



# Point Roberts Water District No. 4 Technical Memo: 2007 Water Rate & GFC Update Updated Draft – May 3, 2007

## Introduction & Background:

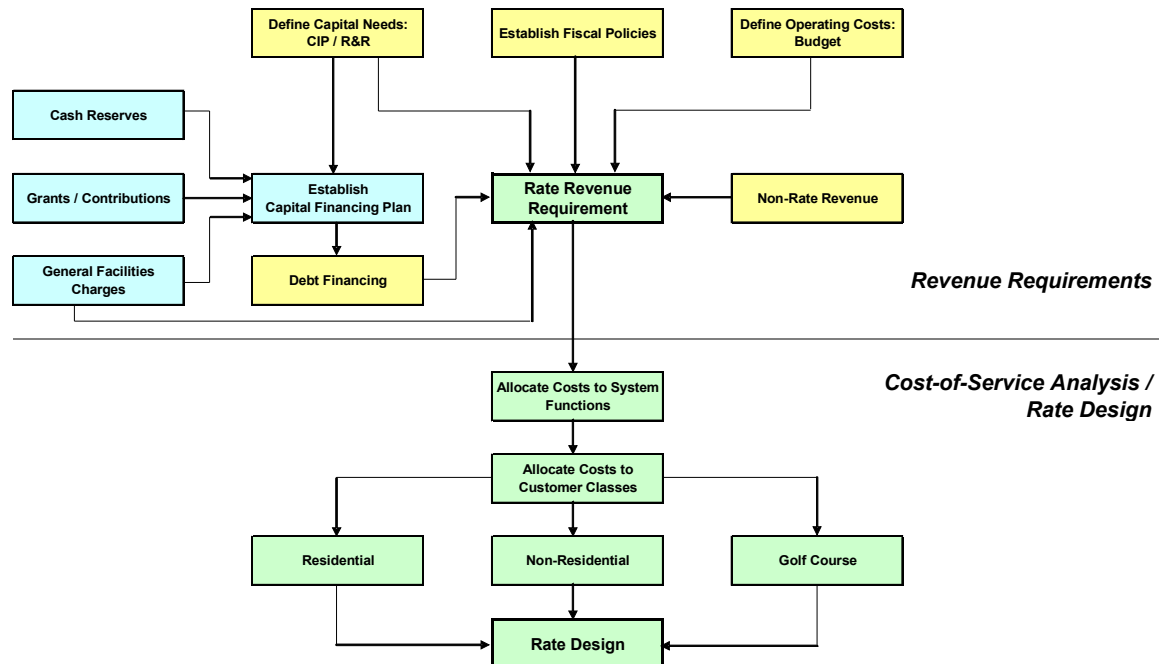
In May 2005, the District authorized FCS Group to perform a water rate study that would address a number of financial issues relevant to the District's water utility, including:

- Planning for long-term capital needs
- Updating general facilities charges
- Evaluating the District's water rates for revenue sufficiency and inter-class equity

FCS Group submitted a report to the District in March 2006 that discussed the findings and recommendations stemming from the rate study. Those findings and recommendations were based on a number of assumptions – additional information has since become available, and the District has expressed interest in revisiting the rate analysis to determine the relative changes from the prior forecast and gauge their impact on the recommended rate strategy.

## Analysis:

The schematic below illustrates the rate study process:



As shown above, the rate study process has two primary phases:

- I. Determine the revenue requirement, or level of revenue that rates must generate.

- II. Recover costs equitably from customers, according to the demands that they place upon the District's water system.

This memo discusses each of these phases separately, providing a refresher on the key methods and assumptions used in the study and evaluating the relative changes to the prior forecast given actual conditions over the past year.

**I. Revenue Requirements**

At its simplest, the rate revenue requirement is defined by the following equation:

$$\text{Rate Revenue Requirement} = \text{Expenses} - \text{Other Revenues}$$

**A. Expenses**

In the equation above, the term "expenses" refers to expenses that are ultimately an obligation of water rates to the extent that other revenues are not available to offset them. It includes both cash operating expenses (such as water purchases, employee salaries, and water system maintenance) and rate-funded capital expenses such as debt service and system reinvestment funding. In the prior analysis, expense projections were primarily based on 2005 expenses and the capital improvement program that was available at that time – the table below summarizes the differences between expense projections:

Operating Expenses	2007	2008	2009	2010	2011	2012
<i>Prior Forecast:</i>						
GVWD Water Purchases	\$ 407,369	\$ 424,882	\$ 446,172	\$ 457,274	\$ 480,138	\$ 504,145
Other Operating Expenses	388,362	410,403	425,295	441,425	458,804	476,909
Rate-Funded Debt Service	7,501	229,874	229,737	229,601	229,464	229,328
Depreciation Funding	57,503	54,002	75,189	144,721	151,683	237,161
<b>Total</b>	<b>\$ 860,735</b>	<b>\$ 1,119,161</b>	<b>\$ 1,176,393</b>	<b>\$ 1,273,021</b>	<b>\$ 1,320,089</b>	<b>\$ 1,447,543</b>
<i>Current Forecast:</i>						
GVWD Water Purchases	\$ 361,000	\$ 446,036	\$ 507,958	\$ 535,948	\$ 557,418	\$ 580,578
Other Operating Expenses	450,952	425,180	436,924	449,021	465,848	475,749
Rate-Funded Debt Service	7,637	122,787	157,717	277,095	398,201	516,580
Depreciation Funding	57,503	54,002	75,189	144,721	151,683	158,946
<b>Total</b>	<b>\$ 877,092</b>	<b>\$ 1,048,005</b>	<b>\$ 1,177,788</b>	<b>\$ 1,406,784</b>	<b>\$ 1,573,150</b>	<b>\$ 1,731,854</b>
Change	\$ 16,357	\$ (71,156)	\$ 1,395	\$ 133,763	\$ 253,061	\$ 284,311
Percent Change	1.9%	-6.4%	0.1%	10.5%	19.2%	19.6%

Capital Expenditures	2007	2008	2009	2010	2011	2012
<i>Prior Forecast:</i>						
Miscellaneous Water Line Improvements	\$ 17,639	\$ 18,168	\$ 18,713	\$ 19,274	\$ 19,853	\$ -
Pressure-Reducing Zone For Distribution System	70,555	72,672	74,852	77,097	79,410	-
New Source of Supply	-	2,725,187	-	-	-	-
Ongoing Repairs & Replacements	-	-	-	-	-	514,226
<b>Total</b>	<b>\$ 88,194</b>	<b>\$ 2,816,027</b>	<b>\$ 93,565</b>	<b>\$ 96,371</b>	<b>\$ 99,263</b>	<b>\$ 514,226</b>
<i>Current Forecast:</i>						
New 3.0 MG Churchill Reservoir	\$ 547,617	\$ 564,045	\$ 580,967	\$ 598,396	\$ 616,347	\$ 634,838
Well Source Development	521,867	537,523	553,648	570,258	587,366	604,986
Fire Flow Improvements	169,641	174,730	179,972	185,371	190,932	196,660
Pressure Zone Improvements	77,250	79,568	81,955	84,413	86,946	89,554
Developer Extension Improvements	206,000	212,180	218,545	225,102	231,855	238,810
<b>Total</b>	<b>\$ 1,522,374</b>	<b>\$ 1,568,046</b>	<b>\$ 1,615,087</b>	<b>\$ 1,663,540</b>	<b>\$ 1,713,446</b>	<b>\$ 1,764,849</b>
Change	\$ 1,434,180	\$ (1,247,981)	\$ 1,521,522	\$ 1,567,169	\$ 1,614,183	\$ 1,250,623
Percent Change	1626.2%	-44.3%	1626.2%	1626.2%	1626.2%	243.2%

