations (M&O) costs of approximately \$6.9 million (expressed in 2008 dollars) to construct and implement dissolved oxygen enhancement facilities that would increase the dissolved oxygen levels in the Chicago Area Waterway System (CAWS) in order to achieve compliance with the IEPA proposed standards. The basis for these costs is documented in the testimony of David R. Zenz. As discussed in his testimony, these are rough, order-of-magnitude cost estimates that are based upon a variety of assumptions, and there are still concerns and unknowns with respect to the facilities that would be required to meet the proposed standards.

ECONOMIC ASSESSMENT

The District generates revenue to fund its operations through an ad valorem property tax, a personal property replacement tax, user charges, interest income, and other miscellaneous fees and charges. The District's primary source of operating revenue is the ad valorem property tax. The personal property replacement tax is primarily a tax on corporate income. User charge revenues are collected from large commercial and industrial customers and tax-exempt customers. A summary of the District's revenues and expenditures for the period 2002 through 2006 is provided as Attachment 1.

The District has several financial limitations and restrictions that directly impact its ability to take on additional projects or programs. First, in 1995, the Property Tax Extension Limitation Law was passed by the Illinois General Assembly, which limits the ability of the District to adopt future increases in the aggregate tax levy. In accordance with this Act, increases to the District's property tax levy are limited to the lesser of: (1) five percent or (2) the change in the national consumer price index plus allowable increases for new property. The aggregate levy is the total levy of all funds except the Bond Redemption and Interest Fund and the Stormwater Management Fund. In other words, debt service and stormwater management costs are not included under this limitation.

Second, the District's initial Tax Cap legislation restricted the District's non-referendum bond authority to only apply to projects initiated prior to October 1, 1991. There was a specific exemption, essentially to exclude Tunnel and Reservoir Plan projects, from the more restrictive provisions of the Act which require referendum approval of all new debt. Public Act 89-385 provides the District with the authority to issue non-referendum "limited bonds" for capital projects initiated after October 1, 1991 at the same debt service level as it did in 1994. Limited bonds can be issued to the extent that the total debt service requirements of any new debt, when

combined with existing debt service, does not exceed the 1994 debt service extension base of \$141,463,920. Public Act 90-485 has provided a further modification by authorizing the exclusion of debt for Tunnel and Reservoir Plan projects from this debt service extension base.

Third, in 2003, the District received authority under Public Act 93-279 to issue \$150 million (previously \$100 million) of non-referendum bonds during any budget year, plus authorized, but unissued bonds, during the previous three budget years through 2016.

A baseline scenario was prepared, which includes the District's currently planned capital projects that the District feels is necessary in order to maintain and upgrade its aging facilities and infrastructure, but excludes the costs associated with this proposed rulemaking. The estimated cost of the District's planned capital improvement projects were provided to Malcolm Pirnie in February 2008, and a discussion of these projects is provided in the testimony of Mr. Tom Kunez of the District's Engineering Department. The baseline scenario indicates that the District would be able to generate sufficient revenues to satisfy the District's projected revenue requirements within the constraints of the legal limitations I just discussed. In addition, the District's debt financing needs will not exceed the Tax Cap legislation limits or the District's non-referendum bonding authority through fiscal year 2015. A summary of the District's projected results compared to the financial limitations and restrictions are provided as Attachment 2 (Figures 2-1, 2-2 and 2-3).

However, the District does not have sufficient financial resources to fund the capital expenditures and operation and maintenance costs necessary to meet the IEPA proposed dissolved oxygen standards. The District cannot generate sufficient revenues within the constraints of the Property Tax Extension Limitation Act, and the remaining funds needed would exceed the District's Tax Cap and non-referendum bonding authority. A summary of the

District's projected financial results under this scenario, as compared to the financial limitations and restrictions, is provided in Attachment 3 (Figures 3-1, 3-2 and 3-3).

I also completed an evaluation of the economic impact of the combined costs of the IEPA proposed dissolved oxygen standards and disinfection requirements (chlorination/dechlorination or ultraviolet disinfection). Disinfection costs were summarized in Attachment 1 of my previous testimony. If the District is required to move forward with both processes, it is anticipated that the Property Tax Extension Limitation Act, the District's Tax Cap, and the non-referendum bonding authority would be greatly exceeded. A summary of the District's projected financial results, including the dissolved oxygen enhancement and chlorination / dechlorination disinfection processes, as compared to the financial limitation and restrictions is provided in Attachment 4 (Figures 4-1, 4-2 and 4-3). Similarly, a summary of the District's projected financial results, including the dissolved oxygen and ultraviolet disinfection processes, as compared to the financial limitation and restrictions is provided in Attachment 5 (Figures 5-1, 5-2, and 5-3).

It should be noted that effluent limits for phosphorus and total nitrogen may be imposed on the District's treatment plants in the future. The District's currently planned capital projects, which were used in the baseline analysis, do not include the costs to implement nutrient removal processes. As documented in a District cost summary table provided in Attachment 8, a rudimentary, order-of-magnitude cost estimate prepared by the District indicates that the capital costs to construct nutrient removal processes could be approximately \$2.8 billion dollars.

CONCLUSION

Fully funding the activities necessary to achieve compliance with IEPA's proposed rule would require an act of the state Legislature to amend the Property Tax Extension Limitation Act

and provide additional non-referendum bonding authority; a voter referendum in support of additional bonding authority; or drastic reductions in the funding of other District programs. Furthermore, adding the combined costs of implementing both the dissolved oxygen and disinfection processes that would be required by this rulemaking to the wastewater system costs currently planned by the District would result in the District's financial limitations and restrictions to be greatly exceeded. In addition, if implemented, these processes would leave no financial capacity to fund other programs not currently included in the District's capital plan. One such project, not currently included in the District's capital plan, is nutrient removal facilities at its treatment plants, which could cost approximately \$2.8 billion if nutrient effluent limits are imposed in the future.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "John Mastracchio". The signature is written in a cursive style with a large initial "J" and a long, sweeping underline.

By: John Mastracchio

Testimony Attachments

1. MWRD Summary of Financial Results
2. Baseline Financial Results Compared to Financial Limitations and Restrictions
3. Projection of Financial Results Including Cost of Dissolved Oxygen Processes Compared to Financial Limitations and Restrictions
4. Financial Results Including Dissolved Oxygen and Chlorination/Dechlorination Disinfection Costs Compared to Financial Limitations and Restrictions
5. Results Including Dissolved Oxygen and Ultraviolet Disinfection Costs Compared to Financial Limitations and Restrictions
6. Report entitled Economic Assessment of Infrastructure to Meet Proposed Water Quality Standards for Dissolved Oxygen and Plant Effluent Standards for Bacteria, prepared by Malcolm Pirnie, Inc.
7. John Mastracchio Resume
8. Rudimentary, Order-of-Magnitude Cost Estimates for Nutrient Removal at District Water Reclamation Plants prepared by the District

Attachment 1
- MWRD Summary of Financial Results
(in \$ Thousands, Modified Accrual Basis)

	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>
Revenues					
Property Taxes	\$ 362,036	\$ 397,751	\$ 360,326	\$ 423,941	\$ 380,675
Personal Property Replacement Tax	22,285	24,048	25,961	36,031	37,743
User Charges	48,890	50,222	47,757	45,983	52,504
Interest on Investments	15,693	13,163	9,943	19,693	43,659
Other Revenues	14,759	16,203	16,495	16,309	17,691
Total Revenues	\$ 463,663	\$ 501,387	\$ 460,482	\$ 541,957	\$ 532,272
Expenditures					
General Administration	\$ 14,318	\$ 14,987	\$ 15,538	\$ 17,259	\$ 16,974
Personnel	27,610	30,916	35,877	32,900	35,162
Pension Costs	27,044	29,511	27,372	31,561	30,071
Research and Development	23,838	24,172	24,030	24,787	24,985
Information Technology	11,204	11,417	10,574	10,811	11,034
Maintenance and Operations	160,326	159,079	160,299	157,612	155,899
Other	32,843	22,563	27,637	31,522	26,931
Construction Costs	157,076	164,865	127,155	133,599	164,157
Debt Service	145,831	158,626	156,025	169,019	171,869
Total Expenditures	\$ 600,090	\$ 616,136	\$ 584,507	\$ 609,070	\$ 637,082
Revenues Over (Under) Expenditures	\$ (136,427)	\$ (114,749)	\$ (124,025)	\$ (67,113)	\$ (104,810)
Other Financing Sources (Uses)	222,622	223,613	52,720	15,973	383,448
Net Change in Fund Balance	\$ 86,195	\$ 108,864	\$ (71,305)	\$ (51,140)	\$ 278,638

Source: Comprehensive Annual Financial Reports (2003-2006).

Attachment 2

Baseline Financial Results Compared to Financial Limitations and Restrictions

Figure 2-1 - Capital Improvement Plan - Baseline

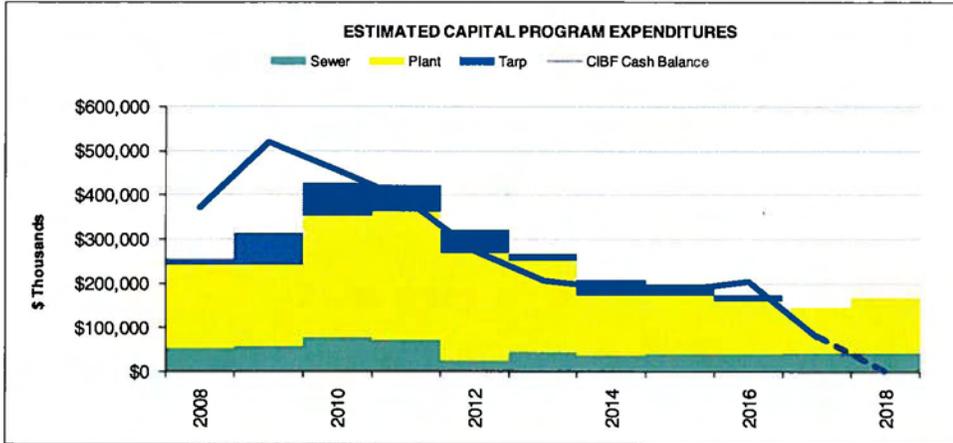


Figure 2-2

Forecasted Aggregate Tax Levy Requirement Compared to Tax Cap Limitation - Baseline

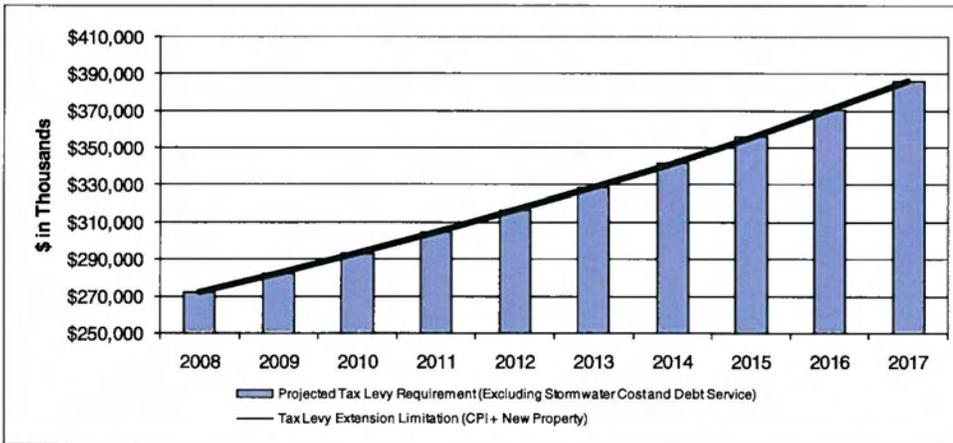
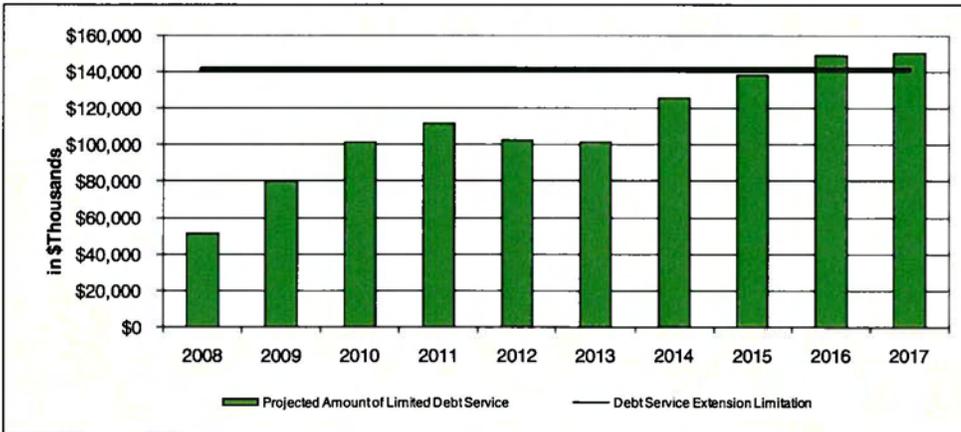


Figure 2-3

Forecasted Debt Service Compared to Debt Service Extension Base - Baseline



Attachment 3

Projection of Financial Results Including Cost of Dissolved Oxygen Processes Compared to Financial Limitations and Restrictions

Figure 3-1 - Capital Improvement Plan

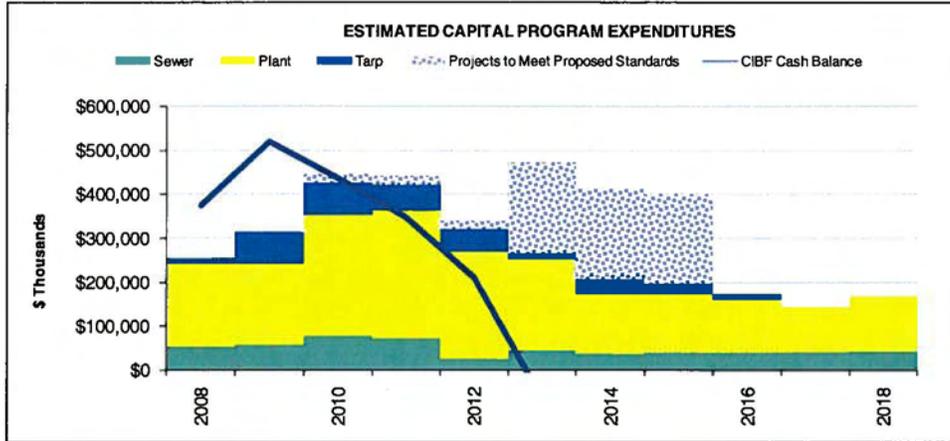


Figure 3-2

Forecasted Aggregate Levy Requirement Compared to Tax Cap Limitation

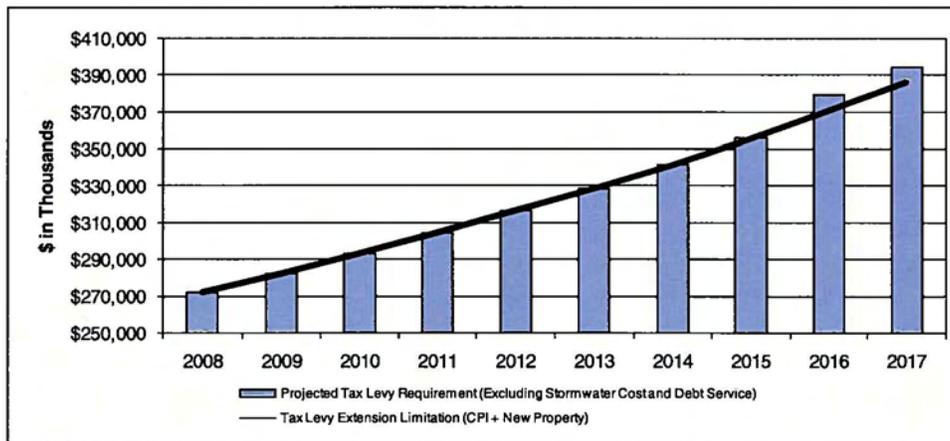
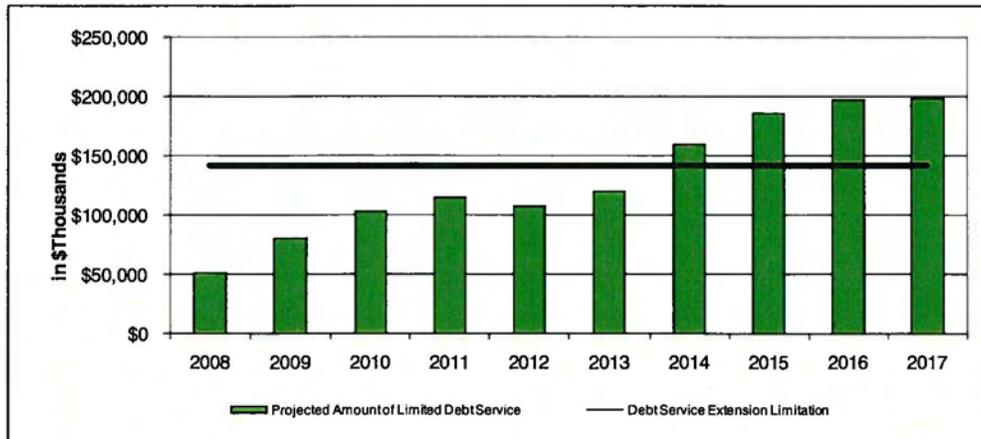


Figure 3-3

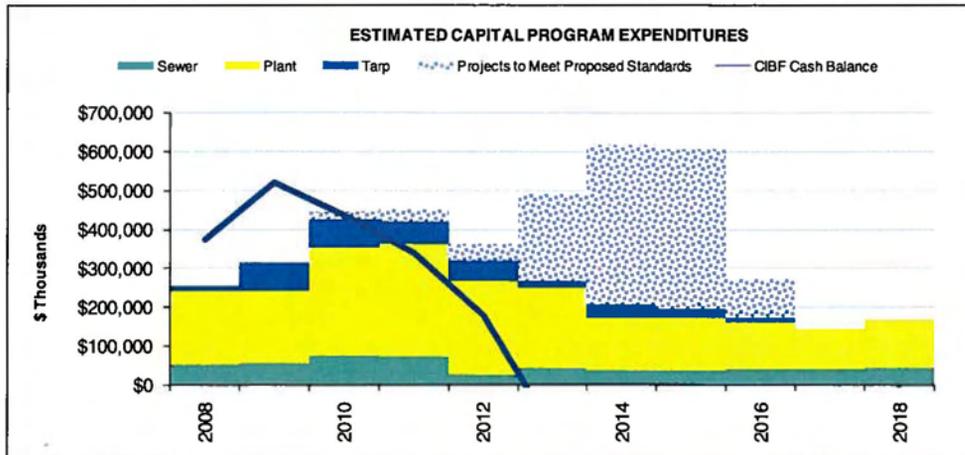
Forecasted Debt Service Compared to Debt Service Extension Base



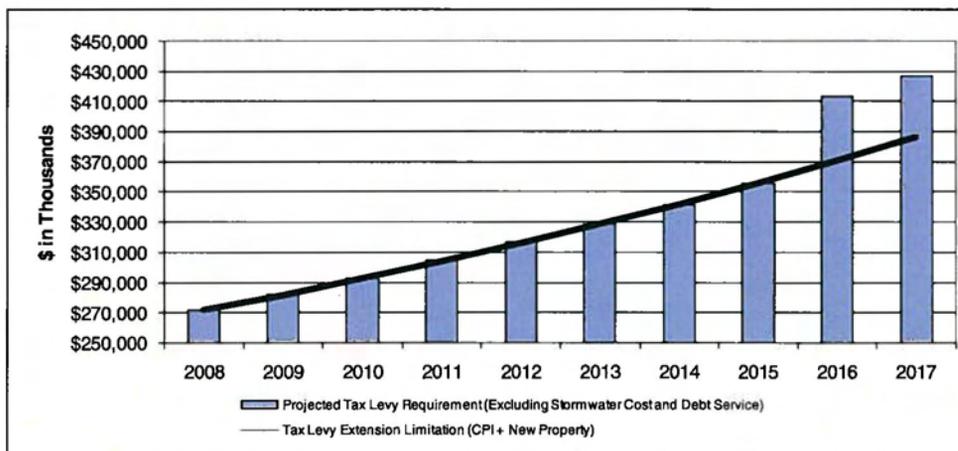
Attachment 4

Financial Results Including Dissolved Oxygen and Chlorination/Dechlorination Disinfection Costs Compared to Financial Limitations and Restrictions

