

Water, Wastewater and Irrigation Impact Fee Study

City of Cape Coral, Florida



Prepared by

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EXECUTIVE SUMMARY

This study calculates maximum impact fees that the City of Cape Coral can charge based on the existing levels of service for its major potable water, wastewater and irrigation water facilities. The City's current impact fee schedules for water, wastewater and irrigation were last updated in January 2005 based on an impact fee analysis conducted in 2004.¹

The maximum potential fees calculated in this report for the water and irrigation facilities for the two residential types and by nonresidential meter size are shown in Table 1. The City can charge less than 100 percent of the full amount, as long as the fees are reduced proportionately for all land uses and meter sizes. Note that potable water impact fees are higher for non-irrigation customers. The schedule shown below assumes that the City will reduce irrigation impact fees by 7.438 percent, so that the combined water/irrigation impact fee for irrigation customers is equal to the water impact fee for non-irrigation customers.

Table 1
POTENTIAL WATER AND IRRIGATION IMPACT FEE SUMMARY

Land Use Type	Water Customers Only	Water & Irrigation Customers		
		Water	Irrigation	Both
Single-Family Detached	\$3,361	\$2,241	\$1,120	\$3,361
Multi-Family	\$2,319	\$1,546	\$773	\$2,319
Nonresidential, 5/8"x3/4" Meter	\$3,361	\$2,241	\$1,120	\$3,361
Nonresidential, 1" Meter	\$8,403	\$5,603	\$2,800	\$8,403
Nonresidential, 1-1/2" Meter	\$16,805	\$11,205	\$5,600	\$16,805
Nonresidential, 2" Meter	\$26,888	\$17,928	\$8,960	\$26,888
Nonresidential, 3" Meter	\$53,776	\$35,856	\$17,920	\$53,776
Nonresidential, 4" Meter	\$84,025	\$56,025	\$28,000	\$84,025
Nonresidential, 6" Meter	\$168,050	\$112,050	\$56,000	\$168,050
Nonresidential, 8" Meter	\$268,880	\$179,280	\$89,600	\$268,880
Nonresidential, 10" Meter	\$386,515	\$257,715	\$128,800	\$386,515
Nonresidential, 12' Meter	\$520,955	\$347,355	\$173,600	\$520,955

Source: Potential fees for water and irrigation facilities from Tables 22 and 37 (irrigation fee shown is 0.92562 times maximum irrigation fee calculated in this report).

The maximum potential fees calculated in this report for wastewater facilities are shown in Table 2. The fees in future utility expansion areas (District 2) would be higher to cover the costs of local facilities, which are paid for by property assessments in existing utility service areas (District 1). In the event that developers in District 2 install local facilities, defined as force mains less than 10 inches in diameter and associated lift stations, they would receive credit for the cost of the improvements.

¹Tetra Tech/Hartman & Associates, Inc., *City of Cape Coral, Water and Wastewater Impact Fee Study*, September 2004

Table 2
POTENTIAL WASTEWATER IMPACT FEE SUMMARY

Land Use Type	District 1 (Major Facilities Only)	District 2		
		Major	Local	Total
Single-Family Detached	\$1,775	\$1,775	\$1,614	\$3,389
Multi-Family	\$1,224	\$1,224	\$1,114	\$2,338
Nonresidential, 5/8"x3/4" Meter	\$1,775	\$1,775	\$1,614	\$3,389
Nonresidential, 1" Meter	\$4,437	\$4,437	\$4,035	\$8,472
Nonresidential, 1-1/2" Meter	\$8,873	\$8,873	\$8,070	\$16,943
Nonresidential, 2" Meter	\$14,197	\$14,197	\$12,912	\$27,109
Nonresidential, 3" Meter	\$28,394	\$28,394	\$25,824	\$54,218
Nonresidential, 4" Meter	\$44,366	\$44,366	\$40,350	\$84,716
Nonresidential, 6" Meter	\$88,731	\$88,731	\$80,700	\$169,431
Nonresidential, 8" Meter	\$141,970	\$141,970	\$129,120	\$271,090
Nonresidential, 10" Meter	\$204,082	\$204,082	\$185,610	\$389,692
Nonresidential, 12" Meter	\$275,067	\$275,067	\$250,170	\$525,237

Source: Potential fees from Table 47.