On the capital side, the updated capital improvement program is significantly more expensive than the version included in the prior rate study. Considering a near-term planning horizon (2007 – 2012), the latest version of the CIP includes roughly \$9.85 million in planned capital expenditures – by contrast, the CIP used in the prior analysis only included \$3.71 million during the same period. *Note that these estimates reflect inflationary adjustments of 3.0% per year.* The difference in capital costs has implications for the capital funding strategy recommended during the prior rate study:

**2007 - 2012 Capital Funding Strategy**

	Prior Forecast		Current Forecast	
	Total	Percent of Total	Total	Percent of Total
Projected Capital Expenditures	\$ 3,707,646		\$ 9,847,341	
Projected Capital Funding:				
Grants / Contributions	\$ -	0.0%	\$ 1,332,492	13.5%
Cash Reserves	1,207,646	32.6%	1,434,431	14.6%
Debt Funding	2,500,000	67.4%	7,080,417	71.9%
Total	\$ 3,707,646	100.0%	\$ 9,847,341	100.0%
Impact to Annual Debt Service	\$ 222,956		\$ 631,449	

The table above suggests that the District will have to issue almost three times as much in new debt as originally expected. From the perspective of total capital funding sources, the current forecast shows a slight increase of roughly 4.5% in the share of capital expenditures funded by debt. The debt-funded share of the CIP increases significantly from the perspective of utility funding sources (excluding grants and contributions from external sources), to roughly 83.2% (compared to 67.4% in the prior forecast). The revised capital improvement program impacts the water rate revenue requirement through the incremental debt service that results from the updated capital funding strategy – projections indicate that the annual debt service will be on the order of three times what was projected in the prior analysis. The current analysis retains the policy of annual rate-funded depreciation transfers that based on annual depreciation net of debt principal payments – consequently, the current analysis assumes annual transfers that are consistent with those assumed in the prior analysis (at least for the first few years, until the higher debt service results in lower net depreciation).

On the operating side, recent budget estimates from District staff indicate that wholesale water purchase costs will be higher than originally expected. Beyond 2007, other cash operating expenses (primarily maintenance, repair, and vehicle expenses) are generally comparable. 2007 is an exception because of a short-term spike in costs associated with incremental engineering fees and excise taxes on hook-up fee (GFC and meter installation) revenue.

In aggregate, rate-funded expenses are expected to be lower than originally forecasted for the first couple of years in the near-term forecast, primarily because of a decrease in rate-funded debt service resulting from delaying some of the capital costs – by the end of the near-term planning horizon, the incremental debt service associated with the revised CIP results in a net increase in the total amount that rates and other allowable revenues need to cover.

**B. Other (Non-Rate) Revenues**

While water rate revenue is the District's primary source of controllable revenue, there are several other sources of cash that are available to the District to help meet its financial obligations. The table below summarizes the relative changes to the projections of these revenues between the prior and current forecasts:

Other Operating Revenues	2007	2008	2009	2010	2011	2012
<i>Prior Forecast:</i>						
Miscellaneous Revenues	\$ 10,551	\$ 10,815	\$ 10,815	\$ 10,815	\$ 10,867	\$ 10,919
Late Charges	6,224	6,380	6,380	6,380	6,411	6,441
Meter Installation Fees	29,994	33,981	-	-	10,491	10,676
RVS Adjustments	870	892	892	892	897	901
Operating Reserve Interest Earnings	4,671	6,464	7,569	8,876	10,585	15,885
<b>Total</b>	<b>\$ 52,310</b>	<b>\$ 58,534</b>	<b>\$ 25,657</b>	<b>\$ 26,964</b>	<b>\$ 39,251</b>	<b>\$ 44,822</b>
<i>Current Forecast:</i>						
Miscellaneous Revenues	\$ 10,551	\$ 10,656	\$ 10,763	\$ 10,870	\$ 10,979	\$ 11,089
Late Charges	6,224	6,224	6,224	6,224	6,224	6,224
Meter Installation Fees	-	-	-	-	-	-
RVS Adjustments	870	870	870	870	870	870
Unmetered Sewer Revenue	14,945	14,945	14,945	14,945	14,945	14,945
Operating Reserve Interest Earnings	5,305	7,280	8,786	11,411	11,275	11,843
<b>Total</b>	<b>\$ 37,895</b>	<b>\$ 39,976</b>	<b>\$ 41,589</b>	<b>\$ 44,321</b>	<b>\$ 44,293</b>	<b>\$ 44,971</b>
Change	\$ (14,415)	\$ (18,558)	\$ 15,932	\$ 17,357	\$ 5,043	\$ 149
Percent Change	-27.6%	-31.7%	62.1%	64.4%	12.8%	0.3%

In the absence of specific revenue forecasts from District staff, these revenues are generally assumed to escalate with growth in the District's customer base – therefore, changes to the customer growth forecast would impact what the District collects in miscellaneous revenues. The customer growth forecast has changed since the prior analysis, based on feedback provided by District staff:

Customer Growth Forecasts	2007	2008	2009	2010	2011	2012
<i>Prior Forecast:</i>						
Total Number of Customers (Beginning of Year)	2,082	2,130	2,182	2,182	2,182	2,192
Plus: Current Year Growth	48	52	0	0	10	10
Total Number of Customers (End of Year)	2,130	2,182	2,182	2,182	2,192	2,202
Average Growth Rate	2.3%	2.5%	0.0%	0.0%	0.5%	0.5%
<i>Current Forecast:</i>						
Total Number of Customers (Beginning of Year)	2,057	2,212	2,212	2,212	2,212	2,212
Plus: Current Year Growth	155	0	0	0	0	0
Total Number of Customers (End of Year)	2,212	2,212	2,212	2,212	2,212	2,212
Average Growth Rate	7.5%	0.0%	0.0%	0.0%	0.0%	0.0%

The two customer growth forecasts do not differ materially in terms of the total number of customers that will be connected to the District's water system by the end of the near-term planning horizon. A key difference between the two forecasts relates to the timing of growth – according to recent feedback provided by District staff, the District expects to release the rest of its allotted connections later this year (the District can accommodate

2,212 connections, but has been in a moratorium since July 2005). These connections would presumably occur during 2007, given recent growth trends in the District's service area prior to the moratorium – aside from this relative surge in growth, the District will not be able to accommodate additional customers until it completes its three-million-gallon storage tank (anticipated to be completed within the next 3 – 5 years; assumed to be completed by 2012 in the analysis). Once the tank is online, the District expects to add roughly 959 single-family residential customers to its water system – 256 of these new connections are attributable to developers (Stanton, Golf Course, Marina) and are expected to occur in 2013, based on projections provided by the developers. Per District staff, the remainder of the expected growth is assumed to occur at a rate of 37 connections per year beginning in 2013.