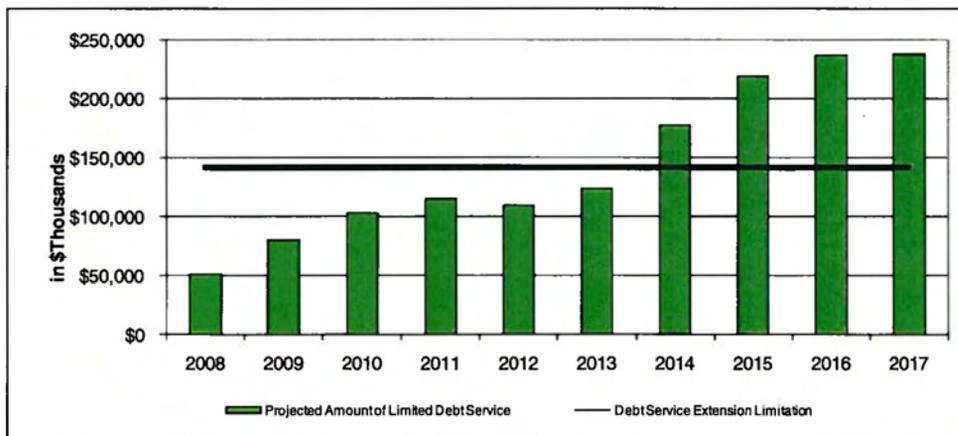
Figure 4-1 - Capital Improvement Plan



**Figure 4-2
Forecasted Aggregate Levy Requirement Compared to Tax Cap Limitation**



**Figure 4-3
Forecasted Debt Service Compared to Debt Service Extension Base**



Attachment 5

Financial Results Including Dissolved Oxygen and Ultraviolet Disinfection Costs Compared to Financial Limitations and Restrictions

Figure 5-1 - Capital Improvement Plan

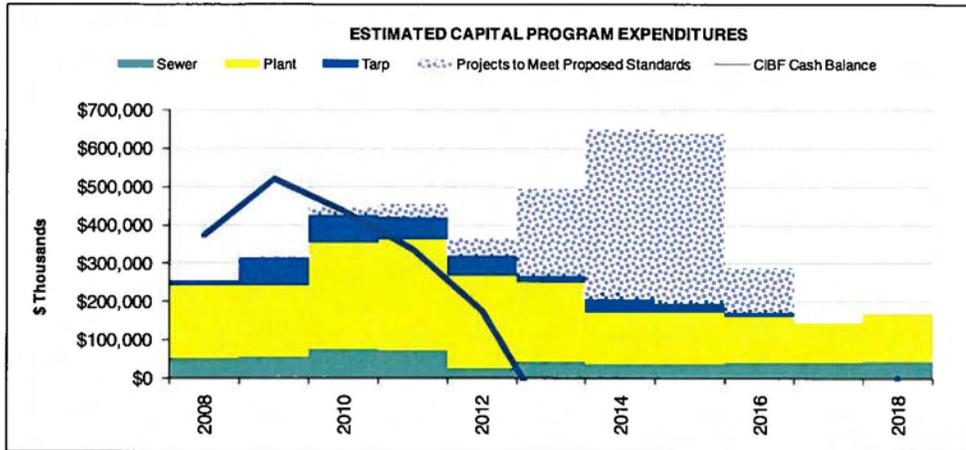


Figure 5-2

Forecasted Aggregate Levy Requirement Compared to Tax Cap Limitation

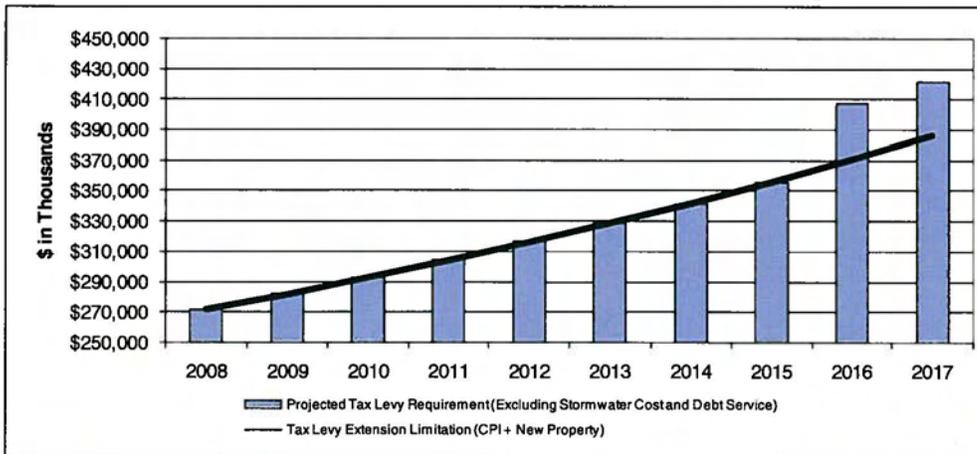
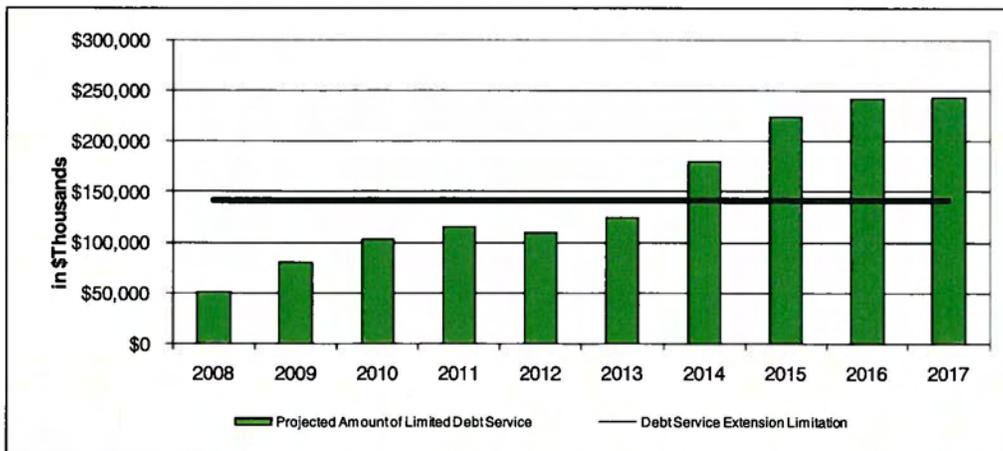


Figure 5-3

Forecasted Debt Service Compared to Debt Service Extension Base



ATTACHMENT 6

**Economic Assessment of Infrastructure to Meet Proposed Water Quality
Standards for Dissolved Oxygen and Plant Effluent Standards for Bacteria
(Malcolm Pirnie, Inc., July 2008)**

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO
ECONOMIC ASSESSMENT OF INFRASTRUCTURE TO MEET PROPOSED WATER
QUALITY STANDARDS FOR DISSOLVED OXYGEN AND PLANT EFFLUENT
STANDARDS FOR BACTERIA

Economic Assessment
July 2008

Introduction

The purpose of this study is to examine the potential economic impacts of implementing processes at the Metropolitan Water Reclamation District of Greater Chicago (District) facilities and in the waterways necessary to meet the proposed water quality and plant effluent standards as proposed by the Illinois Environmental Protection Agency (IEPA) under R08-9. The assessment is composed of two sections; environmental and economic. This report presents the economic portion of the assessment. The environmental portion is provided under a separate cover.

The District's approach is to take a "holistic" view of the environmental impacts of the alternatives, including the potential economic impacts in terms of the District's statutory taxing authority and financial capability. A summary of the infrastructure costs, financial condition and limitations of the District, and financial forecast results under several alternatives is provided below. These alternatives consist of:

- Disinfection (Ultraviolet and Chlorination/Dechlorination) technology;
- Dissolved Oxygen technology;
- A combination of disinfection and dissolved oxygen technology.

Infrastructure Cost Summary

This study evaluates the costs and overall environmental impacts of potentially implementing processes to disinfect plant effluent and increase dissolved oxygen in the Chicago Area Waterway System (CAWS). Costs associated with several alternatives, including implementing chlorination/dechlorination disinfection, and ultraviolet disinfection at the three water reclamation plants is summarized in Table 1 below.

Table 1 – Summary of Costs to Meet Newly Proposed Water Quality and Effluent Standards in the Chicago Area Waterway System

Project Description	Capital Cost	Annual O&M Cost	Total Present Value Cost
SWRP			
Chlorination/Dechlorination Disinfection	\$225,700,000	\$15,900,000	\$533,500,000
Ultraviolet Disinfection	267,200,000	12,600,000	511,200,000
CWRP			
Chlorination/Dechlorination Disinfection	\$79,100,000	\$5,020,000	\$176,500,000
Ultraviolet Disinfection	112,300,000	4,600,000	201,600,000
NSWRP			
Chlorination/Dechlorination Disinfection	\$114,200,000	\$5,040,000	\$212,000,000
Ultraviolet Disinfection	111,600,000	4,900,000	206,800,000
Total			
Chlorination/Dechlorination Disinfection	\$419,000,000	\$25,960,000	\$922,000,000
Ultraviolet Disinfection	491,100,000	22,100,000	919,600,000
Dissolved Oxygen Infrastructure	\$524,800,000	\$6,870,000	\$656,600,000

All costs in 2008 dollars. Present value costs based on a 3.0% interest rate, and a 3% inflation rate for 20 years.

Sources:

Report entitled "Chlorination/Dechlorination Disinfection Cost Study for Stickney, Calumet, and North Side Water Reclamation Plants" prepared by CTE and dated May 12, 2008. Costs subsequently updated to 2008 dollars.

Report entitled "UV Disinfection Cost Study – Northside Water Reclamation Plant" prepared by CTE and dated January 31, 2008. Costs subsequently updated to 2008 dollars.

Dissolved Oxygen Infrastructure costs provided by CTE.

Financial Summary

The District generates revenue to fund its operations from ad valorem property taxes, personal property replacement tax (PPRT), user charge revenue, interest income, and other revenues. The District's primary source of operating revenue is ad valorem property taxes. PPRT revenue is primarily a tax on corporate income. The PPRT revenue is first distributed to fully fund the District's Retirement Fund, and subsequent receipts are distributed to other non-debt funds. User charge revenues are collected from large commercial and industrial classes, and tax-exempt customers. A summary of the District's revenues and expenditures for the period 2002 through 2006 is provided in Table 2 below.

Table 2 – MWRD Summary of Financial Results – All Governmental Funds
(in \$ Thousands, Modified Accrual Basis)

	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>
Revenues					
Property Taxes	\$ 362,036	\$ 397,751	\$ 360,326	\$ 423,941	\$ 380,675
Personal Property Replacement Tax	22,285	24,048	25,961	36,031	37,743
User Charges	48,890	50,222	47,757	45,983	52,504
Interest on Investments	15,693	13,163	9,943	19,693	43,659
Other Revenues	<u>14,759</u>	<u>16,203</u>	<u>16,495</u>	<u>16,309</u>	<u>17,691</u>
Total Revenues	\$ 463,663	\$ 501,387	\$ 460,482	\$ 541,957	\$ 532,272
Expenditures					
General Administration	\$ 14,318	\$ 14,987	\$ 15,538	\$ 17,259	\$ 16,974
Personnel	27,610	30,916	35,877	32,900	35,162
Pension Costs	27,044	29,511	27,372	31,561	30,071
Research and Development	23,838	24,172	24,030	24,787	24,985
Information Technology	11,204	11,417	10,574	10,811	11,034
Maintenance and Operations	160,326	159,079	160,299	157,612	155,899
Other	32,843	22,563	27,637	31,522	26,931
Construction Costs	157,076	164,865	127,155	133,599	164,157
Debt Service	<u>145,831</u>	<u>158,626</u>	<u>156,025</u>	<u>169,019</u>	<u>171,869</u>
Total Expenditures	\$ 600,090	\$ 616,136	\$ 584,507	\$ 609,070	\$ 637,082
Revenues Over (Under) Expenditures	\$ (136,427)	\$ (114,749)	\$ (124,025)	\$ (67,113)	\$ (104,810)
Other Financing Sources (Uses)	<u>222,622</u>	<u>223,613</u>	<u>52,720</u>	<u>15,973</u>	<u>383,448</u>
Net Change in Fund Balance	\$ 86,195	\$ 108,864	\$ (71,305)	\$ (51,140)	\$ 278,638

Source: Comprehensive Annual Financial Reports (2003-2006).

The expenditures shown in Table 2 were appropriated to the Corporate Fund, Construction Fund, Stormwater Fund, Capital Improvement Bond Fund, Bond Redemption and Interest Fund, Retirement Fund, and the Reserve Claim Fund. These funds are briefly summarized below:

- The Corporate Fund is the District's General Fund and includes appropriation requests for all day-to-day operational costs.
- The Construction Fund is utilized as a pay-as-you-go capital rehabilitation and modernization program, and to fund operations-related projects, where the useful life of the improvement is less than 20 years or when the values are less than \$1 million. Capital projects are financed by a tax levy sufficient to pay for project costs as they are constructed.
- The Stormwater Management Fund is used to minimize flooding damage by coordinating, planning, implementing, financing, and operating regional stormwater management projects, to foster stormwater improvements, and to educate the public with respect to sustainable growth concepts.
- The Capital Improvement Bond Fund includes major capital infrastructure projects whose useful lives extend beyond 20 years, and which will be financed by long-term debt, Federal and State grants, and State Revolving Fund loans.

- The Bond Redemption and Interest Fund is the District's debt service fund. Principal and interest payments on District general obligation bonds and SRF loans require an annual levy and appropriation.
- The Retirement Fund is used to account for pension costs as provided by specifically levied annual property taxes. The taxes are collected and recorded in this fund prior to their payment to the MWRD Retirement Fund.
- The Reserve Claim Fund acts as the District's Insurance Fund. The District is primarily self-insured and utilizes this fund for repair or replacement of damaged District property and claims implied against the District.

Financial Limitations

The District has several financial limitations and restrictions that directly impact its ability to take on additional projects or programs. When considering the potential economic impacts that the projected water quality improvement costs will have on the District's funding and bonding authority, several financial limitations were considered. First, in 1995, the Property Tax Extension Limitation Law (PTELL) was passed by the Illinois General Assembly, which limits the ability of the District to adopt future increases in the aggregate tax levy. In accordance with this Act, increases to the District's aggregate tax levy are limited to the lesser of: (1) five percent or (2) the change in the national consumer price index (CPI) plus allowable increases for new property. The aggregate levy is the total of all funds except the Bond Redemption and Interest and the Stormwater Management Funds.

Second, the District's initial Tax Cap legislation restricted the District's non-referendum bond authority to only apply to projects initiated prior to October 1, 1991. There was a specific exemption, essentially to exclude TARP projects from the more restrictive provisions of the Act which require referendum approval of all new debt. Public Act 89-385 provides the District with the authority to issue non-referendum "limited bonds" for capital projects initiated after October 1, 1991 at the same level as it did in 1994. Limited bonds can be issued to the extent that the total debt service requirements of any new debt when combined with existing debt service does not exceed the 1994 debt service extension base of \$141,463,920. Public Act 90-485 has provided a further modification by authorizing the exclusion of debt for Tunnel and Reservoir Plan (TARP) projects from this debt service extension base.

Third, in 2003, the District received authority under Public Act 93-279 to issue \$150 million (previously \$100 million) of non-referendum bonds during any budget year plus authorized but unissued bonds during the previous three budget years through 2016.

These financial limitations and restrictions directly impact the District's ability to take on additional projects and/or programs, and the District is currently very near these limits without considering the implementation of disinfection or dissolved oxygen processes.

Baseline Financial Forecast

A baseline long-term financial forecast was prepared for the District based on its current estimated requirements to be used as a comparison with financial forecasts associated with meeting the proposed water quality and effluent standards. Revenue and expenditure projections were made based on the five-year forecast information contained within the 2008 budget, the capital improvement program information provided by the District, and discussions with the District's Administrative Services Manager. A summary of the current capital improvement plan, which does not include a disinfection program or projects needed to meet the newly proposed water quality standards, is provided in Table 3 below. The estimated cost of the District's planned capital improvement projects were provided to Malcolm Pirnie in February 2008.

Table 3 – Capital Improvement Plan (Other Projects)

Description	Yearly Dispersement Projection (in \$ Thousands)→										
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	
Corporate Fund Program	\$ 177	\$ 329	\$ 189	\$ 206	\$ 219	\$ 386	\$ 399	\$ 413	\$ 427	\$ 441	
Construction Fund Program	14,651	14,547	11,818	6,720	4,927	5,949	6,849	7,796	9,249	10,512	
Limited Bond Fund Projects											
Plant	158,023	161,419	247,995	287,760	242,858	205,403	134,662	133,876	120,859	76,173	
Sewer	23,668	53,703	73,934	61,605	2,618	7,979	-	-	-	-	
TARP	1,016	3,668	10,822	8,524	4,838	-	-	-	-	-	
Unspecified	-	-	-	-	-	-	-	-	-	25,000	
Unlimited Bond Fund Projects (TARP)	10,355	67,535	61,816	50,972	46,709	15,898	35,425	24,053	10,619	-	
Limited SRF Projects											
Plant	29,453	24,654	29,049	-	-	-	-	-	-	-	
Sewer	28,680	2,125	1,831	1,705	-	-	-	-	-	-	
Unlimited SRF Projects (TARP)	1,553	-	-	-	-	-	-	-	-	-	
Stormwater Fund Projects	10,008	2,490	-	-	-	-	-	-	-	-	
Future Sewer Rehab Projects	-	-	-	9,229	22,511	36,503	37,489	38,501	39,541	40,608	
Future Plant Rehab Projects	-	-	-	-	-	-	-	-	-	27,072	
Total	\$ 277,584	\$ 330,470	\$ 437,454	\$ 426,721	\$ 324,680	\$ 272,119	\$ 214,824	\$ 204,638	\$ 180,695	\$ 179,807	

Source: The estimated cost of the District's planned capital improvement projects were provided to Malcolm Pirnie in February 2008.

It is important to note that the current CIP does not include future Stormwater Management fund projects as Detail Watershed Plans (DWPs) are not expected to be completed until 2010. In addition, the District's currently planned projects do not include the costs of implementing nutrient removal processes. As documented in a District summary cost table (provided as Table 4 below), a rudimentary order-of-magnitude cost estimate prepared by the District indicates that the capital costs to construct nutrient removal processes could be approximately \$2.8 billion.