The potential changes to Cape Coral's water, wastewater and irrigation impact fees for single-family units are shown in Table 2. The change for nonresidential customers would be proportional to the change in single-family residential rates. Overall, total utility fees (with or without irrigation) would increase by 19 percent compared to the current fee schedule for customers in areas with property assessments for local wastewater lines (District 1). In new utility expansion areas (District 2), where impact fees would replace assessments for local wastewater lines, the fees would increase by 57 percent.

Table 3
POTENTIAL SINGLE-FAMILY IMPACT FEE INCREASE

	Current Fee	Potential Fee	Potential Increase	Percent Increase
Water Fee for Non-Irrigation Customer	\$2,571	\$3,361	\$790	31%
Water Fee for Irrigation Customer	\$1,714	\$2,241	\$527	31%
Irrigation Fee	\$857	\$1,120	\$263	31%
Combined Water and Irrigation Fee	\$2,571	\$3,361	\$790	31%
Wastewater Fee, District 1	\$1,738	\$1,775	\$37	2%
Wastewater Fee, District 2	\$1,738	\$3,389	\$1,651	95%
Total Utility Fee, District 1	\$4,309	\$5,136	\$827	19%
Total Utility Fee, District 2	\$4,309	\$6,750	\$2,441	57%

Source: Potential fees for water, wastewater and irrigation facilities from Tables 1 and 2; current fees from Cape Coral City Code, Article II, Division 2, Utility Capital Expansion Fee.

The potential fees for a single-family unit shown above are compared with average water and wastewater impact fees for single-family units adopted by other communities across the nation in Table 4. The City's combined potential utility fees are right at the national average. These fees do not include local wastewater facility costs, which are typically installed by developers in other communities.

Table 4
COMPARATIVE FEES PER SINGLE-FAMILY UNIT

Facility	City of Cape Coral	US Average
Potable Water*	\$2,241	\$2,671
Irrigation Water	\$1,120	n/a
Wastewater	\$1,775	\$2,588
Total	\$5,136	\$5,259

* for irrigation water customer

Source: Potential fees for City of Cape Coral from Table 3; national average fees from Duncan Associates survey of 222 communities, September 25, 2006.

INTRODUCTION

The purpose of this project is to assist the City of Cape Coral in updating its existing impact fees for potable water, wastewater and irrigation water facilities.

Background

The purpose of this study is to update the City of Cape Coral's water, wastewater and irrigation impact fees. These impact fees were last updated in 2005 based on the 2004 impact fee study. At the time of the 2004 study, the water fee for a single-family unit was \$864 and wastewater was \$1,572. The study calculated a maximum single-family fee of \$1,714 for water customers with irrigation (\$2,571 without irrigation) and \$1,738 for wastewater; in addition, the study calculated an irrigation fee of \$1,135. In 2005, the City Council implemented the recommended fee increases for water and wastewater and adopted an incentive pricing structure for irrigation with an irrigation fee of \$857. The irrigation fee was established to reflect the difference between the calculated water impact fee rates for irrigation customers and non-irrigation customers. The current fee schedule has been in effect since January 1, 2005.

Cape Coral is located on the Gulf of Mexico in southwest Florida. At 115 square miles, Cape Coral is the third largest city geographically in the state of Florida and is the twelfth largest city in population.

Impact fees are most appropriate for communities experiencing rapid growth. The City of Cape Coral continues to be one of the fastest growing cities in the country, according to the U.S. Census Bureau. The city's population grew 5.8 percent in the 12-month period ending July 1, 2003. This makes Cape Coral the fifth fastest-growing city in the nation with more than 100,000 people. During the last decade, the City's population grew by approximately 36 percent, higher than the rest of Lee County as well as the 24-percent growth experienced by the state as a whole.