The projections of miscellaneous revenues, late charges, and RVS (utility billing) adjustments depend on growth as a percentage of the total customer base and have not materially changed since the prior forecast. In addition to this, there are two noteworthy differences between the two forecasts with respect to miscellaneous revenue and how it is treated for the purpose of determining water rate needs:

- ***Meter Installation Revenue:*** As shown above, the prior forecast treated meter installation charge revenue as a source of miscellaneous operating revenue that could be used to offset operating expenses and other cash requirements. Upon further review and discussion with District staff, the current analysis assumes that meter installation charge revenue is not used in this way, as it is intended to recover meter installation costs that are not included in the operating budget.
- ***Sewer Revenue:*** The current analysis includes the District's unmetered sewer revenue as a source of miscellaneous revenue. Given that most of the District's customers use onsite septic systems and that the District only collects about \$15,000 per year in sewer revenue, this revenue is a fairly minor part of the District's total revenue. The District prepares a single budget that includes expenses attributable to providing both water and sewer service – given that the project scope did not include an allocation of costs between these two utility activities, the current analysis treats unmetered sewer revenue as a source of miscellaneous revenue to offset District expenses. This revenue is assumed to grow with the District's customer base, but the forecast does not incorporate any other adjustments to the underlying sewer charges. The revenue requirement analysis only considers water rate revenue needs, with the consequent rate adjustments applying only to the District's water rates. By contrast, the prior analysis netted out sewer revenues and a corresponding share of operating expenses (the current analysis includes these revenues and expenses for completeness and consistency with District budgeting procedures).

Perhaps the most significant non-rate revenue source would be general facilities charges (GFCs), which the District collects from new customers seeking to connect to the District's water system. While this revenue is restricted for capital purposes and cannot

be used to pay for operating expenses, it can affect water rate revenue needs by reducing the amount of debt service that rates must pay (either by direct use for paying debt service related to the capital costs that form the basis for the GFC, or by use for capital project costs to reduce the amount of debt issuance required). The project scope included an update of the District's GFC in light of recent additions to utility plant-in-service, revisions to the CIP, and updates to the customer growth forecast.

The District's GFC is currently \$1,500 per equivalent residential unit (ERU). The prior analysis derived several GFC alternatives:

- **Average Cost Method:** This method views the system from an aggregate perspective, acknowledging that existing and future facilities will benefit both existing and future customers. The GFC is computed by dividing both existing and future costs by the total number of existing and future customers. This method is relatively easy to implement and explain to customers.
- **Buy-In Plus Growth Method:** This method views the system primarily from an incremental perspective. Put differently, new customers should pay for a proportionate share of the existing system that will serve them – in addition, they should pay for their share of any costs that the District will have to incur to expand the system to provide service to them. This approach is more complicated in that it requires the allocation of planned capital projects between “repair and replacement” (R&R) and “expansion and upgrades” (R&R projects are omitted from the calculation under this method because they are solely attributable to the use of system assets by existing customers).
- **Buy-In Only Method:** This method focuses on the existing system, recovering a fair share of the investment made in the existing system. It does not include a provision for future investments, either due to the lack of an approved CIP or the fact that the system is not expected to grow materially.

The updated GFC calculation is shown below, with the prior calculation shown for comparison:

General Facilities Charge (GFC) Calculation

	Prior Forecast			Current Forecast		
	Average Cost	Buy-In + Growth	Buy-In Only	Average Cost	Buy-In + Growth	Buy-In Only
<b>I. Existing Facilities (Buy-In) Component</b>						
Existing Plant-in-Service as of December 31, 2006	\$ 7,777,634	\$ 7,777,634	\$ 7,777,634	\$ 7,937,223	\$ 7,937,223	\$ 7,937,223
Less: Facilities Funded From Contributions & ULIDs	(1,168,522)	(1,168,522)	(1,168,522)	(1,168,522)	(1,168,522)	(1,168,522)
Less: Additional Grant Funding	(2,823,805)	(2,823,805)	(2,823,805)	(2,823,805)	(2,823,805)	(2,823,805)
Less: 10-Year Provision For Capital Retirements	(372,431)	-	-	(1,179,604)	-	-
Less: Outstanding Debt Net of Cash Reserves	(281,267)	(281,267)	(281,267)	-	-	-
Total Utility-Funded Plant-in-Service	\$ 3,131,609	\$ 3,504,041	\$ 3,504,041	\$ 2,765,293	\$ 3,944,897	\$ 3,944,897
Plus: Cumulative Interest on Utility-Funded Plant-in-Service	\$ 1,682,991	\$ 1,682,991	\$ 1,682,991	\$ 2,368,986	\$ 2,368,986	\$ 2,368,986
Plus: Construction Work In Progress	\$ -	\$ -	\$ -	\$ 84,005	\$ 84,005	\$ 84,005
<b>Total Existing Facilities Cost Basis</b>	<b>\$ 4,814,600</b>	<b>\$ 5,187,031</b>	<b>\$ 5,187,031</b>	<b>\$ 5,134,279</b>	<b>\$ 6,313,883</b>	<b>\$ 6,313,883</b>
<b>II. Future Facilities Component</b>						
10-Year Capital Improvement Program:						
Replacement (R&R) Projects	\$ 1,641,575	\$ -	\$ -	\$ 2,904,617	\$ -	\$ -
Improvements & Upgrades	3,239,208	3,239,208	-	9,002,117	9,002,117	-
Total	\$ 4,880,782	\$ 3,239,208	\$ -	\$ 11,906,733	\$ 9,002,117	\$ -
Less: Project Costs Funded by Grants & Contributions						
Replacement (R&R) Projects	\$ -	\$ -	\$ -	\$ (92,000)	\$ (1,108,000)	\$ -
Improvements & Upgrades	-	-	-	(1,108,000)	(1,108,000)	-
Total	\$ -	\$ -	\$ -	\$ (1,200,000)	\$ (1,108,000)	\$ -
<b>Total Future Facilities Cost Basis</b>	<b>\$ 4,880,782</b>	<b>\$ 3,239,208</b>	<b>\$ -</b>	<b>\$ 10,706,733</b>	<b>\$ 7,894,117</b>	<b>\$ -</b>
<b>III. Customer Base</b>						
Number of Existing ERUs	2,212	2,212	2,212	2,469	2,469	2,469
Plus: Projected Growth Over Next 10 Years	207	207	207	411	411	411
<b>Total ERU Basis</b>	<b>2,419</b>	<b>2,419</b>	<b>2,419</b>	<b>2,880</b>	<b>2,880</b>	<b>2,880</b>
<b>IV. GFC Computation</b>						
Existing Facilities Component						
Total Costs	\$ 4,814,600	\$ 5,187,031	\$ 5,187,031	\$ 5,134,279	\$ 6,313,883	\$ 6,313,883
Allocable ERU Basis	2,419	2,419	2,212	2,880	2,880	2,469
<b>Existing Facilities Charge per ERU</b>	<b>\$ 2,000</b>	<b>\$ 2,150</b>	<b>\$ 2,340</b>	<b>\$ 1,780</b>	<b>\$ 2,190</b>	<b>\$ 2,560</b>
Future Facilities Component						
Total Costs	\$ 4,880,782	\$ 3,239,208	\$ -	\$ 10,706,733	\$ 7,894,117	\$ -
Allocable ERU Basis	2,419	207	0	2,880	411	0
<b>Future Facilities Charge per ERU</b>	<b>\$ 2,020</b>	<b>\$ 15,650</b>	<b>\$ -</b>	<b>\$ 3,720</b>	<b>\$ 19,200</b>	<b>\$ -</b>
<b>Total General Facilities Charge per ERU</b>	<b>\$ 4,020</b>	<b>\$ 17,800</b>	<b>\$ 2,340</b>	<b>\$ 5,500</b>	<b>\$ 21,390</b>	<b>\$ 2,560</b>