Table 4 – Rudimentary, Order-of-Magnitude Cost Estimates for Nutrient Removal at District Water Reclamation Plants

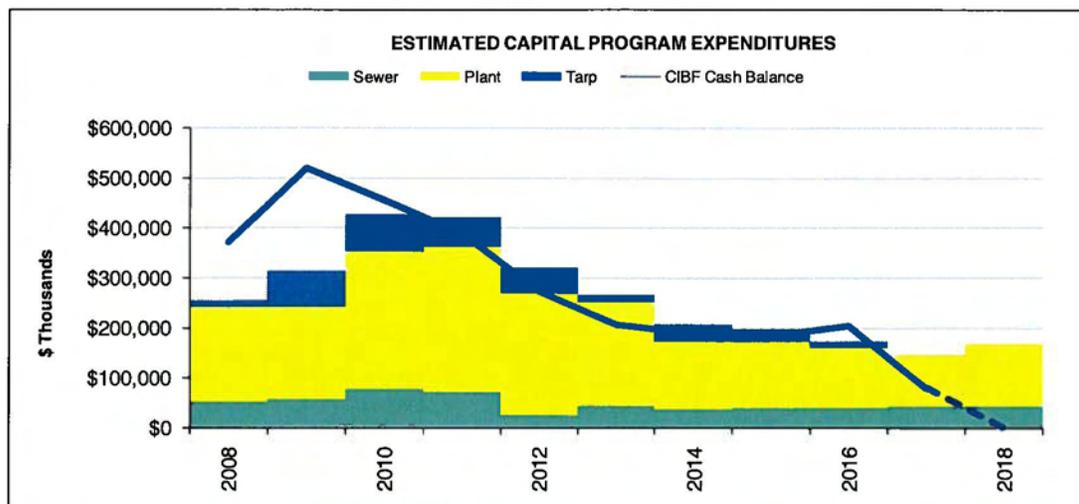
PLANT	CAPITAL COST	ANNUAL M&O
Stickney	\$1,666,000,000	\$100,000,000
Calumet	\$605,000,000	\$29,000,000
North Side	\$408,000,000	\$4,700,000
Kirie	\$83,000,000	\$1,000,000
Egan	\$38,000,000	\$2,500,000
Hanover Park	\$17,000,000	\$1,000,000
Total	\$2,817,000,000	\$138,200,000

NOTES:

1. Cost Estimate prepared by engineering department of MWRDGC.
2. Under the Master Plans for the Calumet and North Side WRPs, conceptual level cost estimates were performed for various nutrient removal processes. The purpose of the cost estimates was to compare various nutrient removal processes relative to each other. These estimates were used to generate a rudimentary, order-of-magnitude cost estimate for all seven WRPs. In short, North Side and Calumet estimates were used to arrive at capital and annual operating costs on a flow basis (i.e. dollars per million gallons of sewage treated). These ratios were used to extrapolate costs for the other four WRPs. The cost estimates that were derived assumed hypothetical effluent limits of 0.5 mg/L for total phosphorus and between 6 to 8 mg/L for total nitrogen.
3. All costs are given in 2008 dollars.
4. Lemont Water Reclamation Plant is not included as it is planned to be converted to a sewage pumping station.

The baseline capital improvement plan and projected cash balance in the Capital Improvement Bond Fund is shown graphically in Figure 1 below. As shown in this figure, the cash balance in the Capital Improvement Bond Fund is expected to gradually decrease as a result of funding these capital projects until 2016 when the District's authority to issue non-referendum bonds expires.

Figure 1
Capital Improvement Plan - Baseline



In addition to these planned capital expenditures, maintenance and operations (M&O) costs were projected over the forecast period. The projection was based on historical results, the District's existing five-year forecast projections, and discussions with District staff. The projections of M&O costs are included in the forecasted property tax levy increases summarized below. Additional details are provided in the tables and calculations provided in Appendix A.

A ten-year projection of funding and tax levy requirements (for the years 2008 through 2017) was developed to provide a baseline scenario of current estimated requirements in which to compare scenarios incorporating capital and M&O costs that would be necessary to meet proposed water quality standards. The baseline financial projection results are summarized in Figures 2 and 3 below and detailed in Appendix A. Figure 2 shows the annual increase in the property tax levy necessary to fund projected capital and M&O costs, excluding those costs necessary to meet the proposed water quality standards, as compared to the property tax levy limitation. The property tax limitation limits the property tax levy increase to the lessor of (1) five percent or (2) the change in CPI plus the increase in new property. The baseline scenario results indicate that the District will stay at or below the tax levy limitation over the forecast period.

Figure 3 shows the projected annual "limited" debt service associated with existing and proposed District debt, excluding debt that would be necessary to fund capital projects associated with the proposed water quality standards, as compared to the debt service limitation. The baseline analysis indicates that the District will stay at or below the debt service extension base limitation through fiscal year 2015 and exceed the limitation slightly in fiscal years 2016 and 2017. This means that in 2016, the District's non-referendum bond authority, which expires at the end of 2016, will be further limited so as not to exceed the debt service extension base.

Figure 2
Forecasted Aggregate Tax Levy Requirement Compared to Tax Cap Limitation - Baseline

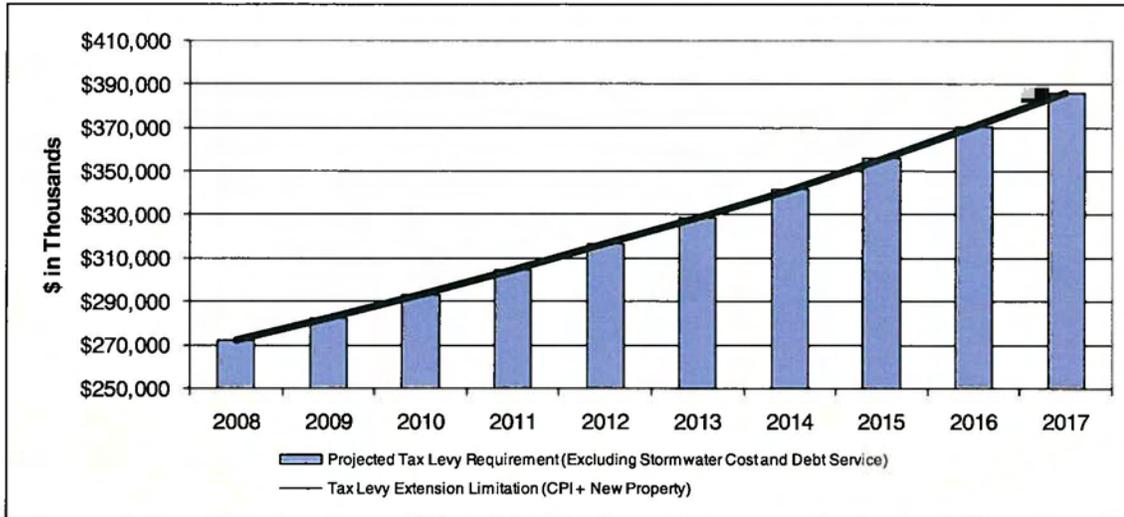
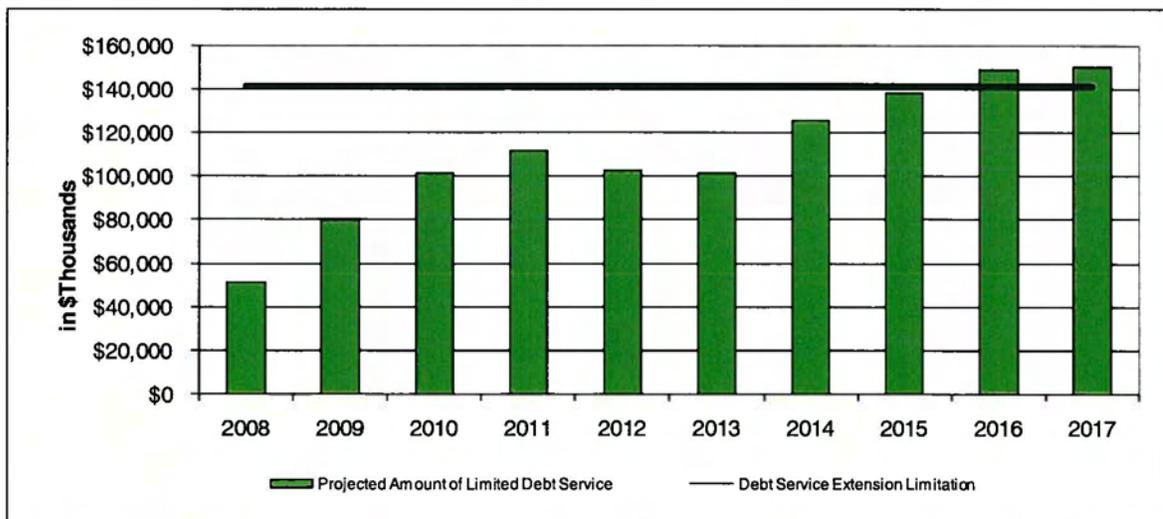


Figure 3
Forecasted Debt Service Compared to Debt Service Extension Base

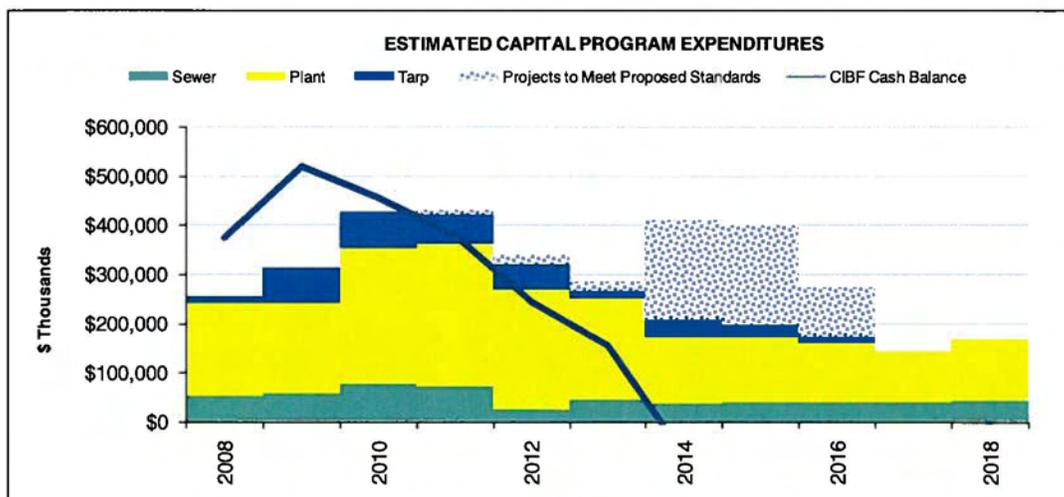


Scenario 1 (Chlorination/Dechlorination Disinfection)

Scenario 1 consists of adding the capital and annual M&O costs associated with chlorination / dechlorination disinfection (as shown in Table 1) to the baseline financial forecast. For the purposes of this scenario, it was assumed that design of the disinfection processes would occur in 2011 through 2013 and construction would occur in 2014 through 2016.

The capital improvement plan and projected cash balance in the Capital Improvement Bond Fund for Scenario 1 is shown graphically in Figure 4 below. As shown in this figure, additional capital costs would be incurred to meet the proposed water quality standards, and the cash balance in the Capital Improvement Bond Fund would decrease more rapidly than the baseline forecast as a result of funding these capital projects until 2016 when the District's authority to issue non-referendum bonds expires. The analysis indicates that the projected cash balance in the Capital Improvement Bond Fund would be insufficient to fund current projects and the projects associated with the proposed water quality standards due to the District's current authority and limitation of issuing no more than \$150 million of non-referendum bonds during any budget year. Furthermore, in order to fund the capital projects, the District would have to receive additional non-referendum bonding authority or issue a voter referendum.

Figure 4
Capital Improvement Plan – Scenario 1



In addition to the capital expenditures associated with Scenario 1, M&O costs associated with this scenario were projected over the forecast period. The projections of M&O costs associated with implementing the chlorination / dechlorination disinfection processes are included in the forecasted property tax levy increases summarized below. Additional details are provided in the tables and calculations provided in Appendix A.

A ten-year projection of funding and tax levy requirements necessary to meet proposed plant effluent standards was developed for Scenario 1. The results are summarized in

Figures 5 and 6 below and detailed in Appendix A. Figure 5 shows the annual aggregate property tax levy requirement necessary to fund projected capital and M&O costs, including those costs necessary to meet the proposed plant effluent standards, as compared to the aggregate tax levy limitation. The Scenario 1 results indicate that the District will exceed the aggregate tax levy limitation once the disinfection processes have been constructed and operations commence in 2016. Furthermore, in order to fund the improvements, the District would have to request an amendment to the Property Tax Extension Limitation Law or obtain voter approval via referendum to increase the aggregate extension limitation and/or the limiting rate.

Figure 5
Forecasted Aggregate Tax Levy Requirement Compared to Tax Cap Limitation – Scenario 1

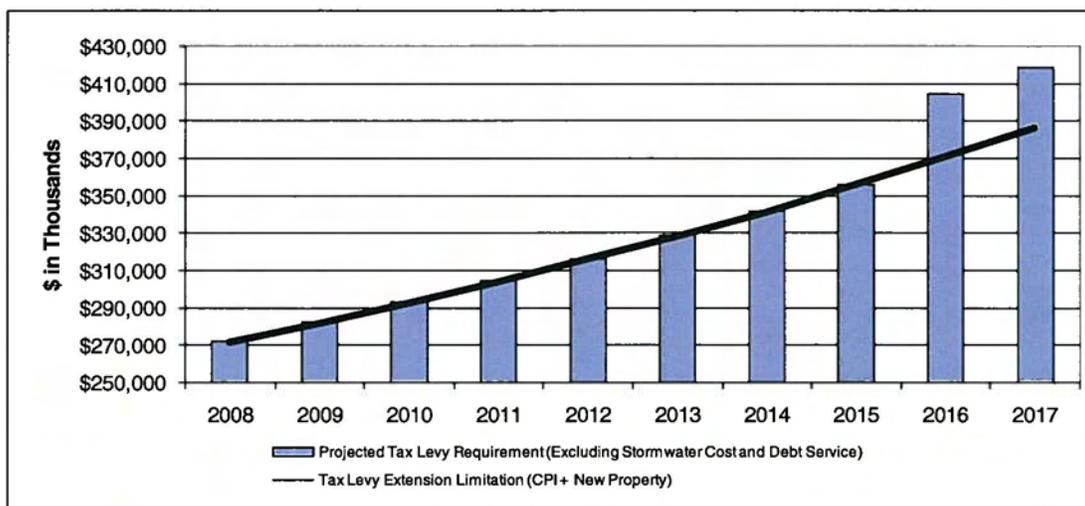
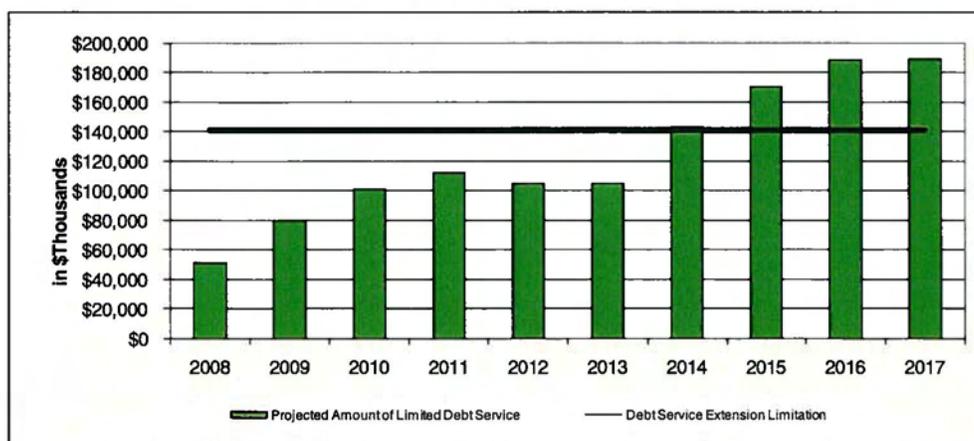


Figure 6 shows the projected annual “limited” debt service associated with existing and proposed District debt, including debt service that would be necessary to fund capital projects associated with the proposed plant effluent standards, as compared to the debt service extension base. The Scenario 1 analysis indicates that the District would significantly exceed the debt service extension base beginning in fiscal year 2014 if the Scenario 1 projects associated with meeting the proposed plant effluent standards were implemented.

Figure 6
Forecasted Debt Service Compared to Debt Service Extension Base – Scenario 1

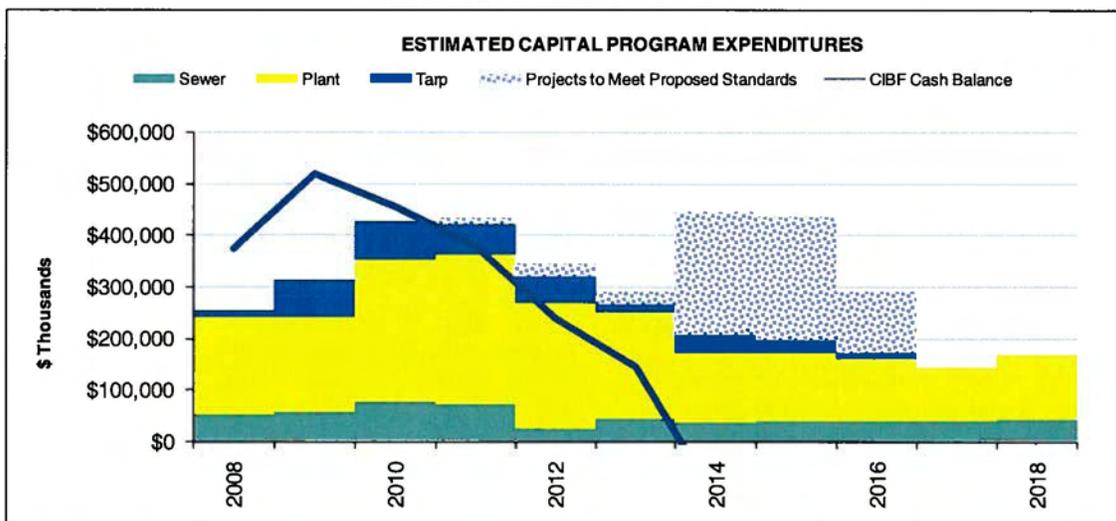


Scenario 2 (Ultraviolet Disinfection)

Scenario 2 consists of adding the capital and annual M&O costs associated with ultraviolet disinfection (as shown in Table 1) to the baseline financial forecast. For the purposes of this scenario, it was assumed that design of the disinfection processes would occur in 2011 through 2013 and construction would occur in 2014 through 2016.

The capital improvement plan and projected cash balance in the Capital Improvement Bond Fund for Scenario 2 is shown graphically in Figure 7 below. As shown in this figure, additional capital costs would be incurred to meet the proposed water quality standards, and the cash balance in the Capital Improvement Bond Fund would decrease more rapidly than the baseline forecast as a result of funding these capital projects until 2016 when the District's authority to issue non-referendum bonds expires. The analysis indicates that the projected cash balance in the Capital Improvement Bond Fund would be insufficient to fund current projected projects and the projects associated with the proposed water quality standards due to the District's current authority and limitation of issuing no more than \$150 million of non-referendum bonds during any budget year. Furthermore, in order to fund the capital projects, the District would have to receive additional non-referendum bonding authority or issue a voter referendum.

Figure 7
Capital Improvement Plan – Scenario 2



In addition to the capital expenditures associated with Scenario 2, M&O costs associated with this scenario were projected over the forecast period. The projections of M&O costs associated with implementing the ultraviolet disinfection processes are included in the forecasted property tax levy increases summarized below. Additional details are provided in the tables and calculations provided in Appendix A.

A ten-year projection of funding and tax levy requirements necessary to meet proposed plant effluent standards was developed for Scenario 2. The results are summarized in Figures 8 and 9 below and detailed in Appendix A. Figure 8 shows the annual aggregate property tax levy requirement necessary to fund projected capital and M&O costs,

including those costs necessary to meet the proposed plant effluent standards, as compared to the aggregate property tax levy limitation. The Scenario 2 results indicate that the District will exceed the aggregate tax levy limitation once the disinfection processes have been constructed and operations commence in 2016. Furthermore, in order to fund the improvements, the District would have to request an amendment to the Property Tax Extension Limitation Law or obtain voter approval via referendum to increase the aggregate extension limitation and/or the limiting rate.