Table 5
CITY AND COUNTY POPULATION GROWTH, 1990-2000

Jurisdiction	Population		% Growth 1990-2000	Annual Growth
	1990	2000		
Cape Coral	74,991	102,286	36.4%	3.15%
Rest of Lee County	260,122	338,602	30.2%	2.67%
Total Lee County	335,113	440,888	31.6%	2.78%

Source: 1990 and 2000 U.S. Census.

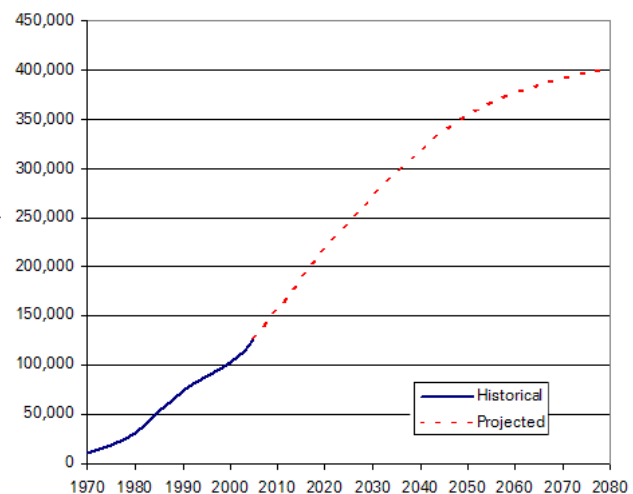
The City's rapid historical growth is projected to continue. As of January 2005, the City's permanent population was estimated to be 135,791. According to the City's growth model, the City's population is projected to reach 413,713 by 2080 (the City's anticipated build-out year). Future growth will not be linear, and the most rapid growth period will be during the next 30 years, with a doubling of the current population by 2030 (see Figure 1 below).

The City of Cape Coral is unique in that it was virtually entirely platted prior to incorporation in 1970. The vast majority of the City was pre-platted into 5,000 square foot lots (10,000 square foot standard building sites) for residential development by the Gulf American Corporation, the original developers of Cape Coral. Today, the City is still only about 42 percent developed, with most existing development in the southern part of the city (see Figure 2). However, the northern part of the city is now developing rapidly—an estimated 65 percent of new development is occurring north of Pine Island Road.

When the City of Cape Coral was incorporated in 1970, the City did not own a water and wastewater system. At the time, water and wastewater services were provided through a privately owned system and through individual wells and holding tanks. The City purchased the water and wastewater system in 1975, and major water treatment plant and transmission line expansions were undertaken in 1980 and 1985. Currently, less than half of the City's land area and approximately three-quarters of the population are served with potable water, irrigation water and wastewater collection. Most of the area north of Pine Island road is currently not served by City-owned utilities.