The report issued in March 2006 recommended that the District adopt a GFC of \$4,020 per ERU, based on the average cost methodology. The current analysis retains this recommendation at least in principle – however, the recommended GFC increases to \$5,500 per ERU based on revised capital cost estimates. In both the current and prior forecasts, the average cost GFC represents a significant increase over the District’s current GFC – such an increase might hinder the expected near-term growth, possibly leading to resistance from developers. However, allowing growth to occur without paying this share of system costs will result in rates bearing a greater share of the financial burden. Consequently, while the District may want to consider a phasing strategy to increase the GFC to the recommended level over the course of a few years, an immediate increase in the GFC would best mitigate future rate impacts.

The current analysis assumes that the average cost GFC of \$5,500 per ERU is implemented in 2007 and is adjusted annually for inflation (since the GFC calculation can only include costs in current dollars, yet the costs that the District will actually incur will generally be higher due to inflation). Given these assumptions and the previously discussed differences in customer growth forecasts, the GFC revenue forecast is notably



higher in the current analysis than it was in the prior analysis. The current forecast indicates that the District will collect about \$868,000 in GFC revenue between 2007 and 2012, compared to roughly \$360,000 in the prior analysis for the same period.

### **C. Rate Revenue Requirement**

The next step is to determine the adjustment to water rates that would be needed in order to fully cover the projected operating and capital expenses, to the degree that they exceed the available non-rate revenues. The “revenue requirement,” or amount of revenue that the District needs to generate, is determined using a set of revenue sufficiency tests:

#### **Sufficiency Test # 1: Cash Flow**

The cash flow test identifies the District’s annual cash needs during the study period:

- Capital needs are identified and a funding strategy is established – this strategy includes the use of debt, cash reserves, outside assistance, and rate funding.
- Cash requirements to be funded from rates are then determined – they include O&M expenses, debt service, depreciation funding or directly funded capital outlays, and any additions to specified reserve balances.

The total annual cash needs of the water utility are then compared to projected cash revenues using the currently adopted rate structure – water rates are adjusted as appropriate to cover any projected revenue shortfalls under the premise that rates should be set as low as possible while providing for the ongoing operations, maintenance, repair, replacement, capital improvements and general business of the water utility.

#### **Sufficiency Test # 2: Debt Service Coverage**

The coverage test is based on a commitment that the District makes when issuing revenue bonds. As a security condition of issuance, the District agrees that revenue bonds have a high priority for payment (a senior lien) compared to most other utility expenditures – the only outlays with a higher lien are operating and maintenance expenses. Annual coverage above the debt service payment is a requirement of revenue bonds and some other long-term debt issuance, and acts as a form of cushion or securitization for the bondholders against poor financial performance. Coverage is expressed as a multiplier – for example, a 1.25 coverage factor means that revenues must be sufficient to pay operating expenses, annual revenue bond debt service, plus an additional 25% of annual revenue bond debt service. The prior analysis assumed a coverage requirement of 1.25 for revenue bond debt service; the current analysis retains the same policy.

Both of these tests must be satisfied in order for water rates to be considered “sufficient.” The result is the total rate revenue requirement, which is shown below for 2007 – 2012.