Figure 8
Forecasted Aggregate Tax Levy Requirement Compared to Tax Cap Limitation – Scenario 2

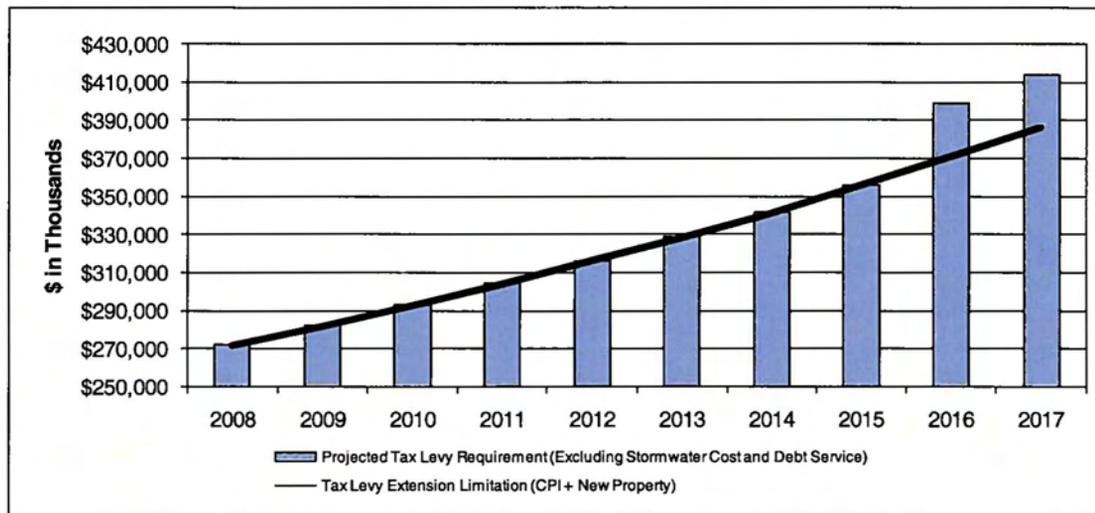
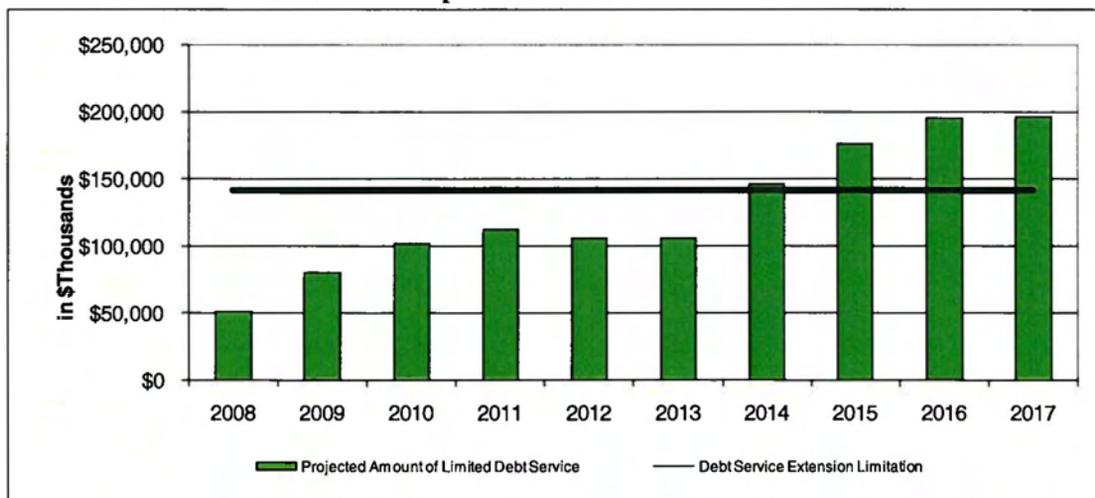


Figure 9 shows the projected annual “limited” debt service associated with existing and proposed District debt, including debt service that would be necessary to fund capital projects associated with the proposed plant effluent standards, compared to the debt service extension base. The Scenario 2 analysis indicates that the District would significantly exceed the debt service extension base beginning in fiscal year 2014 if the Scenario 2 projects associated with meeting the proposed plant effluent standards were implemented.

Figure 9
Forecasted Debt Service Compared to Debt Service Extension Base – Scenario 2

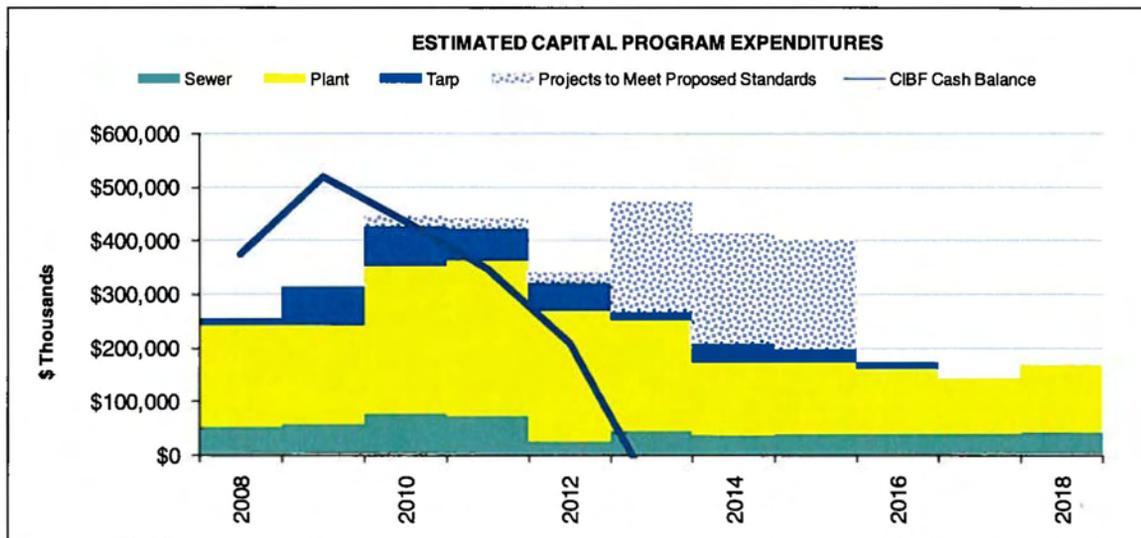


Scenario 3 (Dissolved Oxygen)

Scenario 3 consists of adding the capital and annual M&O costs that are anticipated to be required to meet the proposed Dissolved Oxygen Water Quality Standards in the CAWS (as shown in Table 1) to the baseline financial forecast. While it is possible that the dissolved oxygen enhancement facilities would be required in addition to either the ultraviolet or chlorination/dechlorination disinfection processes, the costs associated with the dissolved oxygen processes are shown herein as a stand alone scenario in order to demonstrate its financial impact separately from the other scenarios. For the purposes of this scenario, it was assumed that design of the dissolved oxygen enhancement facilities would occur in 2010 through 2012 and construction would occur in 2013 through 2015.

The capital improvement plan and projected cash balance in the Capital Improvement Bond Fund for Scenario 3 is shown graphically in Figure 10 below. As shown in this figure, additional capital costs would be incurred to implement the processes, and the cash balance in the Capital Improvement Bond Fund would decrease more rapidly than the baseline forecast as a result of funding these capital projects until 2016 when the District's authority to issue non-referendum bonds expires. The analysis indicates that the projected cash balance in the Capital Improvement Bond Fund would be insufficient to fund current projects and the projects associated with the proposed water quality standards due to the District's current authority and limitation of issuing no more than \$150 million of non-referendum bonds during any budget year. Furthermore, in order to fund the capital projects, the District would have to receive additional non-referendum bonding authority or issue a voter referendum.

Figure 10
Capital Improvement Plan – Scenario 3



In addition to the capital expenditures associated with Scenario 3, M&O costs associated with this scenario were projected over the forecast period. The projections of M&O costs associated with implementing the dissolved oxygen processes are included in the

forecasted property tax levy increases summarized below. Additional details are provided in the tables and calculations provided in Appendix A.

A ten-year projection of funding and tax levy requirements necessary to meet proposed water quality standards was developed for Scenario 3. The results are summarized in Figures 11 and 12 below and detailed in Appendix A. Figure 11 shows the annual property tax levy requirement necessary to fund projected capital and M&O costs, including those costs necessary to meet the proposed water quality standards, as compared to the aggregate property tax levy limitation. The Scenario 3 results indicate that the District will exceed the tax levy limitation once the dissolved oxygen enhancement facilities have been constructed and operations commence in 2016. Furthermore, in order to fund the improvements, the District would have to request an amendment to the Property Tax Extension Limitation Law or obtain voter approval via referendum to increase the aggregate extension limitation and/or the limiting rate.

Figure 11
Forecasted Aggregate Tax Levy Requirement Compared to Tax Cap Limitation – Scenario 3

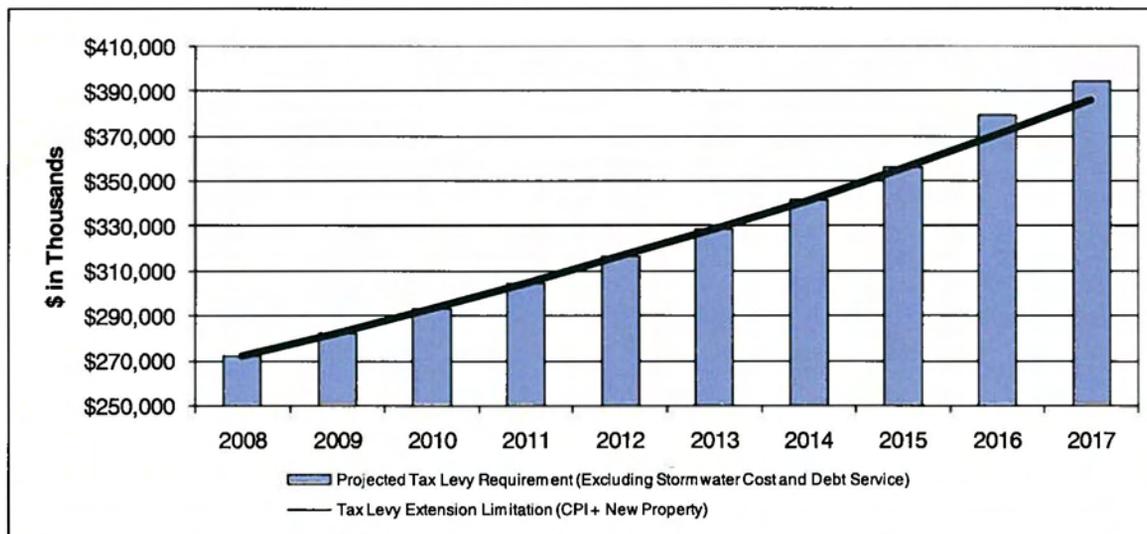
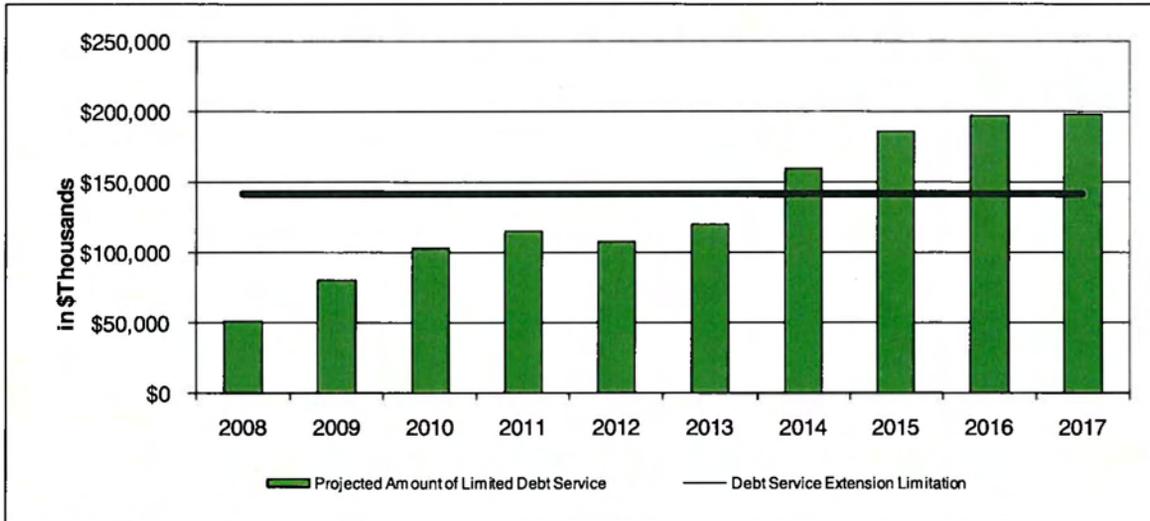


Figure 12 shows the projected annual “limited” debt service associated with existing and proposed District debt, including debt service that would be necessary to fund current projected projects and capital projects associated with the proposed water quality standards, compared to the debt service extension base. The Scenario 3 analysis indicates that the District would significantly exceed the debt service extension base beginning in fiscal year 2014 if the Scenario 3 projects associated with the proposed water quality improvements were implemented.

Figure 12
Forecasted Debt Service Compared to Debt Service Extension Base – Scenario 3

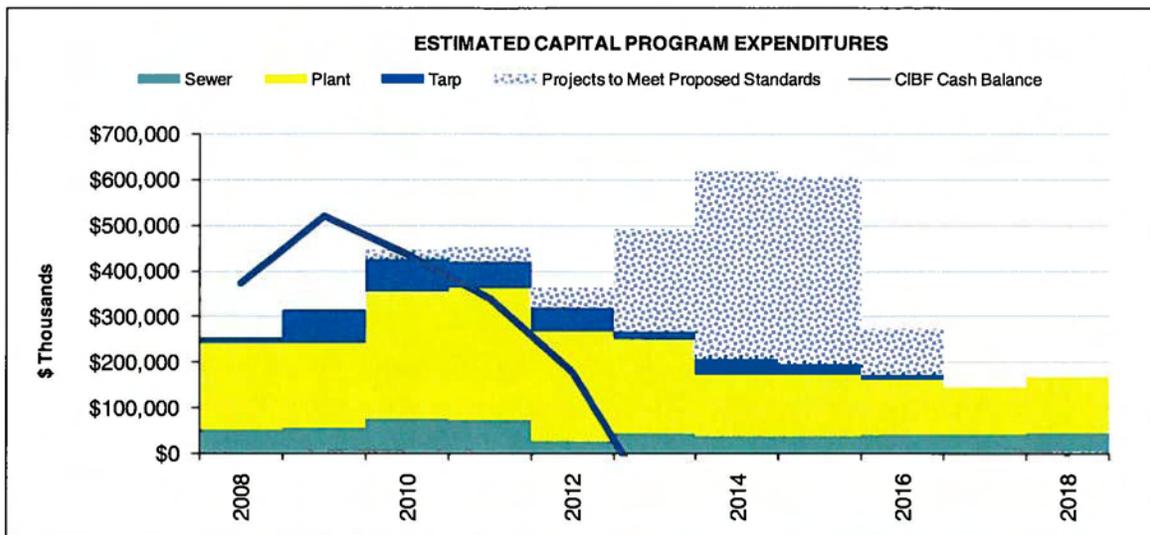


Scenario 4 (Chlorination / Dechlorination and Dissolved Oxygen)

Scenario 4 consists of adding the capital and annual M&O costs associated with both chlorination / dechlorination and dissolved oxygen (as shown in Table 1) to the baseline financial forecast.

The capital improvement plan and projected cash balance in the Capital Improvement Bond Fund for Scenario 4 is shown graphically in Figure 13 below. As shown in this figure, additional capital costs would be incurred to implement the processes, and the cash balance in the Capital Improvement Bond Fund would decrease more rapidly than the baseline forecast and the scenarios showing either disinfection or dissolved oxygen processes, as a result of funding these capital projects until 2016 when the District's authority to issue non-referendum bonds expires. The analysis indicates that the projected cash balance in the Capital Improvement Bond Fund would be insufficient to fund the current projected projects and projects associated with the proposed plant effluent and water quality standards due to the District's current authority and limitation of issuing no more than \$150 million of non-referendum bonds during any budget year. Furthermore, in order to fund the capital projects, the District would have to receive additional non-referendum bonding authority or issue a voter referendum.

Figure 13
Capital Improvement Plan – Scenario 4



In addition to the capital expenditures associated with Scenario 4, M&O costs associated with this scenario were projected over the forecast period. The projections of M&O costs associated with implementing the dissolved oxygen and chlorination/dechlorination disinfection processes are included in the forecasted property tax levy increases summarized below. Additional details are provided in the tables and calculations provided in Appendix A.

A ten-year projection of funding and tax levy requirements necessary to meet proposed plant effluent and water quality standards was developed for Scenario 4. The results are summarized in Figures 14 and 15 below and detailed in Appendix A. Figure 14 shows the annual aggregate property tax levy requirement necessary to fund projected capital and M&O costs, including those costs necessary to meet the proposed standards, as compared to the aggregate property tax levy limitation. The Scenario 4 results indicate that the District will exceed the tax levy limitation once the dissolved oxygen processes and chlorination / dechlorination disinfection improvements have been constructed and operations commence in 2016. Furthermore, in order to fund the projects, the District would have to request an amendment to the Property Tax Extension Limitation Law or obtain voter approval via referendum to increase the aggregate extension limitation and/or the limiting rate.