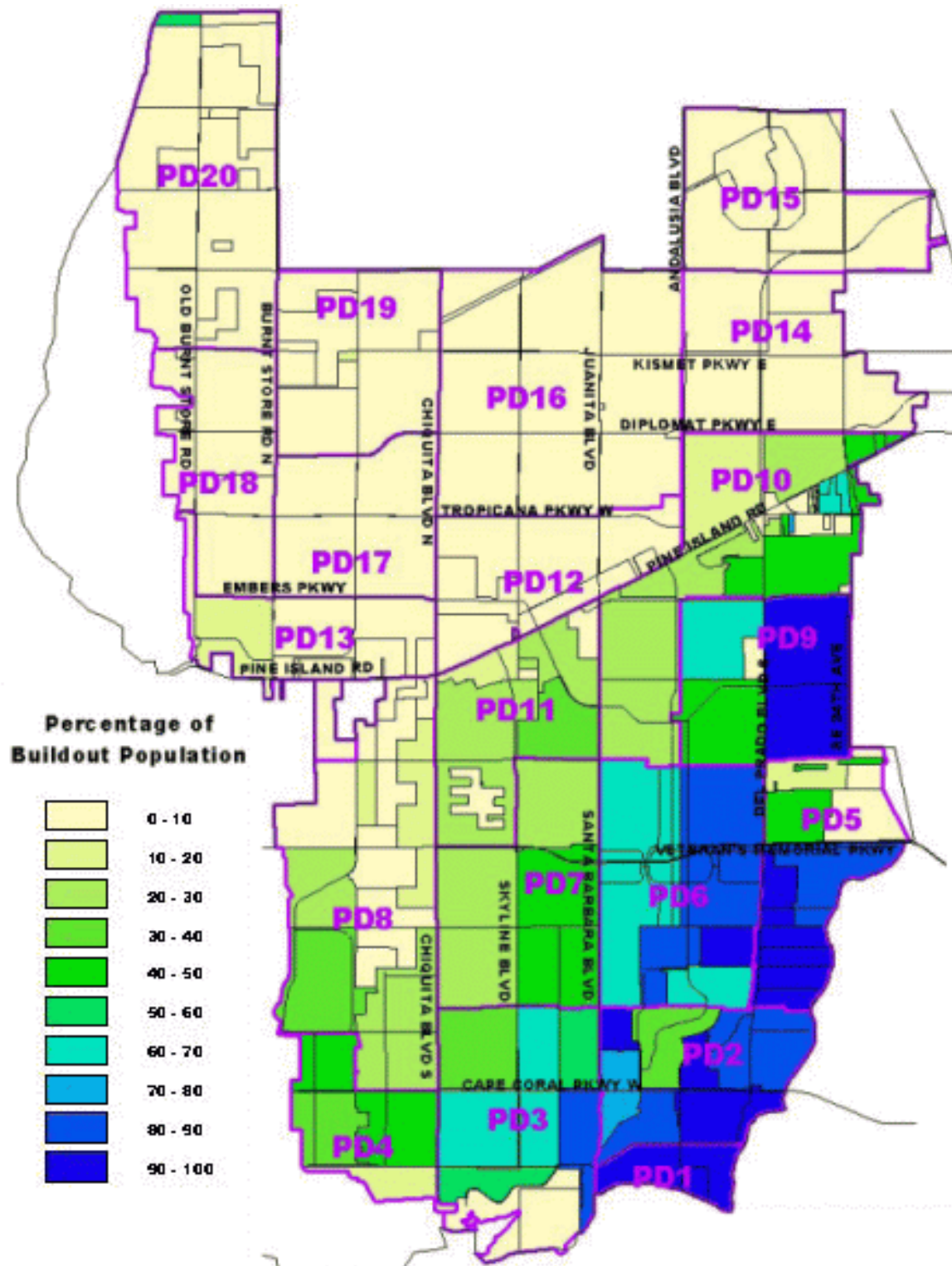
In recognition of the existing unmet demand for utility services and the City's rapid population growth, the City initiated a series of 5-year utility expansion programs. The first expansion program was completed in 2005. The current expansion program will provide water services to most of the areas south of Pine Island Road, and is scheduled for construction during a 5-year period from 2006 to 2010.² Future expansion plans may be implemented to provide service to areas north of Pine Island Road. A detailed listing of utility projects included in the current five-year Capital Improvements Program (CIP) are shown in Table 48 of the Appendix. The need for additional capacity-expanding improvements to the water, wastewater and irrigation systems is demonstrated by the fact that the City plans to spend over half a billion dollars on capital projects over the next five years. The current utility expansion plan and existing service areas are shown in Figure 3.

Figure 1
CITY POPULATION GROWTH, 1970-2080



²The current utility expansion program is based on MWH, *Facilities Planning Report for Cape Coral Water, Wastewater and Irrigation Facilities*, 2004.