Revenue Sufficiency Tests	2007	2008	2009	2010	2011	2012
<b>Cash Flow Sufficiency Test</b>						
<b>Revenues</b>						
Water Rate Revenue	\$ 703,331	\$ 703,331	\$ 703,331	\$ 703,331	\$ 703,331	\$ 703,331
Other Revenues	32,590	32,696	32,802	32,910	33,019	33,128
Operating Reserve Interest Earnings	5,305	7,280	8,786	11,411	11,275	11,843
Direct Use of Bond Reserve For Debt Service	73,570	-	-	-	-	-
<b>Total</b>	<b>\$ 814,796</b>	<b>\$ 743,307</b>	<b>\$ 744,920</b>	<b>\$ 747,652</b>	<b>\$ 747,624</b>	<b>\$ 748,302</b>
<b>Operating Expenses</b>						
GVWD Water Purchases	\$ 361,000	\$ 446,036	\$ 507,958	\$ 535,948	\$ 557,418	\$ 580,578
Other Cash Operating Expenses	450,952	425,180	436,924	449,021	465,848	475,749
<b>Total</b>	<b>\$ 811,952</b>	<b>\$ 871,216</b>	<b>\$ 944,882</b>	<b>\$ 984,969</b>	<b>\$ 1,023,266</b>	<b>\$ 1,056,328</b>
<b>Capital Expenses</b>						
Debt Service	\$ 81,207	\$ 122,787	\$ 157,717	\$ 277,095	\$ 398,201	\$ 516,580
Depreciation Funding	57,503	54,002	75,189	144,721	151,683	158,946
Rate-Funded Capital Expenditures	-	-	-	-	-	-
<b>Total</b>	<b>\$ 138,711</b>	<b>\$ 176,788</b>	<b>\$ 232,906</b>	<b>\$ 421,815</b>	<b>\$ 549,884</b>	<b>\$ 675,526</b>
<b>Total Expenses</b>	<b>\$ 950,662</b>	<b>\$ 1,048,005</b>	<b>\$ 1,177,788</b>	<b>\$ 1,406,784</b>	<b>\$ 1,573,150</b>	<b>\$ 1,731,854</b>
<b>Cash Flow Surplus (Deficit)</b>	<b>\$ (135,866)</b>	<b>\$ (304,698)</b>	<b>\$ (432,868)</b>	<b>\$ (659,132)</b>	<b>\$ (825,525)</b>	<b>\$ (983,551)</b>
<b>Coverage Sufficiency Test</b>						
<b>Revenues</b>						
Water Rate Revenue	\$ 703,331	\$ 703,331	\$ 703,331	\$ 703,331	\$ 703,331	\$ 703,331
Other Revenues	32,590	32,696	32,802	32,910	33,019	33,128
Interest Earnings (All Reserves)	9,298	49,750	19,164	30,374	43,463	52,265
Connection Charges	868,137	-	-	-	-	-
<b>Total</b>	<b>\$ 1,613,356</b>	<b>\$ 785,777</b>	<b>\$ 755,297</b>	<b>\$ 766,615</b>	<b>\$ 779,813</b>	<b>\$ 788,724</b>
<b>Operating Expenses</b>						
GVWD Water Purchases	\$ 361,000	\$ 446,036	\$ 507,958	\$ 535,948	\$ 557,418	\$ 580,578
Taxes	426,289	412,820	424,193	435,908	447,974	460,402
<b>Total</b>	<b>\$ 787,289</b>	<b>\$ 858,856</b>	<b>\$ 932,151</b>	<b>\$ 971,856</b>	<b>\$ 1,005,392</b>	<b>\$ 1,040,980</b>
Debt Service Requiring Coverage	\$ 73,570	\$ 115,286	\$ 150,352	\$ 269,867	\$ 391,109	\$ 509,625
Additional Coverage Required	\$ 18,393	\$ 28,821	\$ 37,588	\$ 67,467	\$ 97,777	\$ 127,406
Coverage Ratio Realized	11.23	(0.63)	(1.18)	(0.76)	(0.58)	(0.49)
<b>Coverage Surplus (Deficit)</b>	<b>\$ 734,105</b>	<b>\$ (217,187)</b>	<b>\$ (364,794)</b>	<b>\$ (542,574)</b>	<b>\$ (714,466)</b>	<b>\$ (889,287)</b>
<b>Water Rate Adjustments</b>						
Maximum Revenue Deficit (Minimum Surplus)	\$ 135,866	\$ 304,698	\$ 432,868	\$ 659,132	\$ 825,525	\$ 983,551
Less: Net Revenue From Prior Adjustments	-	(161,766)	(334,786)	(490,503)	(669,578)	(875,515)
Plus: Adjustment For Incremental Taxes	7,195	16,135	22,922	34,903	43,714	52,082
<b>Net Revenue Adjustment Required</b>	<b>\$ 143,061</b>	<b>\$ 159,066</b>	<b>\$ 121,004</b>	<b>\$ 203,532</b>	<b>\$ 199,661</b>	<b>\$ 160,119</b>
Rate Revenue Requirement	\$ 846,392	\$ 1,024,164	\$ 1,159,121	\$ 1,397,367	\$ 1,572,571	\$ 1,738,965
Annual Rate Adjustment Required	20.34%	18.39%	11.66%	17.05%	14.54%	10.14%
<b>Annual Rate Adjustment Implemented</b>	<b>23.00%</b>	<b>20.00%</b>	<b>15.00%</b>	<b>15.00%</b>	<b>15.00%</b>	<b>11.00%</b>
<b>Cumulative Rate Adjustment Implemented</b>	<b>23.00%</b>	<b>47.60%</b>	<b>69.74%</b>	<b>95.20%</b>	<b>124.48%</b>	<b>149.17%</b>
<b>Post-Adjustment Summary:</b>						
Water Rate Revenue	\$ 865,097	\$ 1,038,117	\$ 1,193,834	\$ 1,372,909	\$ 1,578,846	\$ 1,752,519
Net Cash Flow	\$ 30,428	\$ 13,251	\$ 32,968	\$ (23,227)	\$ 10,328	\$ 14,309
Net Cash Flow Attributable to Reserve Requirements	\$ 12,663	\$ -	\$ -	\$ -	\$ 4,368	\$ 1,436
<i>Operating Reserve Ending Balance</i>	<i>\$ 182,002</i>	<i>\$ 195,254</i>	<i>\$ 228,222</i>	<i>\$ 204,994</i>	<i>\$ 215,322</i>	<i>\$ 229,631</i>
<i>Operating Reserve Minimum Balance</i>	<i>\$ 164,237</i>	<i>\$ 179,017</i>	<i>\$ 194,154</i>	<i>\$ 202,391</i>	<i>\$ 209,363</i>	<i>\$ 216,758</i>
Coverage Surplus (Deficit)	\$ 888,677	\$ 101,464	\$ 102,787	\$ 92,101	\$ 117,335	\$ 107,819
Coverage Ratio Realized	13.33	2.13	1.93	1.59	1.55	1.46

The prior analysis developed a strategy to manage rate increases with available reserves, and the current analysis similarly assumes that the District's operating reserves are used

to smooth the projected increases. The recommended near-term rate strategy is presented below, along with the strategy from the prior analysis for comparative purposes:

Water Rate Adjustments	2007	2008	2009	2010	2011	2012
<i>Prior Analysis:</i>						
Annual Rate Adjustment	24.5%	24.5%	8.7%	8.7%	8.7%	8.7%
Cumulative Rate Adjustment	24.5%	55.0%	68.5%	83.1%	99.1%	116.4%
<i>Current Analysis:</i>						
Annual Rate Adjustment	23.0%	20.0%	15.0%	15.0%	15.0%	11.0%
Cumulative Rate Adjustment	23.0%	47.6%	69.7%	95.2%	124.5%	149.2%

In the current analysis, the initial rate adjustments can be lower than what was originally projected because cash operating expenses decreased overall from the prior forecast (primarily the estimated water purchase costs, with some offsetting increases in other areas). Another noteworthy consideration is that the current analysis has a higher GFC revenue forecast (due to accelerated growth and a higher charge), which significantly offsets the projected debt service in the earliest years.

Note that the revenue requirement in the current analysis increases substantially beginning in 2010, when the collected GFC revenue has been used and is no longer available to help mitigate the increased debt service associated with the revised CIP. The cumulative impact to rates by 2012 is higher in the current analysis than the prior analysis because of increased water purchase and debt service costs, along with the fact that the initial increases were smaller than originally projected. The revenue requirement projections indicate that the District will need about \$1.75 million per year in rate revenue in order to cover its expenses and comply with the recommended policies – this represents a notable increase over the prior forecast, which identified roughly \$1.50 million in rate revenue needs by 2012.