Figure 14
Forecasted Aggregate Tax Levy Requirement Compared to Tax Cap Limitation – Scenario 4

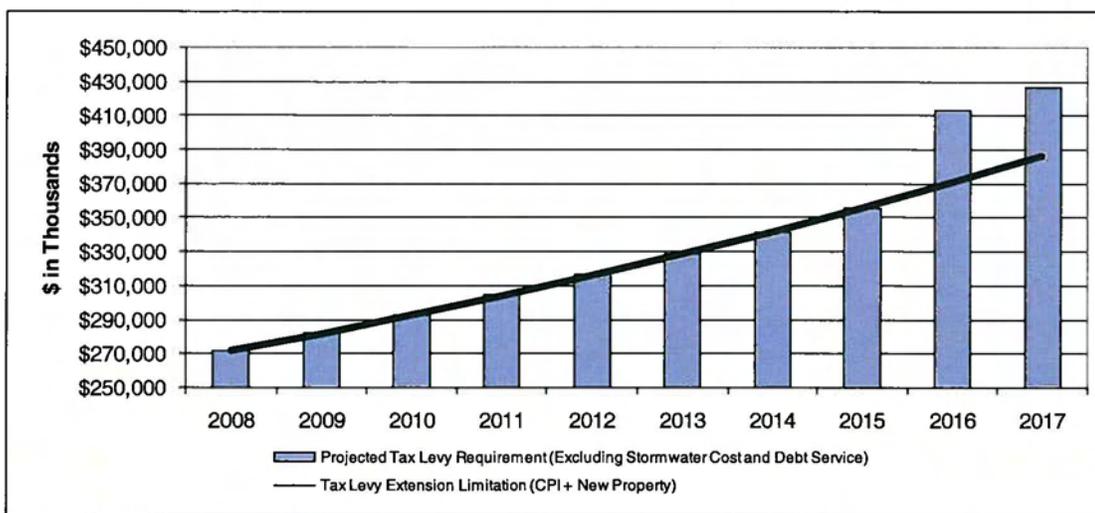
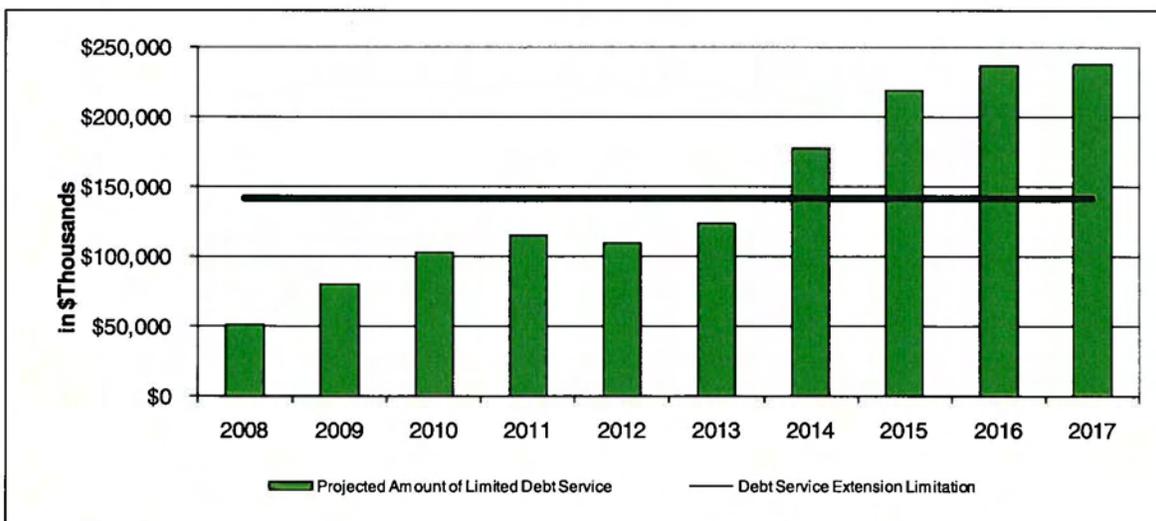


Figure 15 shows the projected annual “limited” debt service associated with existing and proposed District debt, including debt service that would be necessary to fund current projected projects and capital projects associated with the proposed plant effluent and water quality standards, compared to the debt service extension base. The Scenario 4 analysis indicates that the District would significantly exceed the debt service extension base beginning in fiscal year 2014 if the Scenario 4 projects associated with meeting the proposed standards were implemented.

Figure 15
Forecasted Debt Service Compared to Debt Service Extension Base – Scenario 4

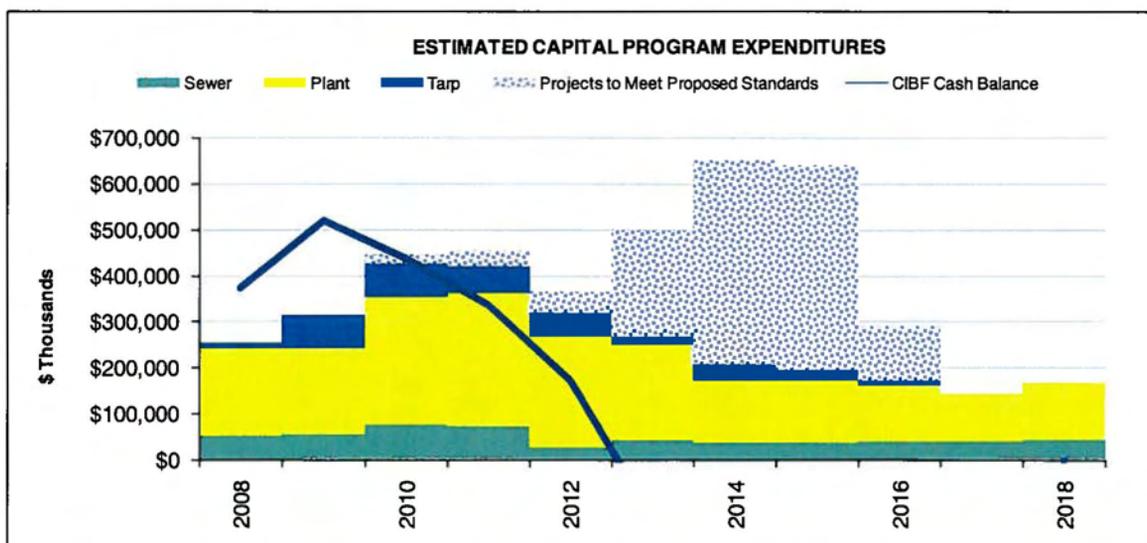


Scenario 5 (UV Disinfection and Dissolved Oxygen)

Scenario 5 consists of adding the capital and annual M&O costs associated with both UV disinfection and dissolved oxygen (as shown in Table 1) to the baseline financial forecast.

The capital improvement plan and projected cash balance in the Capital Improvement Bond Fund for Scenario 5 is shown graphically in Figure 16 below. As shown in this figure, additional capital costs would be incurred to implement the processes, and the cash balance in the Capital Improvement Bond Fund would decrease more rapidly than the baseline forecast and the scenarios showing either disinfection or dissolved oxygen processes, as a result of funding these capital projects until 2016 when the District's authority to issue non-referendum bonds expires. The analysis indicates that the projected cash balance in the Capital Improvement Bond Fund would be insufficient to fund current projected projects and the projects associated with the proposed water quality standards due to the District's current authority and limitation of issuing no more than \$150 million of non-referendum bonds during any budget year. Furthermore, in order to fund the capital projects, the District would have to receive additional non-referendum bonding authority or issue a voter referendum.

Figure 16
Capital Improvement Plan – Scenario 5



In addition to the capital expenditures associated with Scenario 5, M&O costs associated with this scenario were projected over the forecast period. The projections of M&O costs associated with implementing the dissolved oxygen and ultraviolet disinfection processes are included in the forecasted property tax levy increases summarized below. Additional details are provided in the tables and calculations provided in Appendix A.

A ten-year projection of funding and tax levy requirements necessary to meet proposed plant effluent and water quality standards was developed for Scenario 5. The results are summarized in Figures 17 and 18 below and detailed in Appendix A. Figure 17 shows the annual aggregate property tax levy requirement necessary to fund projected capital

and M&O costs, including those costs necessary to meet the proposed standards, as compared to the aggregate property tax levy limitation. The Scenario 5 results indicate that the District will exceed the tax levy limitation once the dissolved oxygen processes and ultraviolet disinfection improvements have been constructed and operations commence in 2016. Furthermore, in order to fund the projects, the District would have to request an amendment to the Property Tax Extension Limitation Law or obtain voter approval via referendum to increase the aggregate extension limitation and/or the limiting rate.

Figure 17
Forecasted Aggregate Tax Levy Requirement Compared to Tax Cap Limitation – Scenario 5

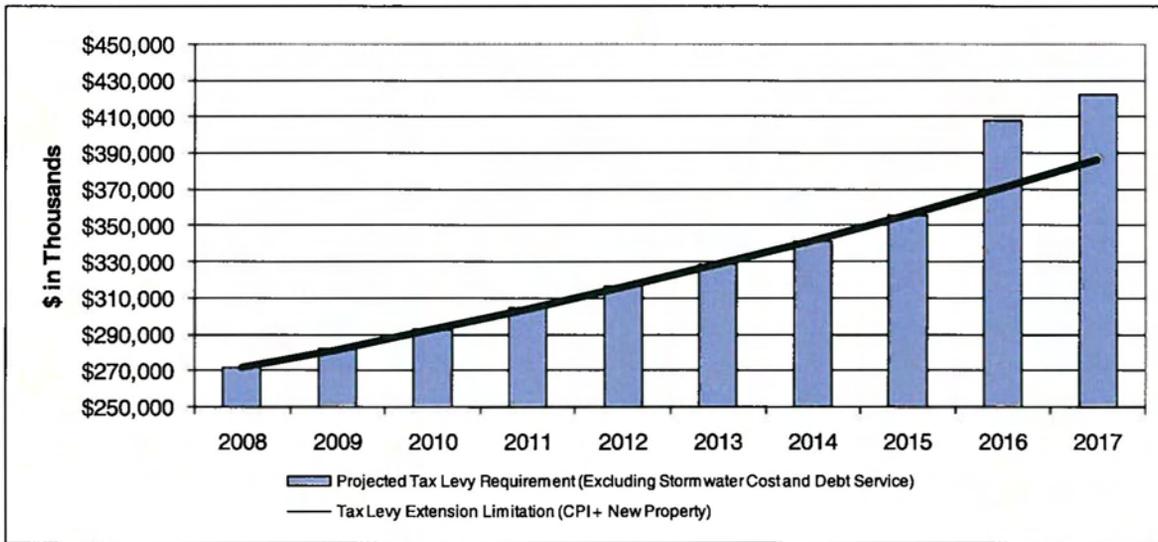
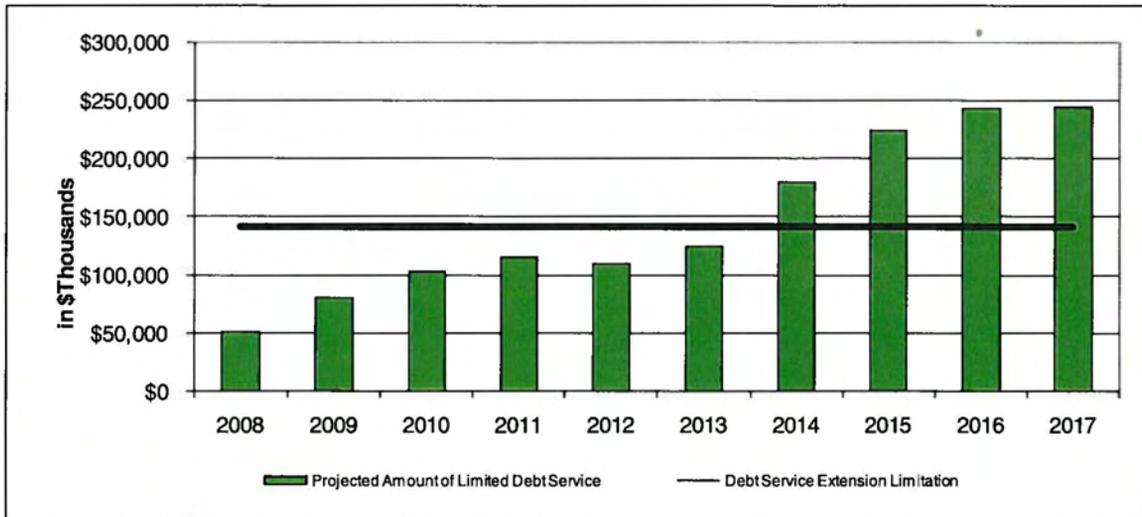


Figure 18 shows the projected annual “limited” debt service associated with existing and proposed District debt, including debt service that would be necessary to fund current projected projects and capital projects associated with the proposed plant effluent and water quality standards, compared to the debt service extension base. The Scenario 5 analysis indicates that the District would significantly exceed the debt service extension base beginning in fiscal year 2014 if the Scenario 5 projects associated with meeting the proposed standards were implemented.

Figure 18
Forecasted Debt Service Compared to Debt Service Extension Base – Scenario 5



Appendix A
Backup Tables and Calculations

**Table A-1
Tax Levy Requirement Forecast Summary – Baseline Scenario**

Description	Projection (in \$ Thousands)-->									
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Projected Levy:										
Corporate Fund	\$ 239,262	\$ 243,031	\$ 251,304	\$ 268,826	\$ 278,106	\$ 286,957	\$ 297,344	\$ 309,412	\$ 321,991	\$ 334,848
Construction Fund	1	5,523	8,385	1,272	2,830	5,213	6,561	7,635	8,747	10,090
Stormwater Fund	15,211	18,802	12,443	15,878	17,023	18,145	18,387	19,123	20,126	20,410
Debt Service - Existing	141,601	122,409	119,829	116,727	121,793	123,152	109,793	108,674	101,013	99,594
Debt Service - Proposed	-	31,204	55,313	79,422	92,888	106,555	120,223	133,890	147,558	150,583
Retirement Fund	25,665	26,450	26,023	26,726	27,447	28,188	28,949	29,818	30,712	31,634
Reserve Claim Fund	7,073	7,062	7,345	7,639	7,944	8,262	8,593	8,936	9,294	9,666
Total Projected Gross Levy (in \$ thousands)	\$ 428,814	\$ 454,481	\$ 480,642	\$ 516,489	\$ 548,031	\$ 576,473	\$ 589,851	\$ 617,489	\$ 639,442	\$ 656,823

**Table A-2
Property Tax Extension Limitation – Baseline Scenario**

Description	Projection (in \$ Thousands)-->									
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Property Tax Levy Constraint (Property Tax Extension Limitation Law)¹:										
Adjusted Aggregate Gross Property Tax Levy (Excluding Debt Service and Stormwater)	272,001	282,066	293,057	304,462	316,327	328,620	341,447	355,801	370,744	386,237
Projected Increase in Aggregate Tax Levy	0%	3.70%	3.90%	3.89%	3.90%	3.89%	3.90%	4.20%	4.20%	4.18%
Estimated Change in Consumer Price Index	3.00%	2.80%	2.70%	2.70%	2.70%	2.70%	2.70%	3.00%	3.00%	3.00%
Estimated New Property (Growth)	<u>0.80%</u>	<u>0.90%</u>	<u>1.20%</u>							
Total Allowable Increase in Adjusted Tax Levy	3.80%	3.70%	3.90%	3.90%	3.90%	3.90%	3.90%	4.20%	4.20%	4.20%
Total Allowable Aggregate Tax Levy	272,001	282,065	293,066	304,495	316,370	328,709	341,529	355,873	370,819	386,394
Gap between Allowable and Projected Tax levy Increase		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

¹The Property Tax Extension Limitation Act, Tax Cap limits future increases in property tax levies, except debt service to the lesser of 5 percent or the change in the national consumer price index plus allowable increases for new property.

Table A-3 – Debt Service Projection and Debt Service Extension Limitation – Baseline Scenario

Description	Historical		Projection (in \$ Thousands)-->									
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<i>Capital Improvement Bond Fund Program Expenditures</i>												
Limited Bond Funds	8,862	31,250	\$ 183,040	\$ 220,164	\$ 337,931	\$ 369,596	\$ 260,514	\$ 223,362	\$ 148,729	\$ 146,689	\$ 135,726	\$ 106,446
Unlimited Bond Funds	51,066	22,712	10,355	67,535	61,816	50,972	46,709	15,898	35,425	24,053	10,619	-
Limited Bond and SRF	15,276	8,357	58,133	26,779	30,881	1,705	-	-	-	-	-	-
Unlimited Bond and SRF	-	1,201	1,553	-	-	-	-	-	-	-	-	-
Future Sewer Rehab Projects	-	-	-	-	-	9,229	22,511	36,503	37,489	38,501	39,541	40,608
Future Plant Rehab Projects	-	-	-	-	-	-	-	-	-	-	-	27,072
Compliance with Proposed Water Quality Standards	-	-	-	-	-	-	-	-	-	-	-	-
<i>CIBF Program Expenditures</i>	<u>75,204</u>	<u>63,520</u>	<u>\$ 253,081</u>	<u>\$ 314,478</u>	<u>\$ 430,627</u>	<u>\$ 431,501</u>	<u>\$ 329,734</u>	<u>\$ 275,764</u>	<u>\$ 221,642</u>	<u>\$ 209,243</u>	<u>\$ 185,886</u>	<u>\$ 174,127</u>
<i>Bond Fund Revenues (Debt Sizing)</i>												
Proposed limited Bonds	300,000	150,000	\$ -	\$ 150,000	\$ 300,000	\$ 150,000	\$ 150,000	\$ 100,000	\$ 150,000	\$ 150,000	\$ 150,000	-
Proposed unlimited	-	-	-	250,000	-	150,000	-	50,000	-	-	-	-
Proposed SRF	40,000	42,000	42,000	42,000	42,000	42,000	45,000	45,000	45,000	45,000	45,000	40,000
Investment income	4,618	14,297	27,767	18,602	25,908	22,772	19,436	13,671	10,316	9,500	9,262	10,181
<i>Bond Fund Revenues</i>	<u>344,618</u>	<u>206,297</u>	<u>\$ 69,767</u>	<u>\$ 460,602</u>	<u>\$ 367,908</u>	<u>\$ 364,772</u>	<u>\$ 214,436</u>	<u>\$ 208,671</u>	<u>\$ 205,316</u>	<u>\$ 204,500</u>	<u>\$ 204,262</u>	<u>\$ 50,181</u>
CIBF Cash Balance	285,935	555,349	372,035	518,159	455,440	388,711	273,412	206,318	189,992	185,249	203,625	79,680
<i>Debt Service</i>												
Existing limited	31,632	46,800	51,228	\$ 66,463	\$ 63,894	\$ 60,792	\$ 38,331	\$ 26,574	\$ 37,302	\$ 36,183	\$ 33,219	\$ 31,450
Existing unlimited (w/ SRF)	101,795	88,930	90,373	55,946	55,935	55,935	83,462	96,577	72,491	72,491	67,794	68,143
Proposed Limited Bond Funds	-	-	-	10,643	31,929	42,571	53,214	60,310	70,952	81,595	92,238	92,238
Proposed Unlimited Bond Funds	-	-	-	17,738	17,738	28,381	28,381	31,929	31,929	31,929	31,929	31,929
Proposed Limited Bond and SRF	-	-	-	2,823	5,646	8,469	11,292	14,317	17,342	20,366	23,391	26,416
Proposed Limited Bond DS for Water Quality Projects	-	-	-	-	-	-	-	-	-	-	-	-
Proposed Unlimited Bond and SRF	-	-	-	-	-	-	-	-	-	-	-	-
<i>Debt service</i>	<u>133,427</u>	<u>135,730</u>	<u>141,601</u>	<u>153,613</u>	<u>175,142</u>	<u>196,149</u>	<u>214,681</u>	<u>229,707</u>	<u>230,016</u>	<u>242,565</u>	<u>248,571</u>	<u>250,176</u>
Debt issuance capacity unissued	600,000	400,000	550,000	300,000	150,000	-	-	-	-	-	-	-
<i>Debt Service Extension Limitation</i>												
Total Limited Bond Debt Service	31,632	46,800	51,228	79,929	101,469	111,833	102,838	101,201	125,596	138,145	148,849	150,104
Debt Service Extension Base	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464

**Table A-4
Tax Revenue Requirement Forecast Summary – Scenario 1**

Description	Projection (in \$ Thousands)-->									
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Projected Levy:										
Corporate Fund	\$ 239,262	\$ 243,031	\$ 251,304	\$ 268,826	\$ 278,106	\$ 286,957	\$ 297,344	\$ 309,412	\$ 355,511	\$ 366,886
Construction Fund	1	5,523	8,385	1,272	2,830	5,213	6,561	7,635	8,747	10,090
Stormwater Fund	15,211	18,802	12,443	15,878	17,023	18,145	18,387	19,123	20,126	20,410
Debt Service - Existing	141,601	122,409	119,829	116,727	121,793	123,152	109,793	108,674	101,013	99,594
Debt Service - Proposed	-	31,204	55,313	80,141	95,045	110,152	138,205	166,258	187,118	190,143
Retirement Fund	25,665	26,450	26,023	26,726	27,447	28,188	28,949	29,818	30,712	31,634
Reserve Claim Fund	7,073	7,062	7,345	7,639	7,944	8,262	8,593	8,936	9,294	9,666
Total Projected Gross Levy (in \$ thousands)	\$ 428,814	\$ 454,481	\$ 480,642	\$ 517,208	\$ 550,189	\$ 580,069	\$ 607,832	\$ 649,856	\$ 712,521	\$ 728,421

**Table A-5
Property Tax Extension Limitation – Scenario 1**

Description	Projection (in \$ Thousands)-->									
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Property Tax Levy Constraint (Property Tax Extension Limitation Law)¹:										
Adjusted Aggregate Gross Property Tax Levy (Excluding Debt Service and Stormwater)	272,001	282,066	293,057	304,462	316,327	328,620	341,447	355,801	404,264	418,275
Projected Increase in Aggregate Tax Levy	0%	3.70%	3.90%	3.89%	3.90%	3.89%	3.90%	4.20%	13.62%	3.47%
Estimated Change in Consumer Price Index	3.00%	2.80%	2.70%	2.70%	2.70%	2.70%	2.70%	3.00%	3.00%	3.00%
Estimated New Property (Growth)	<u>0.80%</u>	<u>0.90%</u>	<u>1.20%</u>							
Total Allowable Increase in Adjusted Tax Levy	3.80%	3.70%	3.90%	3.90%	3.90%	3.90%	3.90%	4.20%	4.20%	4.20%
Total Allowable Aggregate Tax Levy	272,001	282,065	293,066	304,495	316,370	328,709	341,529	355,873	370,819	386,394
Gap between Allowable and Projected Tax levy Increase		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	9.02%	8.25%

¹The Property Tax Extension Limitation Act, Tax Cap limits future increases in property tax levies, except debt service to the lesser of 5 percent or the change in the national consumer price index plus allowable increases for new property.