Figure 2
PERCENT OF CITY POPULATION BUILD-OUT BY SUBAREA



The map displays the following water service areas and capacity changes:

- NORTH CAPE WRF**: NEW CAPACITY - 10 MGD
- NORTH CAPE RO WTP**: NEW CAPACITY - 12 MGD
- SOUTHWEST WRF**: CAPACITY INCREASE FROM 8.0 MGD - 15 MGD
- SOUTHWEST BIOSOLIDS**: SOLIDS DEWATERING 55 TONS/DAY
- SOUTHWEST RO WTP**: CAPACITY INCREASE FROM 14.7 - 17.8 MGD
- EVEREST WRF**: CAPACITY INCREASE FROM 8.5 MGD - 13.4 MGD

Key roads shown include: US HIGHWAY 1, US HIGHWAY 41, SANTA BARBARA BLVD, DIPLOMAT PKWY, TROPICANA PKWY, EMERALD PKWY, SW PINE ISLAND RD, TRAFALGAR PKWY, VETERANS PKWY, CHICKADEE BLVD, SKYLINE BLVD, GLEASON PKWY, CAPE CORAL PKWY, COUNTRY CLUB BLVD, DEL PRADO BLVD, EVEREST PKWY, HANCOCK BRIDGE PKWY, and DELICATOUS BLVD.

As shown in Table 6, the City's water and wastewater impact fee revenue has increased in each year since 2001 as the result of both general population growth and service area expansion. Revenue data for the irrigation fee prior to 2005 are not available since the fee was not implemented until January 2005.

Table 6
WATER, WASTEWATER AND IRRIGATION IMPACT FEE REVENUE

FY Ending 9/30:	Water	Wastewater	Irrigation	Total Revenue
2001	\$992,669	\$2,390,929	n/a	\$3,383,598
2002	\$1,589,244	\$2,685,375	n/a	\$4,274,619
2003	\$2,734,427	\$4,721,612	n/a	\$7,456,039
2004	\$3,157,994	\$5,248,345	n/a	\$8,406,339
2005	\$6,292,765	\$7,353,022	\$464,251	\$13,645,787

Source: 2001 through 2004 revenue from City of Cape Coral, *Comprehensive Financial Report, FY 2004*, September 2004; 2005 revenue from City of Cape Coral Finance Department, April 26, 2006.

Legal Framework

Impact fees are charges that are assessed on new development to help pay for the capital facility costs they impose on the community. Unlike other types of developer exactions, impact fees are based on a standard formula and a pre-determined fee schedule. Essentially, impact fees require that each new residential or commercial project pay its pro-rata share of the cost of new facilities required to serve that development.

Since impact fees were pioneered in states like Florida that lacked specific enabling legislation, such fees have generally been legally defended as an exercise of local government's broad "police power" to protect the health, safety and welfare of the community. The courts have gradually developed guidelines for constitutionally valid impact fees, based on a "rational nexus" that must exist between the regulatory fee or exaction and the development activity that is being regulated.³ The standards set by court cases generally require that an impact fee meet a two-part test:

- 1) The need for new facilities must be created by new development; and
- 2) The expenditure of impact fee revenues must provide benefit to the fee-paying development.

One of the most fundamental principles of impact fees, rooted in both case law and norms of equity, is that impact fees should not charge new development for a higher level of service than is provided to existing development. While impact fees can be based on a higher level of service than the one existing at the time of the adoption of the fees, two things are required if this is done. First, another source of funding other than impact fees must be identified and committed to fund the capacity deficiency created by the higher level of service. Second, the impact fees must generally be reduced to ensure that new

³There are six Florida cases that have guided the development of impact fees in the state: *Contractors and Builders Association of Pinellas County v. City of Dunedin*, 329 So.2d 314 (Fla. 1976); *Hollywood, Inc. v. Broward County*, 431 So.2d 606 (Fla. 1976); *Home Builders and Contractors Association of Palm Beach County, Inc. v. Board of County Commissioners of Palm Beach County*, 446 So.2d 140 (Fla. 4th DCA 1983); *Seminole County v. City of Casselberry*, 541 So.2d 666 (Fla. 5th DCA 1989); *City of Ormond Beach v. County of Volusia*, 535 So.2d 302 (Fla. 5th DCA 1988); and *St. Johns County v. Northeast Florida Builders Association*, 16 FLW S264 (April 18, 1991).

development does not pay twice for the same level of service, once through impact fees and again through general taxes that are used to remedy the capacity deficiency for existing development. In order to avoid these complications, our general practice is to base the impact fees on the existing level of service.