## II. Cost-of-Service Analysis & Rate Design

While the revenue requirement analysis determines the amount of revenue that water rates must generate, it says nothing about how water rates should collect that revenue from the District’s water customers. The cost-of-service analysis is intended to provide an analytical basis for recovering the forecasted revenue requirements from customer classes according to the demand that they place on the system. The American Water Works Association (AWWA) defines a two-step process for allocating costs:

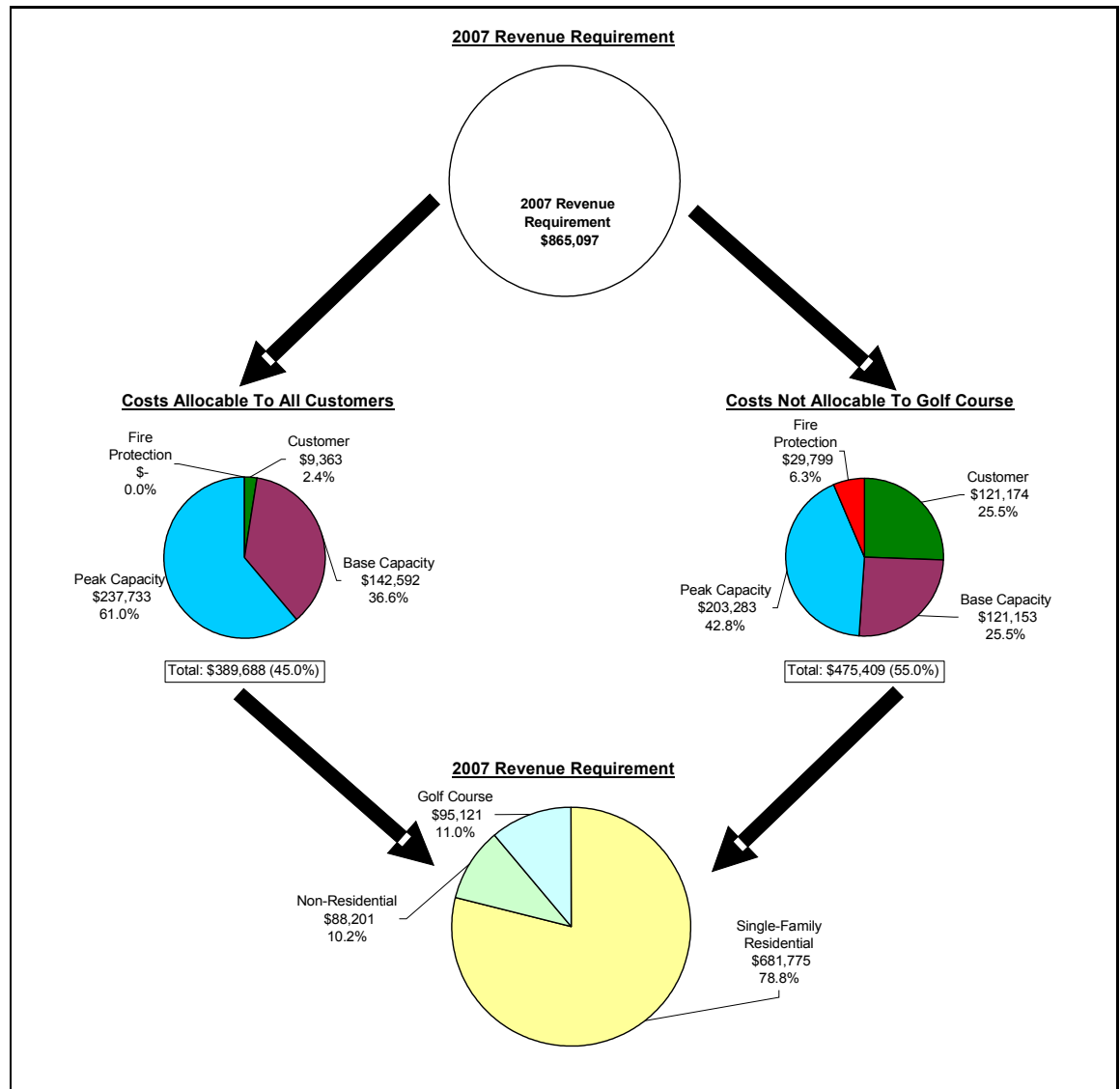
1. First, capital and O&M costs are allocated to applicable functional categories. Functions of service relevant to a water utility include:
  - **Customer** costs are associated with providing services to customers regardless of the amount of water used – such costs include billing, meter reading, and office support. These costs are typically associated with the number of customer accounts.

- **Base Capacity** costs tend to vary with the amount of water produced, such as source of supply, chemical, power, etc., and are associated with meeting a constant, or average, annual rate of use.
  - **Extra (Peak) Capacity** costs are associated with providing facilities to meet the extra capacity needs of the system during peak demand periods.
  - **Fire Protection** costs are related to the provision of fire service – this pertains to storage, pumping, transmission, and hydrants. *Note: when the water system meets fire flow standards, all customers benefit by improved fire ratings and cost savings in lower fire insurance.*
2. Then, based on customer class demand characteristics, functional costs would be distributed to customer classes according to the relative demands that they place on the system.

In the cost-of-service analysis, the 2007 revenue requirement is split into two subsets before being allocated to customers. One subset includes costs that are allocable to all customers; the other subset includes only costs that are not allocable to the golf course. In summary,

- Purchased water costs are allocable to all customers, including the golf course.
- Costs that are not allocable to the golf course include costs allocated to fire protection (irrigation meters do not receive fire protection service) and excise taxes (irrigation revenues are not subject to taxation).
- A share of the other operating expenses is included in the pool of costs allocable to all customers – the share is defined by the ratio of the length of mains serving the golf course to the total length of mains in the District’s system (20,000 feet / 236,721 feet, or about 8.45%).
- A share of capital expenditures is included in the pool of costs allocable to all customers – the share is based on projected capital costs over a rolling ten-year period. Projects benefiting the golf course include a meter replacement program and long-term pipe replacement program. The golf course’s allocated share of projected capital costs over the next ten years is approximately 1.37% of the total projected capital expenditures.

The revised cost allocations are summarized below.



The diagram above represents the full cost-of-service-based allocation of the 2007 revenue requirement to each customer class. This method of cost allocation results in a significant shift in cost recovery from the District’s residential customers to its non-residential customers. The cost-of-service analysis indicates that the District’s non-residential customers (including the golf course) should be paying significantly more than they have been under the District’s existing rate structure. In the case of the golf course, the existing rate structure does not fully account for the peak period demands that the golf course imposes on the District’s water system; other non-residential customers are allocated a greater share of costs based on their share of equivalent residential units (based on meter size and flow capacity), total water demand, and total fire protection requirements. The prior analysis developed a three-year phase-in strategy to mitigate rate impacts to the District’s non-residential customers – the current analysis assumes the continuation of this strategy, attaining the full cost-of-service allocations by 2008.

### Rate Design

The cost-of-service analysis determines an appropriate allocation of costs to customer classes based on their service needs and characteristics (as defined by the customer data collected and maintained by the District). Once the cost allocation has been determined, the next step is to design a set of water rates that will recover those costs from the District's water customers. Key considerations include:

- **Practicality:** How easy is the proposed rate structure to implement? Are there any limitations attributable to political or other qualitative considerations?
- **Equity:** How well does the proposed rate structure achieve its goal of recovering costs from customers based on the demands that they place on the system?
- **Effectiveness:** How well does the proposed rate structure achieve the District's policy goals (encouraging water conservation, ensuring revenue stability and the financial integrity of the utility)?

From a practicality standpoint, the District's existing water rate structure is fairly simple to implement and explain. All customers pay a fixed bimonthly charge (that depends on their meter size and customer class) and a volume charge based on their water usage. In the case of single-family residential customers (and duplexes, triplexes, and quadplexes), the volume charge structure consists of several volume thresholds, each of which has its own rate per hundred cubic feet (ccf). Multi-family residential and commercial customers, along with the golf course, pay a uniform volume charge for all of their water usage.