Table A-6 – Debt Service Projection and Non-Referendum Bonding Authority Limitation – Scenario 1

Description	Historical		Projection (in \$ Thousands)-->									
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<i>Capital Improvement Bond Fund Program Expenditures</i>												
Limited Bond Funds	8,862	31,250	\$ 183,040	\$ 220,164	\$ 337,931	\$ 369,596	\$ 260,514	\$ 223,362	\$ 148,729	\$ 146,689	\$ 135,726	\$ 106,446
Unlimited Bond Funds	51,066	22,712	10,355	67,535	61,816	50,972	46,709	15,898	35,425	24,053	10,619	-
Limited Bond and SRF	15,276	8,357	58,133	26,779	30,881	1,705	-	-	-	-	-	-
Unlimited Bond and SRF	-	1,201	1,553	-	-	-	-	-	-	-	-	-
Future Sewer Rehab Projects	-	-	-	-	-	9,229	22,511	36,503	37,489	38,501	39,541	40,608
Future Plant Rehab Projects	-	-	-	-	-	-	-	-	-	-	-	27,072
Compliance with Proposed Water Quality Standards	-	-	-	-	-	10,137	20,275	20,275	202,748	202,748	101,374	-
<i>CIBF Program Expenditures</i>	75,204	63,520	\$ 253,081	\$ 314,478	\$ 430,627	\$ 441,639	\$ 350,009	\$ 296,039	\$ 424,390	\$ 411,991	\$ 287,260	\$ 174,127
<i>Bond Fund Revenues (Debt Sizing)</i>												
Proposed limited Bonds	300,000	150,000	\$ -	\$ 150,000	\$ 300,000	\$ 150,000	\$ 150,000	\$ 100,000	\$ 150,000	\$ 150,000	\$ 150,000	-
Proposed unlimited	-	-	-	250,000	-	150,000	-	50,000	-	-	-	-
Proposed SRF	40,000	42,000	42,000	42,000	42,000	42,000	45,000	45,000	45,000	45,000	45,000	40,000
Investment income	4,618	14,297	27,767	18,602	25,908	22,772	18,929	12,125	7,679	(3,407)	(14,427)	(19,761)
<i>Bond Fund Revenues</i>	344,618	206,297	\$ 69,767	\$ 460,602	\$ 367,908	\$ 364,772	\$ 213,929	\$ 207,125	\$ 202,679	\$ 191,593	\$ 180,573	\$ 20,239
CIBF Cash Balance	285,935	555,349	372,035	518,159	455,440	378,573	242,493	153,579	(68,133)	(288,530)	(395,217)	(549,104)
<i>Debt Service</i>												
Existing limited	31,632	46,800	51,228	\$ 66,463	\$ 63,894	\$ 60,792	\$ 38,331	\$ 26,574	\$ 37,302	\$ 36,183	\$ 33,219	\$ 31,450
Existing unlimited (w/ SRF)	101,795	88,930	90,373	55,946	55,935	55,935	83,462	96,577	72,491	72,491	67,794	68,143
Proposed Limited Bond Funds	-	-	-	10,643	31,929	42,571	53,214	60,310	70,952	81,595	92,238	92,238
Proposed Unlimited Bond Funds	-	-	-	17,738	17,738	28,381	28,381	31,929	31,929	31,929	31,929	31,929
Proposed Limited Bond and SRF	-	-	-	2,823	5,646	8,469	11,292	14,317	17,342	20,366	23,391	26,416
Proposed Limited Bond DS for Water Quality Projects	-	-	-	-	-	719	2,158	3,596	17,982	32,367	39,560	39,560
Proposed Unlimited Bond and SRF	-	-	-	-	-	-	-	-	-	-	-	-
Debt service	133,427	135,730	141,601	153,613	175,142	196,868	216,839	233,303	247,998	274,932	288,131	289,736
Debt issuance capacity unissued	600,000	400,000	550,000	300,000	150,000	-	-	-	-	-	-	-
<i>Debt Service Extension Limitation</i>												
Total Limited Bond Debt Service	31,632	46,800	51,228	79,929	101,469	112,552	104,996	104,797	143,578	170,512	188,409	189,664
Debt Service Extension Base	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464

**Table A-7
Tax Revenue Requirement Forecast Summary – Scenario 2**

Description	Projection (in \$ Thousands)-->									
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Projected Levy:										
Corporate Fund	\$ 239,262	\$ 243,031	\$ 251,304	\$ 268,826	\$ 278,106	\$ 286,957	\$ 297,344	\$ 309,412	\$ 350,527	\$ 362,122
Construction Fund	1	5,523	8,385	1,272	2,830	5,213	6,561	7,635	8,747	10,090
Stormwater Fund	15,211	18,802	12,443	15,878	17,023	18,145	18,387	19,123	20,126	20,410
Debt Service - Existing	141,601	122,409	119,829	116,727	121,793	123,152	109,793	108,674	101,013	99,594
Debt Service - Proposed	-	31,204	55,313	80,265	95,417	110,770	141,299	171,827	193,925	196,950
Retirement Fund	25,665	26,450	26,023	26,726	27,447	28,188	28,949	29,818	30,712	31,634
Reserve Claim Fund	7,073	7,062	7,345	7,639	7,944	8,262	8,593	8,936	9,294	9,666
Total Projected Gross Levy (in \$ thousands)	\$ 428,814	\$ 454,481	\$ 480,642	\$ 517,332	\$ 550,560	\$ 580,688	\$ 610,927	\$ 655,426	\$ 714,344	\$ 730,464

**Table A-8
Property Tax Extension Limitation – Scenario 2**

Description	Projection (in \$ Thousands)-->									
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Property Tax Levy Constraint (Property Tax Extension Limitation Law)¹:										
Adjusted Aggregate Gross Property Tax Levy (Excluding Debt Service and Stormwater)	272,001	282,066	293,057	304,462	316,327	328,620	341,447	355,801	399,280	413,511
Projected Increase in Aggregate Tax Levy	0%	3.70%	3.90%	3.89%	3.90%	3.89%	3.90%	4.20%	12.22%	3.56%
Estimated Change in Consumer Price Index	3.00%	2.80%	2.70%	2.70%	2.70%	2.70%	2.70%	3.00%	3.00%	3.00%
Estimated New Property (Growth)	<u>0.80%</u>	<u>0.90%</u>	<u>1.20%</u>							
Total Allowable Increase in Adjusted Tax Levy	3.80%	3.70%	3.90%	3.90%	3.90%	3.90%	3.90%	4.20%	4.20%	4.20%
Total Allowable Aggregate Tax Levy	272,001	282,065	293,066	304,495	316,370	328,709	341,529	355,873	370,819	386,394
Gap between Allowable and Projected Tax levy Increase		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	7.68%	7.02%

¹The Property Tax Extension Limitation Act, Tax Cap limits future increases in property tax levies, except debt service to the lesser of 5 percent or the change in the national consumer price index plus allowable increases for new property.

Electronic Filing - Received, Clerk's Office, August 4, 2008

Description	Historical		Projection (in \$ Thousands)-->									
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<i>Capital Improvement Bond Fund Program Expenditures</i>												
Limited Bond Funds	8,862	31,250	\$ 183,040	\$ 220,164	\$ 337,931	\$ 369,596	\$ 260,514	\$ 223,362	\$ 148,729	\$ 146,689	\$ 135,726	\$ 106,446
Unlimited Bond Funds	51,066	22,712	10,355	67,535	61,816	50,972	46,709	15,898	35,425	24,053	10,619	-
Limited Bond and SRF	15,276	8,357	58,133	26,779	30,881	1,705	-	-	-	-	-	-
Unlimited Bond and SRF	-	1,201	1,553	-	-	-	-	-	-	-	-	-
Future Sewer Rehab Projects	-	-	-	-	-	9,229	22,511	36,503	37,489	38,501	39,541	40,608
Future Plant Rehab Projects	-	-	-	-	-	-	-	-	-	-	-	27,072
Compliance with Proposed Water Quality Standards	-	-	-	-	-	11,882	23,764	23,764	237,636	237,636	118,818	-
<i>CIBF Program Expenditures</i>	75,204	63,520	\$ 253,081	\$ 314,478	\$ 430,627	\$ 443,383	\$ 353,498	\$ 299,528	\$ 459,279	\$ 446,879	\$ 304,704	\$ 174,127
<i>Bond Fund Revenues (Debt Sizing)</i>												
Proposed limited Bonds	300,000	150,000	\$ -	\$ 150,000	\$ 300,000	\$ 150,000	\$ 150,000	\$ 100,000	\$ 150,000	\$ 150,000	\$ 150,000	-
Proposed unlimited	-	-	-	250,000	250,000	150,000	50,000	-	-	-	-	-
Proposed SRF	40,000	42,000	42,000	42,000	42,000	42,000	45,000	45,000	45,000	45,000	45,000	40,000
Investment income	4,618	14,297	27,767	18,602	25,908	22,772	18,841	11,859	7,225	(5,628)	(18,503)	(24,913)
<i>Bond Fund Revenues</i>	344,618	206,297	\$ 69,767	\$ 460,602	\$ 367,908	\$ 364,772	\$ 213,841	\$ 206,859	\$ 202,225	\$ 189,372	\$ 176,497	\$ 15,087
CIBF Cash Balance	285,935	555,349	372,035	518,159	455,440	376,829	237,172	144,503	(112,550)	(370,057)	(498,263)	(657,303)
<i>Debt Service</i>												
Existing limited	31,632	46,800	51,228	\$ 66,463	\$ 63,894	\$ 60,792	\$ 38,331	\$ 26,574	\$ 37,302	\$ 36,183	\$ 33,219	\$ 31,450
Existing unlimited (w/ SRF)	101,795	88,930	90,373	55,946	55,935	55,935	83,462	96,577	72,491	72,491	67,794	68,143
Proposed Limited Bond Funds	-	-	-	10,643	31,929	42,571	53,214	60,310	70,952	81,595	92,238	92,238
Proposed Unlimited Bond Funds	-	-	-	17,738	17,738	28,381	28,381	31,929	31,929	31,929	31,929	31,929
Proposed Limited Bond and SRF	-	-	-	2,823	5,646	8,469	11,292	14,317	17,342	20,366	23,391	26,416
Proposed Limited Bond DS for Water Quality Projects	-	-	-	-	-	843	2,529	4,215	21,076	37,937	46,367	46,367
Proposed Unlimited Bond and SRF	-	-	-	-	-	-	-	-	-	-	-	-
<i>Debt service</i>	133,427	135,730	141,601	153,613	175,142	196,992	217,210	233,922	251,092	280,502	294,938	296,544
Debt issuance capacity unissued	600,000	400,000	550,000	300,000	150,000	-	-	-	-	-	-	-
<i>Debt Service Extension Limitation</i>												
Total Limited Bond Debt Service	31,632	46,800	51,228	79,929	101,469	112,676	105,367	105,416	146,672	176,082	195,216	196,472
Debt Service Extension Base	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464

Table A-9 – Debt Service Projection and Non-Referendum Bonding Authority Limitation – Scenario 2

Table A-10
Tax Revenue Requirement Forecast Summary – Scenario 3

Description	Projection (in \$ Thousands)-->									
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Projected Levy:										
Corporate Fund	\$ 239,262	\$ 243,031	\$ 251,304	\$ 268,826	\$ 278,106	\$ 286,957	\$ 297,344	\$ 309,412	\$ 330,862	\$ 343,326
Construction Fund	1	5,523	8,385	1,272	2,830	5,213	6,561	7,635	8,747	10,090
Stormwater Fund	15,211	18,802	12,443	15,878	17,023	18,145	18,387	19,123	20,126	20,410
Debt Service - Existing	141,601	122,409	119,829	116,727	121,793	123,152	109,793	108,674	101,013	99,594
Debt Service - Proposed	-	31,204	56,771	82,337	97,261	125,506	153,751	181,996	195,664	198,689
Retirement Fund	25,665	26,450	26,023	26,726	27,447	28,188	28,949	29,818	30,712	31,634
Reserve Claim Fund	7,073	7,062	7,345	7,639	7,944	8,262	8,593	8,936	9,294	9,666
Total Projected Gross Levy (in \$ thousands)	\$ 428,814	\$ 454,481	\$ 482,100	\$ 519,405	\$ 552,404	\$ 595,423	\$ 623,379	\$ 665,595	\$ 696,418	\$ 713,407

Table A-11
Property Tax Extension Limitation – Scenario 3

Description	Projection (in \$ Thousands)-->									
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Property Tax Levy Constraint (Property Tax Extension Limitation Law)¹:										
Adjusted Aggregate Gross Property Tax Levy (Excluding Debt Service and Stormwater)	272,001	282,066	293,057	304,462	316,327	328,620	341,447	355,801	379,615	394,715
Projected Increase in Aggregate Tax Levy	0%	3.70%	3.90%	3.89%	3.90%	3.89%	3.90%	4.20%	6.69%	3.98%
Estimated Change in Consumer Price Index	3.00%	2.80%	2.70%	2.70%	2.70%	2.70%	2.70%	3.00%	3.00%	3.00%
Estimated New Property (Growth)	<u>0.80%</u>	<u>0.90%</u>	<u>1.20%</u>							
Total Allowable Increase in Adjusted Tax Levy	3.80%	3.70%	3.90%	3.90%	3.90%	3.90%	3.90%	4.20%	4.20%	4.20%
Total Allowable Aggregate Tax Levy	272,001	282,065	293,066	304,495	316,370	328,709	341,529	355,873	370,819	386,394
Gap between Allowable and Projected Tax levy Increase		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.37%	2.15%

¹The Property Tax Extension Limitation Act, Tax Cap limits future increases in property tax levies, except debt service to the lesser of 5 percent or the change in the national consumer price index plus allowable increases for new property.

Table A-12 – Debt Service Projection and Non-Referendum Bonding Authority Limitation – Scenario 3

Description	Historical		Projection (in \$ Thousands)-->									
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<i>Capital Improvement Bond Fund Program Expenditures</i>												
Limited Bond Funds	8,862	31,250	\$ 183,040	\$ 220,164	\$ 337,931	\$ 369,596	\$ 260,514	\$ 223,362	\$ 148,729	\$ 146,689	\$ 135,726	\$ 106,446
Unlimited Bond Funds	51,066	22,712	10,355	67,535	61,816	50,972	46,709	15,898	35,425	24,053	10,619	-
Limited Bond and SRF	15,276	8,357	58,133	26,779	30,881	1,705	-	-	-	-	-	-
Unlimited Bond and SRF	-	1,201	1,553	-	-	-	-	-	-	-	-	-
Future Sewer Rehab Projects	-	-	-	-	-	9,229	22,511	36,503	37,489	38,501	39,541	40,608
Future Plant Rehab Projects	-	-	-	-	-	-	-	-	-	-	-	27,072
Compliance with Proposed Water Quality Standards	-	-	-	-	20,546	20,546	20,546	205,456	205,456	205,456	-	-
<i>CIBF Program Expenditures</i>	75,204	63,520	\$ 253,081	\$ 314,478	\$ 451,173	\$ 452,047	\$ 350,280	\$ 481,220	\$ 427,098	\$ 414,698	\$ 185,886	\$ 174,127
<i>Bond Fund Revenues (Debt Sizing)</i>												
Proposed limited Bonds	300,000	150,000	\$ -	\$ 150,000	\$ 300,000	\$ 150,000	\$ 150,000	\$ 100,000	\$ 150,000	\$ 150,000	\$ 150,000	-
Proposed unlimited	-	-	-	250,000	-	150,000	-	50,000	-	-	-	-
Proposed SRF	40,000	42,000	42,000	42,000	42,000	42,000	45,000	45,000	45,000	45,000	45,000	40,000
Investment income	4,618	14,297	27,767	18,602	25,908	21,745	17,330	10,432	(3,357)	(15,130)	(26,871)	(27,759)
<i>Bond Fund Revenues</i>	344,618	206,297	\$ 69,767	\$ 460,602	\$ 367,908	\$ 363,745	\$ 212,330	\$ 205,432	\$ 191,643	\$ 179,870	\$ 168,129	\$ 12,241
CIBF Cash Balance	285,935	555,349	372,035	518,159	434,894	346,592	208,642	(67,146)	(302,601)	(537,429)	(555,186)	(717,073)
<i>Debt Service</i>												
Existing limited	31,632	46,800	51,228	\$ 66,463	\$ 63,894	\$ 60,792	\$ 38,331	\$ 26,574	\$ 37,302	\$ 36,183	\$ 33,219	\$ 31,450
Existing unlimited (w/ SRF)	101,795	88,930	90,373	55,946	55,935	55,935	83,462	96,577	72,491	72,491	67,794	68,143
Proposed Limited Bond Funds	-	-	-	10,643	31,929	42,571	53,214	60,310	70,952	81,595	92,238	92,238
Proposed Unlimited Bond Funds	-	-	-	17,738	17,738	28,381	28,381	31,929	31,929	31,929	31,929	31,929
Proposed Limited Bond and SRF	-	-	-	2,823	5,646	8,469	11,292	14,317	17,342	20,366	23,391	26,416
Proposed Limited Bond DS for Water Quality Projects	-	-	-	-	1,458	2,916	4,373	18,951	33,528	48,106	48,106	48,106
Proposed Unlimited Bond and SRF	-	-	-	-	-	-	-	-	-	-	-	-
<i>Debt service</i>	133,427	135,730	141,601	153,613	176,600	199,065	219,054	248,658	263,544	290,671	296,677	298,282
Debt issuance capacity unissued	600,000	400,000	550,000	300,000	150,000	-	-	-	-	-	-	-
<i>Debt Service Extension Limitation</i>												
Total Limited Bond Debt Service	31,632	46,800	51,228	79,929	102,926	114,748	107,211	120,152	159,125	186,251	196,955	198,210
Debt Service Extension Base	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464

Table A-13
Tax Revenue Requirement Forecast Summary – Scenario 4

Description	Projection (in \$ Thousands)-->									
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Projected Levy:										
Corporate Fund	\$ 239,262	\$ 243,031	\$ 251,304	\$ 268,826	\$ 278,106	\$ 286,957	\$ 297,344	\$ 309,412	\$ 364,381	\$ 375,364
Construction Fund	1	5,523	8,385	1,272	2,830	5,213	6,561	7,635	8,747	10,090
Stormwater Fund	15,211	18,802	12,443	15,878	17,023	18,145	18,387	19,123	20,126	20,410
Debt Service - Existing	141,601	122,409	119,829	116,727	121,793	123,152	109,793	108,674	101,013	99,594
Debt Service - Proposed	-	31,204	56,771	83,056	99,419	129,102	171,733	214,364	235,224	238,249
Retirement Fund	25,665	26,450	26,023	26,726	27,447	28,188	28,949	29,818	30,712	31,634
Reserve Claim Fund	7,073	7,062	7,345	7,639	7,944	8,262	8,593	8,936	9,294	9,666
Total Projected Gross Levy (in \$ thousands)	\$ 428,814	\$ 454,481	\$ 482,100	\$ 520,124	\$ 554,562	\$ 599,020	\$ 641,361	\$ 697,962	\$ 769,498	\$ 785,005

Table A-14
Property Tax Extension Limitation – Scenario 4

Description	Projection (in \$ Thousands)-->									
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Property Tax Levy Constraint (Property Tax Extension Limitation Law)¹:										
Adjusted Aggregate Gross Property Tax Levy (Excluding Debt Service and Stormwater)	272,001	282,066	293,057	304,462	316,327	328,620	341,447	355,801	413,134	426,753
Projected Increase in Aggregate Tax Levy	0%	3.70%	3.90%	3.89%	3.90%	3.89%	3.90%	4.20%	16.11%	3.30%
Estimated Change in Consumer Price Index	3.00%	2.80%	2.70%	2.70%	2.70%	2.70%	2.70%	3.00%	3.00%	3.00%
Estimated New Property (Growth)	<u>0.80%</u>	<u>0.90%</u>	<u>1.20%</u>							
Total Allowable Increase in Adjusted Tax Levy	3.80%	3.70%	3.90%	3.90%	3.90%	3.90%	3.90%	4.20%	4.20%	4.20%
Total Allowable Aggregate Tax Levy	272,001	282,065	293,066	304,495	316,370	328,709	341,529	355,873	370,819	386,394
Gap between Allowable and Projected Tax levy Increase		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	11.41%	10.45%

¹The Property Tax Extension Limitation Act, Tax Cap limits future increases in property tax levies, except debt service to the lesser of 5 percent or the change in the national consumer price index plus allowable increases for new property.