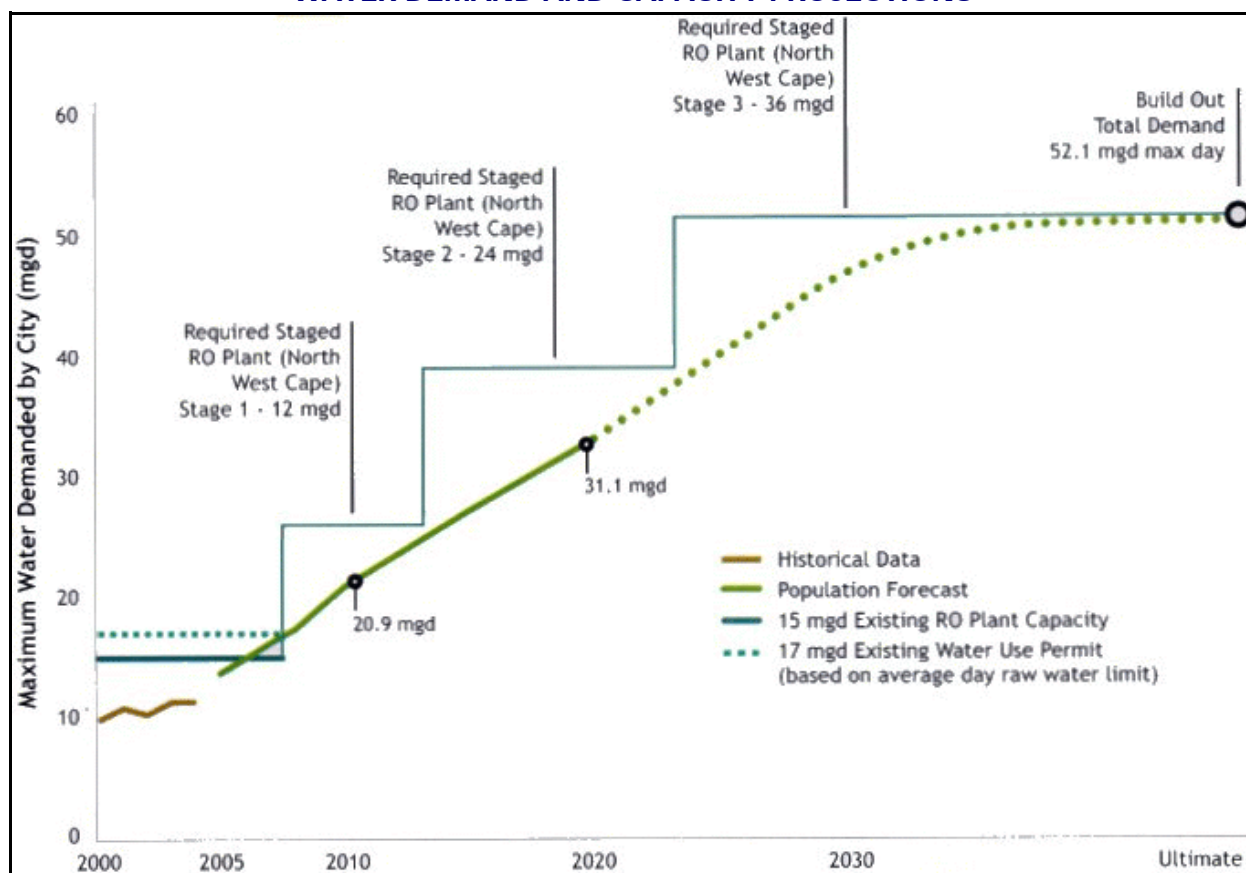
A corollary principle is that new development should not have to pay more than its proportionate share when multiple sources of payment are considered (this is often referred to as “paying twice”). As noted above, if impact fees are based on a higher-than-existing level of service, the fees should be reduced by a credit that accounts for the contribution of new development toward remedying the existing deficiencies. A similar situation arises when the existing level of service has not been fully paid by the municipality. Outstanding debt on existing facilities that are counted in the existing level of service will be retired, in part, by revenues generated from new development. Given that new development will pay impact fees to provide the existing level of service for itself, the fact that new development will also be paying for the facilities that provide that level of service for existing development amounts to paying more than its proportionate share. Consequently, impact fees need to be reduced to account for future tax payments that will retire outstanding debt on existing facilities.