As previously noted, the results of the cost-of-service analysis would suggest that the equity of the current rate structure could be improved by shifting cost recovery from single-family residential customers to the District's other customers. Given that a direct shift to cost-of-service rates might not be practical because of the impacts to non-residential customers, the analysis proposes a transitional structure to move toward enhanced rate equity.

As far as effectiveness is concerned, the existing structure provides for relatively stable revenue generation – this is prudent from a financial planning standpoint, as the District serves a number of transient customers and consequently faces a substantial amount of revenue risk (particularly during the winter months). The existing rate structure derives about 22% of its revenue from volume charges, indicating that it provides at least a moderate incentive to conserve water without jeopardizing the fiscal well-being of the District's water utility. The District's reserves provide a way to mitigate the risk associated with recovering costs through variable user charges.

Given the District's projected revenue needs and the results of the cost-of-service allocations, along with the rate design considerations discussed above, the proposed near-term rate strategy is shown below.

Near-Term (2007 - 2012) Water Rate Strategy	Existing 2006	Proposed 2007	Proposed 2008	For Planning Purposes Only			
				2009	2010	2011	2012
<b>Single-Family Residential &amp; Multi-Family (2 - 4 Units)</b>							
Fixed Bimonthly Charge:							
5/8" & 3/4"	\$ 40.28	\$ 46.76	\$ 53.01	\$ 60.97	\$ 70.11	\$ 80.63	\$ 89.50
1"	\$ 55.14	\$ 63.93	\$ 72.38	\$ 83.23	\$ 95.72	\$ 110.08	\$ 122.19
1-1/2"	\$ 70.00	\$ 81.10	\$ 91.74	\$ 105.50	\$ 121.33	\$ 139.53	\$ 154.88
2"	\$ 78.56	\$ 90.98	\$ 102.88	\$ 118.31	\$ 136.05	\$ 156.46	\$ 173.67
Volume Charge per ccf (1):							
Block One (0 - 5 ccf) <i>(Allowance Included In Fixed Charge)</i>	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Block Two (6 - 14 ccf)	\$ 1.00	\$ 1.23	\$ 1.48	\$ 1.70	\$ 1.95	\$ 2.24	\$ 2.49
Block Three (15 - 40 ccf)	\$ 1.35	\$ 1.66	\$ 1.99	\$ 2.29	\$ 2.64	\$ 3.03	\$ 3.36
Block Four (> 40 ccf)	\$ 2.40	\$ 2.95	\$ 3.54	\$ 4.07	\$ 4.68	\$ 5.39	\$ 5.98
(1) Volume thresholds shown apply to each bimonthly billing period							
<b>Multi-Family (&gt; 4 Units) &amp; Commercial</b>							
Fixed Bimonthly Charge:							
5/8" & 3/4"	\$ 55.00	\$ 78.49	\$ 124.27	\$ 142.91	\$ 164.34	\$ 188.99	\$ 209.78
1"	\$ 66.29	\$ 108.35	\$ 172.13	\$ 197.95	\$ 227.64	\$ 261.79	\$ 290.59
1-1/2"	\$ 84.34	\$ 138.22	\$ 220.00	\$ 252.99	\$ 290.94	\$ 334.59	\$ 371.39
2"	\$ 94.71	\$ 155.39	\$ 247.52	\$ 284.65	\$ 327.34	\$ 376.44	\$ 417.85
3"	\$ 179.09	\$ 294.99	\$ 471.28	\$ 541.98	\$ 623.27	\$ 716.76	\$ 795.61
4"	\$ 499.44	\$ 825.04	\$ 1,320.88	\$ 1,519.01	\$ 1,746.86	\$ 2,008.89	\$ 2,229.87
6"	\$ 634.80	\$ 1,049.00	\$ 1,679.86	\$ 1,931.84	\$ 2,221.62	\$ 2,554.86	\$ 2,835.90
8"	\$ 950.64	\$ 1,571.59	\$ 2,517.49	\$ 2,895.12	\$ 3,329.38	\$ 3,828.79	\$ 4,249.96
Volume Charge per ccf	\$ 1.30	\$ 2.09	\$ 2.95	\$ 3.39	\$ 3.90	\$ 4.49	\$ 4.98
<b>Golf Course</b>							
Fixed Bimonthly Charge	\$ 227.04	\$ 361.76	\$ 513.54	\$ 590.57	\$ 679.15	\$ 781.03	\$ 866.94
Volume Charge per ccf	\$ 1.30	\$ 2.09	\$ 2.95	\$ 3.39	\$ 3.90	\$ 4.49	\$ 4.98

Proposed phased cost-of-service rates are shown for 2007 and 2008 – rate adjustments for 2009 – 2012 are shown for planning purposes only, and reflect uniform adjustments (15.0% per year from 2009 – 2011, 11.0% in 2012) to the 2008 rates. Sample bill impacts are shown below.