Table A-15 – Debt Service Projection and Non-Referendum Bonding Authority Limitation – Scenario 4

Description	Historical		Projection (in \$ Thousands)-->									
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<i>Capital Improvement Bond Fund Program Expenditures</i>												
Limited Bond Funds	8,862	31,250	\$ 183,040	\$ 220,164	\$ 337,931	\$ 369,596	\$ 260,514	\$ 223,362	\$ 148,729	\$ 146,689	\$ 135,726	\$ 106,446
Unlimited Bond Funds	51,066	22,712	10,355	67,535	61,816	50,972	46,709	15,898	35,425	24,053	10,619	-
Limited Bond and SRF	15,276	8,357	58,133	26,779	30,881	1,705	-	-	-	-	-	-
Unlimited Bond and SRF	-	1,201	1,553	-	-	-	-	-	-	-	-	-
Future Sewer Rehab Projects	-	-	-	-	-	9,229	22,511	36,503	37,489	38,501	39,541	40,608
Future Plant Rehab Projects	-	-	-	-	-	-	-	-	-	-	-	27,072
Compliance with Proposed Water Quality Standards	-	-	-	-	20,546	30,683	40,820	225,730	408,204	408,204	101,374	-
<i>CIBF Program Expenditures</i>	75,204	63,520	\$ 253,081	\$ 314,478	\$ 451,173	\$ 462,184	\$ 370,555	\$ 501,494	\$ 629,846	\$ 617,446	\$ 287,260	\$ 174,127
<i>Bond Fund Revenues (Debt Sizing)</i>												
Proposed limited Bonds	300,000	150,000	\$ -	\$ 150,000	\$ 300,000	\$ 150,000	\$ 150,000	\$ 100,000	\$ 150,000	\$ 150,000	\$ 150,000	-
Proposed unlimited	-	-	-	250,000	-	150,000	-	50,000	-	-	-	-
Proposed SRF	40,000	42,000	42,000	42,000	42,000	42,000	45,000	45,000	45,000	45,000	45,000	40,000
Investment income	4,618	14,297	27,767	18,602	25,908	21,745	16,823	8,886	(5,994)	(28,036)	(50,560)	(57,701)
<i>Bond Fund Revenues</i>	344,618	206,297	\$ 69,767	\$ 460,602	\$ 367,908	\$ 363,745	\$ 211,823	\$ 203,886	\$ 189,006	\$ 166,964	\$ 144,440	\$ (17,701)
CIBF Cash Balance	285,935	555,349	372,035	518,159	434,894	336,455	177,723	(119,885)	(560,726)	(1,011,208)	(1,154,028)	(1,345,857)
<i>Debt Service</i>												
Existing limited	31,632	46,800	51,228	\$ 66,463	\$ 63,894	\$ 60,792	\$ 38,331	\$ 26,574	\$ 37,302	\$ 36,183	\$ 33,219	\$ 31,450
Existing unlimited (w/ SRF)	101,795	88,930	90,373	55,946	55,935	55,935	83,462	96,577	72,491	72,491	67,794	68,143
Proposed Limited Bond Funds	-	-	-	10,643	31,929	42,571	53,214	60,310	70,952	81,595	92,238	92,238
Proposed Unlimited Bond Funds	-	-	-	17,738	17,738	28,381	28,381	31,929	31,929	31,929	31,929	31,929
Proposed Limited Bond and SRF	-	-	-	2,823	5,646	8,469	11,292	14,317	17,342	20,366	23,391	26,416
Proposed Limited Bond DS for Water Quality Projects	-	-	-	-	1,458	3,635	6,531	22,547	51,510	80,473	87,666	87,666
Proposed Unlimited Bond and SRF	-	-	-	-	-	-	-	-	-	-	-	-
<i>Debt service</i>	133,427	135,730	141,601	153,613	176,600	199,784	221,212	252,254	281,526	323,038	336,237	337,842
Debt issuance capacity unissued	600,000	400,000	550,000	300,000	150,000	-	-	-	-	-	-	-
<i>Debt Service Extension Limitation</i>												
Total Limited Bond Debt Service	31,632	46,800	51,228	79,929	102,926	115,468	109,369	123,748	177,106	218,618	236,515	237,770
Debt Service Extension Base	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464

Table A-16
Tax Revenue Requirement Forecast Summary – Scenario 5

Description	Projection (in \$ Thousands)-->									
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Projected Levy:										
Corporate Fund	\$ 239,262	\$ 243,031	\$ 251,304	\$ 268,826	\$ 278,106	\$ 286,957	\$ 297,344	\$ 309,412	\$ 359,397	\$ 370,600
Construction Fund	1	5,523	8,385	1,272	2,830	5,213	6,561	7,635	8,747	10,090
Stormwater Fund	15,211	18,802	12,443	15,878	17,023	18,145	18,387	19,123	20,126	20,410
Debt Service - Existing	141,601	122,409	119,829	116,727	121,793	123,152	109,793	108,674	101,013	99,594
Debt Service - Proposed	-	31,204	56,771	83,180	99,790	129,721	174,827	219,933	242,031	245,056
Retirement Fund	25,665	26,450	26,023	26,726	27,447	28,188	28,949	29,818	30,712	31,634
Reserve Claim Fund	7,073	7,062	7,345	7,639	7,944	8,262	8,593	8,936	9,294	9,666
Total Projected Gross Levy (in \$ thousands)	\$ 428,814	\$ 454,481	\$ 482,100	\$ 520,248	\$ 554,934	\$ 599,639	\$ 644,455	\$ 703,532	\$ 771,321	\$ 787,049

Table A-17
Property Tax Extension Limitation – Scenario 5

Description	Projection (in \$ Thousands)-->									
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Property Tax Levy Constraint (Property Tax Extension Limitation Law)¹:										
Adjusted Aggregate Gross Property Tax Levy (Excluding Debt Service and Stormwater)	272,001	282,066	293,057	304,462	316,327	328,620	341,447	355,801	408,150	421,989
Projected Increase in Aggregate Tax Levy	0%	3.70%	3.90%	3.89%	3.90%	3.89%	3.90%	4.20%	14.71%	3.39%
Estimated Change in Consumer Price Index	3.00%	2.80%	2.70%	2.70%	2.70%	2.70%	2.70%	3.00%	3.00%	3.00%
Estimated New Property (Growth)	0.80%	0.90%	1.20%	1.20%	1.20%	1.20%	1.20%	1.20%	1.20%	1.20%
Total Allowable Increase in Adjusted Tax Levy	3.80%	3.70%	3.90%	3.90%	3.90%	3.90%	3.90%	4.20%	4.20%	4.20%
Total Allowable Aggregate Tax Levy	272,001	282,065	293,066	304,495	316,370	328,709	341,529	355,873	370,819	386,394
Gap between Allowable and Projected Tax Levy Increase		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	10.07%	9.21%

¹The Property Tax Extension Limitation Act, Tax Cap limits future increases in property tax levies, except debt service to the lesser of 5 percent or the change in the national consumer price index plus allowable increases for new property.

Table A-18 – Debt Service Projection and Non-Referendum Bonding Authority Limitation – Scenario 5

Description	Historical		Projection (in \$ Thousands)-->									
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<i>Capital Improvement Bond Fund Program Expenditures</i>												
Limited Bond Funds	8,862	31,250	\$ 183,040	\$ 220,164	\$ 337,931	\$ 369,596	\$ 260,514	\$ 223,362	\$ 148,729	\$ 146,689	\$ 135,726	\$ 106,446
Unlimited Bond Funds	51,066	22,712	10,355	67,535	61,816	50,972	46,709	15,898	35,425	24,053	10,619	-
Limited Bond and SRF	15,276	8,357	58,133	26,779	30,881	1,705	-	-	-	-	-	-
Unlimited Bond and SRF	-	1,201	1,553	-	-	-	-	-	-	-	-	-
Future Sewer Rehab Projects	-	-	-	-	-	9,229	22,511	36,503	37,489	38,501	39,541	40,608
Future Plant Rehab Projects	-	-	-	-	-	-	-	-	-	-	-	27,072
Compliance with Proposed Water Quality Standards	-	-	-	-	20,546	32,427	44,309	229,219	443,092	443,092	118,818	-
<i>CIBF Program Expenditures</i>	75,204	63,520	\$ 253,081	\$ 314,478	\$ 451,173	\$ 463,929	\$ 374,044	\$ 504,983	\$ 664,734	\$ 652,335	\$ 304,704	\$ 174,127
<i>Bond Fund Revenues (Debt Sizing)</i>												
Proposed limited Bonds	300,000	150,000	\$ -	\$ 150,000	\$ 300,000	\$ 150,000	\$ 150,000	\$ 100,000	\$ 150,000	\$ 150,000	\$ 150,000	-
Proposed unlimited	-	-	-	250,000	-	150,000	-	50,000	-	-	-	-
Proposed SRF	40,000	42,000	42,000	42,000	42,000	42,000	45,000	45,000	45,000	45,000	45,000	40,000
Investment income	4,618	14,297	27,767	18,602	25,908	21,745	16,736	8,620	(6,448)	(30,257)	(54,637)	(62,854)
<i>Bond Fund Revenues</i>	344,618	206,297	\$ 69,767	\$ 460,602	\$ 367,908	\$ 363,745	\$ 211,736	\$ 203,620	\$ 188,552	\$ 164,743	\$ 140,363	\$ (22,854)
CIBF Cash Balance	285,935	555,349	372,035	518,159	434,894	334,710	172,402	(128,961)	(605,143)	(1,092,735)	(1,257,075)	(1,454,056)
<i>Debt Service</i>												
Existing limited	31,632	46,800	51,228	\$ 66,463	\$ 63,894	\$ 60,792	\$ 38,331	\$ 26,574	\$ 37,302	\$ 36,183	\$ 33,219	\$ 31,450
Existing unlimited (w/ SRF)	101,795	88,930	90,373	55,946	55,935	55,935	83,462	96,577	72,491	72,491	67,794	68,143
Proposed Limited Bond Funds	-	-	-	10,643	31,929	42,571	53,214	60,310	70,952	81,595	92,238	92,238
Proposed Unlimited Bond Funds	-	-	-	17,738	17,738	28,381	28,381	31,929	31,929	31,929	31,929	31,929
Proposed Limited Bond and SRF	-	-	-	2,823	5,646	8,469	11,292	14,317	17,342	20,366	23,391	26,416
Proposed Limited Bond DS for Water Quality Projects	-	-	-	-	1,458	3,759	6,902	23,166	54,605	86,043	94,473	94,473
Proposed Unlimited Bond and SRF	-	-	-	-	-	-	-	-	-	-	-	-
<i>Debt service</i>	133,427	135,730	141,601	153,613	176,600	199,908	221,583	252,873	284,620	328,608	343,044	344,650
Debt issuance capacity unissued	600,000	400,000	550,000	300,000	150,000	-	-	-	-	-	-	-
<i>Debt Service Extension Limitation</i>												
Total Limited Bond Debt Service	31,632	46,800	51,228	79,929	102,926	115,591	109,740	124,367	180,201	224,188	243,322	244,578
Debt Service Extension Base	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464	141,464

ATTACHMENT 7

John Mastracchio CV

Mr. Mastracchio is a senior financial analyst specializing in municipal utility economics, financial analysis, capital and financial planning, cost of service evaluation, the design of rates, fees, and charges, and utility valuation. Mr. Mastracchio is a member of the Finance, Accounting & Management Controls committee of the American Water Works Association where he participates on the capital financing and valuation subcommittees, and is a member of the Water Environment Federation and the Chartered Financial Analyst Institute. He is a contributing author of the Utility Capital Financing Manual of Practice (M29) and routinely speaks at national and regional conferences and meetings on the topics of regionalization, financial planning, rate-setting, and valuation.

REPRESENTATIVE EXPERIENCE

- **Confidential Client: Due Diligence Review for Water System Acquisition / New York City NY.** Task Leader for the financial analysis as part of a due diligence investigation for the acquisition of a Water Company in the eastern U.S. Services included assistance in developing a long-term capital improvement plan, review and development of financial modeling assumptions regarding supply and demand, operation and maintenance costs, capital expenditures and general rate setting methodology in accordance with each state's rate setting requirements. Recommendations regarding the acquisition and future capital and operating requirements including projections of revenues and rate of return for each of five regulated utilities were presented.
- **City of Columbus: Comprehensive Rate and Charge Study / Columbus OH.** Completed a cost-of-service evaluation and rate, fee, and charge assessment to assist the City of Columbus generate sufficient revenues to pay for upcoming water and sewer capital improvement and operation and maintenance programs. The project included completing a cost-of-service evaluation to determine the cost responsibility of the city's customers, water and sewer asset valuations to support connection fee development, and a rate structure evaluation to identify water and sewer rate structures that were closely aligned with the cost of providing service and developing rate formulas for the city's future use. Based on the results of this study, the city changed its water rates from a declining block structure to a "lifeline" rate and an inclining block structure for residential customers. The city also implemented a separate charge to customers to pay for its upcoming \$2.5 billion wet weather capital program. This charge recovers the cost of the program based upon the impervious surface area of the city's customers. Presented study results to city staff, city council, and other stakeholders using interactive financial modeling tools that were developed for the client.
- **Credit Suisse First Boston: Columbia, SC.** Acting on behalf of several investment banking firms, reviewed of the estimates of environmental liability reported to the Securities and Exchange Commission by a publicly

John M. Mastracchio

Title/Firm:

Senior Associate
Red Oak Consulting, A Division of
Malcolm Pirnie, Inc.

Years of Experience

13

Education

BA State University of New York at
Geneseo 1993
MS Civil and Environmental Engineering
Clarkson University 1994
MBA Finance Cornell University 2001

Licenses and Certifications

Professional Engineer
Chartered Financial Analyst

Societies

American Water Works Association,
Finance, Accounting & Management
Controls Committee
Chartered Financial Analyst Society of
Rochester
Government Financial Officers
Association
Water Environment Federation

Employment History

Red Oak Consulting, a Division of Malcolm
Pirnie, Inc. 2002 to present
Arthur Andersen, LLP. 2001 to 2002
Parsons Engineering Science, Inc. 1994 to
2000

traded, national, environmental services company. This project was accomplished by reviewing pertinent SEC filings, environmental liability reporting policies and procedures established by the Company, requirements of FASB Statement No. 5 and SFAS Statement No. 143 related to reporting of environmental contingent liabilities and asset retirement obligations, and information gathered through site visits, interviews with regulators, site assessments, Superfund site reviews, and landfill useful life estimates provided by other Malcolm Pirnie team members. This information was assessed and used to form an opinion about the reasonableness of the estimates of environmental liability prepared by the Company. Our clients, the investment banking firms, relied on our efforts as underwriters for the bonds to be issued by the Company and as agents and lenders with respect to a credit agreement entered into by the Company. In addition, other lenders participating in the syndicate also relied on our report from a credit agreement perspective.

- **Countryside Village North - City of Anderson: Anderson Utility System Valuation / Anderson IN.** Completed a valuation of the Countryside Village North sewer system to support the negotiated sale of the system to the City of Anderson. The sewer system consisted of approximately 3,000 linear feet of sewer, one lift station, 4,000 linear feet of force main, and associated appurtenances.
- **City of Delaware: Financial Services / Delaware OH.** Provided expert advice to the city in support of financing wastewater capital infrastructure improvements in anticipated future city growth. Reviewed and evaluated wastewater impact fee methodologies and fee levels. Recommended changes to the existing wastewater fee structure to address the city's concerns about rate equitability for multifamily and single-family residential customers, and to ensure that growth pays for itself.
- **Erie County Dept. of Environment and Planning: Utility Merger Feasibility Study and Asset Management Evaluation / Buffalo NY.** Managed the evaluation of the feasibility of consolidating three adjacent wastewater systems into Erie County Sewer Districts. Managed the financial evaluation of the impacts of consolidating included potential cost savings and impacts on customer taxes and user fee rates. Managed the completion of a financial impact analysis and sewer rate plan as part of an overall asset management program for the County. The project included evaluation of capital improvement program alternatives using an interactive financial model that supported the creation of an asset management plan.
- **Erie County Dept. of Environment and Planning: ECDEP Asset/Finac / Buffalo NY.** Managed the completion of a financial impact analysis and sewer rate plan as part of an overall asset management program for the County. The project included evaluation of capital improvement program alternatives using an interactive financial model, supporting the creation of an asset management plan, developing a baseline condition

assessment of major plant and buried assets, evaluation of strategic business drivers, development of project prioritization methodologies, and preparation of the final CIP document, including a detailed financial impact analysis and utility rate plan.

- **City of Fort Wayne: Valuation in Support of Utility Acquisition / Fort Wayne IN.** Completed a valuation of a private water and wastewater utility regulated by the Indiana Utilities Regulatory Commission using asset- and market-based valuation approaches. The valuation estimate was provided to the City's attorney to support settlement negotiations and condemnation.
- **City of Grand Forks: Rate Study and Cost-of-Service Evaluation/ Grand Forks, ND.** Completed a financial evaluation of the city's water, wastewater, solid waste, and stormwater utilities. The evaluations were conducted to ensure that the costs associated with planned capital infrastructure investment and the operations of each utility were allocated equitably to each customer class based on its service requirements. Evaluated the financial affordability of capital improvement plans. Developed cost allocation methodologies using sound engineering, financial, and rate-making practice. Developed nonproprietary revenue adequacy models to provide the city with a basis for the evaluation of alternative rate structures and to ensure that all of the appropriate costs of operating the utility were reflected in the rates.
- **Greene County: Capital Planning Study / Dayton OH.** Provided capital investment decision-making support and planning assistance for county municipality in Dayton, Ohio. Developed an affordable financial plan for paying for the capital infrastructure investments that were identified in the study. Developed an interactive financial model that was used during the project to assess the impact various capital improvement programs and financing alternatives on the County's wastewater rates. Conducted an in-depth evaluation of the parameters that impacted affordability, developed a financial plan that identified the most cost effective project financing alternatives, and presented 20-year pro forma financial projections for the County under several different scenarios and assumptions.
- **Borough of Haledon: Valuation in Support of Utility Acquisition / Haledon NJ.** Completed a valuation of a municipal water system in New Jersey to assist the client in making acquisition decisions. The valuation was completed to establish a baseline for the utility system and its negotiated sale.
- **The Harrisburg Authority: Financial Capability Assessment / Harrisburg PA.** Completed a Financial Capability Assessment to measure the impact that the Authority's Long-Term Control Plan will have on both the current and future financial health of the service area. Determined the service area's average wastewater treatment and CSO implementation cost per household, and evaluated debt, socioeconomic, and financial management indicators of financial capability.