Sample Bimonthly Bill Impacts	Existing	Proposed	Proposed	For Planning Purposes Only			
	2006	2007	2008	2009	2010	2011	2012
<b>Single-Family Residential (5/8" Meter):</b>							
Winter Average Usage: 4.62 ccf per Billing Cycle	\$ 40.28	\$ 46.76	\$ 53.01	\$ 60.97	\$ 70.11	\$ 80.63	\$ 89.50
Annual Average Usage: 7.51 ccf per Billing Cycle	\$ 42.79	\$ 49.85	\$ 56.72	\$ 65.23	\$ 75.02	\$ 86.27	\$ 95.76
Summer Average Usage: 13.31 ccf per Billing Cycle	\$ 48.59	\$ 56.98	\$ 65.27	\$ 75.06	\$ 86.32	\$ 99.27	\$ 110.19
Percent Change In Annual Average Bimonthly Bill		16.5%	13.8%	15.0%	15.0%	15.0%	11.0%
<b>Single-Family Residential (1" Meter):</b>							
Winter Average Usage: 4.62 ccf per Billing Cycle	\$ 55.14	\$ 63.93	\$ 72.38	\$ 83.23	\$ 95.72	\$ 110.08	\$ 122.19
Annual Average Usage: 7.51 ccf per Billing Cycle	\$ 57.65	\$ 67.02	\$ 76.09	\$ 87.50	\$ 100.62	\$ 115.72	\$ 128.45
Summer Average Usage: 13.31 ccf per Billing Cycle	\$ 63.45	\$ 74.15	\$ 84.64	\$ 97.33	\$ 111.93	\$ 128.72	\$ 142.88
Percent Change In Annual Average Bimonthly Bill		16.3%	13.5%	15.0%	15.0%	15.0%	11.0%
<b>Single-Family Residential (2" Meter):</b>							
Winter Average Usage: 4.62 ccf per Billing Cycle	\$ 78.56	\$ 90.98	\$ 102.88	\$ 118.31	\$ 136.05	\$ 156.46	\$ 173.67
Annual Average Usage: 7.51 ccf per Billing Cycle	\$ 81.07	\$ 94.07	\$ 106.58	\$ 122.57	\$ 140.96	\$ 162.10	\$ 179.93
Summer Average Usage: 13.31 ccf per Billing Cycle	\$ 86.87	\$ 101.19	\$ 115.13	\$ 132.41	\$ 152.27	\$ 175.11	\$ 194.37
Percent Change In Annual Average Bimonthly Bill		16.0%	13.3%	15.0%	15.0%	15.0%	11.0%
<b>Non-Residential (5/8" Meter):</b>							
Winter Average Usage: 8.4 ccf per Billing Cycle	\$ 65.92	\$ 96.02	\$ 149.06	\$ 171.42	\$ 197.13	\$ 226.70	\$ 251.64
Annual Average Usage: 11.21 ccf per Billing Cycle	\$ 69.57	\$ 101.86	\$ 157.33	\$ 180.93	\$ 208.07	\$ 239.28	\$ 265.60
Summer Average Usage: 16.81 ccf per Billing Cycle	\$ 76.86	\$ 113.56	\$ 173.88	\$ 199.96	\$ 229.95	\$ 264.44	\$ 293.53
Percent Change In Annual Average Bimonthly Bill		46.4%	54.5%	15.0%	15.0%	15.0%	11.0%
<b>Non-Residential (1" Meter):</b>							
Winter Average Usage: 8.4 ccf per Billing Cycle	\$ 77.21	\$ 125.88	\$ 196.92	\$ 226.46	\$ 260.43	\$ 299.50	\$ 332.44
Annual Average Usage: 11.21 ccf per Billing Cycle	\$ 80.85	\$ 131.73	\$ 205.20	\$ 235.98	\$ 271.37	\$ 312.08	\$ 346.41
Summer Average Usage: 16.81 ccf per Billing Cycle	\$ 88.14	\$ 143.42	\$ 221.74	\$ 255.00	\$ 293.25	\$ 337.24	\$ 374.34
Percent Change In Annual Average Bimonthly Bill		62.9%	55.8%	15.0%	15.0%	15.0%	11.0%
<b>Non-Residential (1-1/2" Meter):</b>							
Winter Average Usage: 8.4 ccf per Billing Cycle	\$ 95.26	\$ 155.74	\$ 244.79	\$ 281.51	\$ 323.73	\$ 372.29	\$ 413.24
Annual Average Usage: 11.21 ccf per Billing Cycle	\$ 98.90	\$ 161.59	\$ 253.06	\$ 291.02	\$ 334.67	\$ 384.87	\$ 427.21
Summer Average Usage: 16.81 ccf per Billing Cycle	\$ 106.19	\$ 173.28	\$ 269.61	\$ 310.05	\$ 356.55	\$ 410.04	\$ 455.14
Percent Change In Annual Average Bimonthly Bill		63.4%	56.6%	15.0%	15.0%	15.0%	11.0%
<b>Non-Residential (2" Meter):</b>							
Winter Average Usage: 8.4 ccf per Billing Cycle	\$ 105.64	\$ 172.91	\$ 272.31	\$ 313.16	\$ 360.13	\$ 414.15	\$ 459.71
Annual Average Usage: 11.21 ccf per Billing Cycle	\$ 109.28	\$ 178.76	\$ 280.58	\$ 322.67	\$ 371.07	\$ 426.73	\$ 473.67
Summer Average Usage: 16.81 ccf per Billing Cycle	\$ 116.57	\$ 190.45	\$ 297.13	\$ 341.70	\$ 392.95	\$ 451.89	\$ 501.60
Percent Change In Annual Average Bimonthly Bill		63.6%	57.0%	15.0%	15.0%	15.0%	11.0%
<b>Golf Course (4" Meter):</b>							
Winter Average Usage: 71.53 ccf per Billing Cycle	\$ 320.03	\$ 510.95	\$ 724.62	\$ 833.31	\$ 958.30	\$ 1,102.05	\$ 1,223.28
Annual Average Usage: 247.05 ccf per Billing Cycle	\$ 548.21	\$ 877.04	\$ 1,242.57	\$ 1,428.95	\$ 1,643.30	\$ 1,889.79	\$ 2,097.67
Summer Average Usage: 598.1 ccf per Billing Cycle	\$ 1,004.57	\$ 1,609.23	\$ 2,278.47	\$ 2,620.24	\$ 3,013.28	\$ 3,465.27	\$ 3,846.45
Percent Change In Annual Average Bimonthly Bill		60.0%	41.7%	15.0%	15.0%	15.0%	11.0%

**Recommendations:** Specific recommendations stemming from the 2007 Water Rate & GFC Update include:

- Increase the District’s water GFC per equivalent residential unit from \$1,500 to \$5,500. This action will ensure that new customers pay for their fair share of the cumulative investment made in the system, as defined by the “average cost” method of GFC computation.
- Adopt and implement the water rates proposed for 2007 and 2008. These rates will help the District’s water utility meet its near-term financial obligations while enhancing the equity of the District’s water rates given the differing service characteristics and needs of the District’s water customers. We recommend re-evaluating the District’s post-2008 revenue needs at a later time, when more information is available. In particular, the progress of the reservoir’s construction will be a key consideration in determining future rate responses as it determines when the District will be able to accommodate additional customers. It is important to note that the rate recommendations presented in this memo are at



least partially based on developer-provided growth projections – significant deviations from these projections could have a material impact on the sufficiency of the proposed near-term rate strategy.

- Based on discussions with District staff, we recommend some revisions to the District’s excise tax reporting practices to ensure compliance with applicable tax laws. In particular,

Water sales revenue is generally subject to public utility tax at 5.029%. The District already deducts what it receives from the golf course for irrigation, but should include RVS (billing adjustment) revenue and fees for activities that are incidental to providing water service to existing customers (meter shut-off fees, fees for replacing or repairing existing meters and mains, etc.) in the measure of tax.

Sewer sales revenue is subject to public utility tax at 3.852% to the extent that it is attributable to wastewater collection. Revenue attributable to related business activities (transmission, treatment, disposal, etc.) is subject to tax at a lower rate (1.5%) under the “Service & Other Activities” classification. The District has not historically split its sewer revenue between these two tax categories – while this practice would not materially impact the District given the current magnitude of its sewer revenue, it is worth noting the correct reporting practice in case the District’s sewer revenue increases materially in the future.

Late fees and other miscellaneous revenues not discussed above are subject to tax at 1.5% under the “Service & Other Activities” classification. Amounts received from new customers prior to the receipt of regular utility service (general facilities charges, meter installation fees) are also subject to tax at 1.5%.

- Continue phasing in the policy of rate-funded system reinvestment developed during the prior analysis. While changing financial conditions may alter the specific amounts that the District is able to dedicate to system reinvestment, it is important for the District to continue funding system reinvestment as part of a prudent long-term financial plan. Consistent with the prior analysis, the target funding level is based on the District’s annual (original cost) depreciation expense net of debt principal repayment.