Recommended a capital improvement implementation schedule that would minimize the financial impact to customers, based on the results of the assessment.

- **Henrico County: Water and Sewer Rate Study / Richmond VA.**
Completed a cost of service evaluation and rate, fee, and charge study to assist Henrico County develop a sustainable financial management plan, determine revenue requirements over the next ten years, and ensure equitable recovery of costs. The study also consisted of completing an asset valuation to support the development of impact fees to ensure that growth pays for itself over the planning period. The financial management plan was developed using an interactive forecast model that allowed alternative scenarios to be easily evaluated. Connection fees, fire protection charges, and local facility fees were established by determining the costs of providing these services and developing fees to equitably recover these costs from customers utilizing the services. Rate, fee, and charge formulas were developed for the County's \$80 million operating budget.
- **City of Kingston: Wastewater Rate Study / Kingston, NY.** Completed a wastewater rate study to assist the City pay for its capital improvement program, develop a sustainable financial management plan, and determine future revenue requirements. Developed an interactive rate model for forecasting revenue requirements and user rates. Presented rate recommendations to City officials.
- **Kinderhook Industries, LLC: Environmental Liability Assessment / Berwyn, PA.** Completed a financial evaluation in support of an environmental compliance/liability assessment to support acquisition of a firm in the remedial construction and Resource Conservation and Recovery Act (RCRA) hazardous waste management business with three RCRA treatment, storage, or disposal facilities (TSDFs). Financial evaluation consisted of reviewing the reporting requirements of FASB 5 and SFAS 143 to ensure environmental liability estimates prepared by Malcolm Pirnie satisfied accounting and reporting requirements. Utilized the expected cash flow approach for calculating environmental liabilities, compared liability estimates with those reported on the company's financial statements, and prepared cost and cash flow estimates.
- **City of Lorain: Wastewater Regionalization Study / Lorain, OH**
Managed the completion of a wastewater regionalization study to evaluate the feasibility of constructing a regional wastewater treatment plant and conveyance system to serve customers throughout Lorain County. Assessed the capital and O&M costs associated with the regional entity, developed financial models to project revenue requirements and rates under the regional approach and under status quo. Facilitated discussions with stakeholders pertaining to the costs and benefits of regionalization.
- **LS Power, LLC: Economic Impact Assessment / West Deptford, NJ.**
Assessed the potential economic impact of the construction and operation of a modern coal-fired power plant in West Deptford Township,

New Jersey. Utilized IMPLAN® software to assess the economic impacts of a 500 MW coal fired power plant on an 11 county region. Examined the direct and indirect economic benefits to the region, effects of the project on local employment and economic output, during construction and post construction, and evaluated the potential peak economic stimulus.

Prepared report that provided information to elected officials and other stakeholders to support a decision to proceed with the project.

- **City of Lancaster: Engineer's Feasibility Report and Rate Study / Lancaster OH.** Completed an Engineer's Feasibility Report to support the release of bond disclosure documentation for the issuance of \$8 million waterworks revenue bonds. Subsequently completed a sewer rate study consisting of projections of rate revenue requirements considering various capital improvement programs, and growth scenarios, development of sewer rate and connection fee recommendations, evaluation of customer affordability, and comparison of sewer rates in nearby communities.

Completed a comprehensive water rate and charge study to support the client's capital investment planning process. The project included assessing alternatives for financing water system capital investments and completing a cost-of-service evaluation to equitably recover utility costs from rate payers. In addition, a nonproprietary financial planning and rate design model was developed to assist in the pricing of utility services.

Detailed analyses of customer costs, usage characteristics, capital improvement program costs, and neighboring utility rate comparisons were conducted to support the design of the rate components.

- **Macomb County: Wastewater Treatment Plant Acquisition Evaluation / Mt Clemens, MI** Managed the completion of a preliminary evaluation of wastewater treatment plant ownership and joint use options for Macomb County. Completed a financial evaluation of alternatives that provided a projection of future capital and O&M costs, and assessed the future rate implications of each option. Estimated the value of wastewater system assets and evaluated asset transfer pricing that would result in a win-win for all involved parties. Served as a financial and technical resource for assessing asset transfer and deal structure alternatives.
- **Maricopa Water District: Wholesale Water Service Agreement Development / Phoenix AZ.** Assisted in the development and negotiation of a water treatment plant financing agreement with an investor-owned water company. Developed water and water rate and pricing formulas for inclusion into the capital lease and other supporting documentation. The capital lease agreement provided the client with a reasonable rate of return and ensured that financing requirements, such as legal debt service coverage and capital reserve requirements would be met under many foreseeable future scenarios. Developed and provided an interactive rate-setting and financial planning model for use during the development and negotiation of the agreements. Worked with the client's legal council in developing the terms and conditions of the agreement. Provided expert testimony before the Arizona Corporation Commission

regarding the financial impact of the District constructing and operating its own water treatment plant.

- **Milwaukee Metropolitan Sewerage District: MMSD O&M Options Analysis / Milwaukee WI.** Assisted MMSD in evaluating the feasibility of continued contract operations or the feasibility of District operation of their wastewater treatment facilities. Assisted in the evaluation of alternative forms of privatization as applied to a number of its service areas including wastewater treatment and sludge disposal. Assisted in the efforts to establish submittal requirements relating to financial capability and cost bids and participated in the review and evaluation of these areas for the submitted proposals.
- **City of Marysville: Wastewater Master Study / Marysville OH.** Completed financial planning studies in support of the development of water and wastewater capital investment plans and the issuance of revenue bonds. Analyzed the affordability of recommended capital investment alternatives and associated impacts to the city's long-term financial position. Developed an interactive financial planning model to guide the planning process and assist the city in making capital investment decisions. Completed a wastewater pricing evaluation to develop wastewater rates for the city that reflected the cost of providing service and ensured adequate funding for the city's upcoming \$200 million capital improvement program. Prepared a bond feasibility report supporting the issuance of approximately \$150 million in revenue bonds and bond anticipation notes.
- **Metropolitan District Commission: Valuation Assessments / Hartford CT.** Completed valuations of publicly-owned and investor-owned water utilities regulated by the Connecticut Department of Public Utility Control to assist our client in making utility acquisition decisions. The target utilities provide water service to more than 200,000 people in the northeastern US. The estimates of value were determined utilizing different valuation techniques to estimate the potential value of the water systems, including the asset and income approaches. Mr. Mastracchio's efforts and experience in valuating public utilities supported the client's strategic expansion objectives.
- **Metropolitan District Commission: Financial Analysis and Pricing for the Development of Inter-jurisdictional Agreements / Hartford CT.** Completed financial analyses and pricing of water service for intergovernmental water service agreements to allow the Metropolitan District Commission to maximize its utilization of its excess water supply capacity and generate additional revenues by selling this capacity to neighboring private water companies. The project involved developing terms and conditions of the agreement, as well as developing and recommending a wholesale water rate and capacity charge structure. The wholesale rate was developed by evaluating the costs of operating the water utility using a financial model. The capacity charge was based on the net value of the Commissions fixed assets and available water supply

capacity and was designed to recognize the value of the additional water supply capacity, which would be dedicated to the private water company.

- **City of Miamisburg: Bond Engineering Report and Rate Study/ Miamisburg OH.** Completed a bond feasibility report to support the issuance of \$2 million in 2004 waterworks revenue bonds. Bond feasibility analysis included a description of the system and the improvements, summary of historic and projected system demands, a cash flow analysis, a comparison of water rates with those of other cities, and an opinion of the adequacy of the rates and cash flows of the city. Completed a water and sewer rate study for the City consisting of projecting revenue requirements over a five year period, assessing the impact of various capital improvement program scenarios, developing cost justified water and sewer rates, and completing a survey of water and sewer rates of nearby communities.
- **Nassau County: Water Utility Consolidation Study / Mineola, NY.** Evaluated the feasibility of consolidating 46 water systems within Nassau County into one or more management organizations. Assessed the potential for cost savings and the impact on residential ad valorem taxes and user fees. Assessed the environmental benefits of a regional approach to water resources. Prepared reports and presented findings to the County Executive of Nassau County.
- **State of New Jersey, Department of the Public Advocate: Water Utility Valuation / Newark, NJ.** Served as a valuation expert and provided testimony in the matter of the Joint Petition of the City Trenton, New Jersey and New Jersey American Water Company, Inc. for authorization of the purchase and sale of the assets of the outside water utility system of the City of Trenton, New Jersey.
- **Newark Watershed Conservation and Development Corporation: Wastewater Asset Condition Assessment and Valuation / Newark, NJ.** Supported efforts to complete an asset condition assessment and valuation of the City of Newark's wastewater system to assist the Newark Watershed Conservation and Development Corporation (NWCDC) and the City of Newark in their consideration of the formation of a Municipal Utilities Authority.
- **City of Newark: Wastewater Rate Study / Newark, OH.** Project Manager for a wastewater rate and charge study. The project included an evaluation of the City's rate structure, development of a nonproprietary rate model, detailed analyses of customer costs, usage characteristics, and capital improvement program costs, and presentation of rate recommendations to City Council. In addition, neighboring utility rate comparisons were completed to support the design of the rate components.
- **City of Norwalk: Financial Planning and Rate Study / Norwalk CT.** Completed a financial planning study in support of a long-term wastewater master plan. Analyzed capital investment alternatives and associated impacts to City wastewater rates. Developed an interactive

financial planning model to utilize throughout the planning process and assisted the City in making capital investment decisions. Completed system asset valuation estimates to support connection fee development. Presented rate recommendations at budget hearings with the City Commission.

- **City of Painesville: Pricing of Utility Services / Painesville OH.**
Developed an intergovernmental wastewater service agreement to allow the City of Painesville to maximize its utilization of its excess wastewater treatment capacity to neighboring county customers. The project involved developing terms and conditions of the agreement, as well as developing and recommending a wholesale rate and capacity charge structure. The wholesale rate was developed by evaluating the costs of operating the city's wastewater utility using a financial model. The capacity charge was based on the net value of the city's fixed assets and available wastewater treatment capacity and was designed to recognize the value of the city's additional system capacity, which will be sold to the county.
- **City of Reno: Wastewater Cost of Service Evaluation and Rate Study / Reno, NV.** Developed a financial plan and wastewater utility pricing schedules for the City of Reno. Project helped to ensure the funding and financing of the City's wastewater utility capital investment needs. Developed an interactive financial model that was used to evaluate future rate revenue requirements, determine the cost of providing wastewater service, and determine equitable connection fees based on the estimated value of fixed assets and the cost of wastewater system expansion. Advised the City in the design a rate structure that was aligned with the City's needs and financial objectives. Presented study results to City staff, city council and other stakeholders using interactive financial modeling tools that were developed for the client.
- **Saratoga County Water Authority: Water Bond Feasibility Report / Saratoga, NY.** Prepared an engineering and financial feasibility report for the issuance of \$40 million in water system revenue bonds to finance the construction of water treatment plant, raw water pipeline, pump station, and distribution mains.
- **Summit County: Comprehensive Rate and Charge Study / Akron OH.** Completed a cost of service evaluation and rate, fee, and charge assessment to assist the County to generate sufficient revenues to pay for upcoming sewer capital improvement and operation and maintenance programs. The project included completing a cost of service evaluation to determine the cost responsibility of the County customers, wastewater asset valuation estimates to support capacity fee development, and a rate structure evaluation to identify sewer rate structures that were closely aligned with the cost of providing service, and developing rate formulas for the County's future use.
- **U.S. Air Force Material Command: Hill AFB EUL / Ogden UT.** Senior Analyst for the valuation and financial analysis of a proposed Enhanced

Use Lease (EUL) at Hill Air Force Base. The analysis included evaluating real estate market conditions and land sales data, completing a life cycle cost analysis of Air Force office space procurement options and developing valuation models for potential site development scenarios. Other activities included developing the financial portion of the Business Case analysis, supporting presentations to leadership, responding to technical questions and developing potential site development scenarios.

- **Utilities Inc: Strategic Financial Consulting / Northbrook, IL.** Managed the completion of financial assessments, and projections of performance and value for more than 90 operating companies of an investor-owned utility located in Arizona, Florida, Georgia, Illinois, Indiana, Kentucky, Louisiana, Maryland, North Carolina, New Jersey, Nevada, Pennsylvania, South Carolina, Tennessee, and Virginia. Provided analysis results to the senior leadership team of Utilities, Inc.
- **City of Virginia Beach: Financial Services / Virginia Beach VA.** Served as project manager for a multi-year financial services contract for the City of Virginia Beach that included true-up evaluation, developing an interactive financial planning model, and completing a cost of service evaluation. The true-up evaluation consisted of reviewing the City of Norfolk's cost allocation model for allocating operation and maintenance expenses, reviewing the rate model for allocation of fixed assets, and the rate of return on rate base for reasonableness. The cost of service evaluation consisted of assessing future capital funding needs for the water and sewer utilities due to aging infrastructure, system expansion, and new regulations, determining revenue requirements over a five to ten year period, and developing rates, fees and charges to meet revenue requirements and other City rate-setting goals and objectives.
- **Virgin Islands Public Services Commission: Expert Testimony / St Thomas, VI.** Served as financial and rate expert for the U.S Virgin Islands Public Services Commission regarding Waste Management Authority's solid waste and wastewater utility rate cases. Reviewed financial and rate aspects of the Authority's filings, prepared written testimony, and presented oral testimony before the Public Services Commission. Application involved establishment of new Authority Environmental User Fees and Wastewater User Fees. Technical issues reviewed involved reasonableness of the rate revenue requirements, fairness and equitability of the rate structure, and affordability issues.
- **Westchester Joint Water Works: Water Rate Study / Westchester, NY.** Completed a comprehensive rate study for Westchester Joint Water Works and its member municipalities. Evaluated revenue requirements and the cost to serve wholesale and retail customers, developed rate models, and worked with Client and member municipalities to evaluate water rate structure alternatives.
- **Wayne County, Department of Environment: Comprehensive Assessment and Master Plan / Detroit MI.** Completed a financial evaluation in support of a comprehensive utility assessment and master

plan. Assessed the client's level of competitiveness, vulnerability to privatization, and degree of organizational alignment from a financial perspective. Developed a cost allocation model that was used throughout the project. Evaluated many aspects of the client's financial operations including a detailed evaluation of DOE's rate and fee structure, as well as a critical review of administration, finance, accounting, and general management policies and procedures. Based on the evaluation, recommended revising and consolidating DOE's fee structure.

EXPERT TESTIMONY

Valuation Expert in the Matter of the Joint Petition of the City Trenton, New Jersey and New Jersey American Water Company, Inc. for Authorization of the Purchase and Sale of the Assets of the Outside Water Utility System of the City of Trenton, New Jersey, BPU Docket No. WM08010063.

Municipal Utility Rate Expert in the Application for Approval of Environmental User Fee and Wastewater User Fee in the United States Virgin Islands by the Virgin Island Waste Management Authority, Docket Number 554, before the Government of the Virgin Islands Public Services Commission.

Rate Expert In the Matter of the Application of Arizona-American Water Company, Inc. for Approvals Associated with a Proposed Transaction with Maricopa Water Conservation District Number One To Allow the Construction of a Surface Water Treatment Facility Known as the White Tanks Project, Docket No. W-01303A-05-0718, before the Arizona Corporation Commission.

PUBLICATIONS AND PRESENTATIONS

Mastracchio, J.M.. **Capital Project Funding, Improving Your Success Rate**, presented at the Greater Buffalo Environmental Conference, Buffalo, NY, March 18, 2008.

Mastracchio, J.M., et. al. **Water Capital Financing, Manual of Practice M29**, contributing author and workshop presenter at the American Water Works Association Annual Conference and Exposition, Toronto, Canada. June 23, 2007.

Mastracchio, J.M., **"Economic and Financial Elements of Water Utility Facilities Master Planning,"** presented at the Spring Meeting of the American Water Works Association, New York Section, Saratoga Springs NY, April 24-27, 2007.

Mastracchio, J.M., **"Budget Forecasting in the New Construction Cost Era - It's Not as Simple as the ENR Anymore,"** presented at the Conference of the United States Society of Dams, Pittsburgh PA, March 7, 2007.

Gangemi, A.N, Mastracchio, J.M., **"Dynamic Utility Financial Modeling - A Utility Manager's Crystal Ball,"** presented at the Annual Conference of the New England Water Works Association, Danvers MA, September 17-20, 2006.

Mastracchio, J.M., **"The Next Challenge in Eliminating Sewer Overflows: Who Pays?,"** *Clearwaters*, Vol. 35, p. 26-27, Winter 2005. New York Water Environment Association, Inc.

Lockridge, R.L., Mastracchio, J.M., **"Dynamic Financial Modeling for Local Governments,"** *Proceedings*, 91st Annual Conference of the International City/County Management Association (ICMA), Minneapolis MN, September 25-28, 2005.

Mastracchio, J.M., **"Interactive Financial Modeling: An Effective Tool for Utility Management and Planning,"** *Proceedings*, 68th Annual Conference of the Indiana Water Environment Association, Indianapolis IN, November 15-17, 2004.

Mastracchio, J.M., **"The Use of Financial Modeling to Support Utility Management and Planning,"** presented at the 78th Annual Conference of the Ohio Water Environment Association, Columbus OH, June 21-24, 2004.

Mastracchio, J.M., **"Using Financial Models to Establish and Update Water and Sewer Rates,"** presented at the Winter Conference of the County Commissioners Association of Ohio, Columbus OH, December 1, 2003.

Attachment 8

Rudimentary, Order-of-Magnitude Cost Estimates for Nutrient Removal at District Water Reclamation Plants

Rudimentary, Order-of-Magnitude Cost Estimates for Nutrient Removal at District Water Reclamation Plants

PLANT	CAPITAL COST	ANNUAL M&O
Stickney	\$1,666,000,000	\$100,000,000
Calumet	\$605,000,000	\$29,000,000
North Side	\$408,000,000	\$4,700,000
Kirie	\$83,000,000	\$1,000,000
Egan	\$38,000,000	\$2,500,000
Hanover Park	\$17,000,000	\$1,000,000
Total	\$2,817,000,000	\$138,200,000

NOTES:

1. Cost Estimate prepared by engineering department of MWRDGC.
2. Under the Master Plans for the Calumet and North Side WRPs, conceptual level cost estimates were performed for various nutrient removal processes. The purpose of the cost estimates was to compare various nutrient removal processes relative to each other. These estimates were used to generate a rudimentary, order-of-magnitude cost estimate for all seven WRPs. In short, North Side and Calumet estimates were used to arrive at capital and annual operating costs on a flow basis (i.e. dollars per million gallons of sewage treated). These ratios were used to extrapolate costs for the other four WRPs. The cost estimates that were derived assumed hypothetical effluent limits of 0.5 mg/L for total phosphorus and between 6 to 8 mg/L for total nitrogen.
3. All costs are given in 2008 dollars.
4. Lemont Water Reclamation Plant is not included as it is planned to be converted to a sewage pumping station.