The issue is less clear-cut when it comes to other types of revenue that may be used to make capacity-expanding capital improvements of the same type being funded by impact fees. Arguably, no credit is warranted, since, while new development may contribute toward such funding, so does existing development, and both existing and new development benefit from the higher level of service that the additional funding makes possible. For the facilities under consideration in this study, the only other significant source of revenue available to fund capacity-expanding improvements is utility rate revenue. The impact fees calculated in this report are sufficient to provide new development with the same level of service that existing development has already fully paid for. Any additional rate revenue spent on capacity-expanding improvements will increase the level of service for both existing and new development. Most of this rate revenue will come from existing customers, but some will come from new customers. However, both existing and new customers will benefit from the enhanced level of service. Consequently, no revenue credits are warranted for utility rate revenue, other than that used to retire outstanding debt.

WATER

According to the 2004 *Annual Report*, the City's water facilities include 26 raw water supply wells, six miles of raw transmission mains, the Southwest Reverse Osmosis Water Treatment Plant with a capacity of 15 million gallons per day (mgd), a brine disposal system, two storage and re-pump stations, and 656 miles of potable water mains.⁴ The water treatment plant is located in the southwest part of the city, and serves most of the area south of Pine Island Road. The City is in the process of expanding the facility, including the addition of eight new wells, to add 3.1 mgd of capacity. The City is also planning the construction of a new 12 mgd water treatment plant and wellfield in the north part of the city, to be completed in 2008. Most of the future growth in demand for potable water will be met by the North Cape Reverse Osmosis Water Treatment Plant, which is planned for an ultimate capacity of 36 mgd.

Figure 4
WATER DEMAND AND CAPACITY PROJECTIONS



⁴Tetra Tech/HAI, *City of Cape Coral Water and Wastewater Annual Report Fiscal Year 2004*, July 2005.

The City of Cape Coral experiences its heaviest potable water use during the winter months, when the City's seasonal population reaches its peak and its driest weather occurs, resulting in increased water demand for landscape watering from non-irrigation customers. The City currently charges new water customers a water impact fee that is based on the replacement cost of the existing system as calculated in the 2004 impact fee update. This approach to calculating impact fees is ideal for systems like Cape Coral that have very little excess capacity and require major capital costs in the near future to accommodate new customers. The rationale for using replacement costs, rather than depreciated replacement costs, is that one cannot build old facilities to serve new development—one must build new facilities and pay current costs for them. In this update, the water impact fees will be based on the most recent replacement cost data from the 2005-06 Capital Improvement Plan and the most recent costs for water projects in the facility expansion program.

Service Area and Benefit District

An impact fee service area is a geographic area subject to a single, uniform impact fee schedule. A benefit district is a geographic area, often a subarea of a service area, in which fees collected are earmarked to be spent. Water impact fees will be assessed only on existing or new development that connects to the City's potable water system. The potable water system is an integrated, pressurized system that provides a relatively uniform level of service from centralized facilities. It is recommended that the City's entire jurisdiction should continue to be treated as a single impact fee service area and benefit district.

Service Unit

To calculate water impact fees, the water demand associated with different types of customers must be expressed in a common unit of measurement, called a "service unit." This can be accomplished by developing factors that convert customer rate codes and daily consumption per rate code into multiples of an equivalent single-family residential unit or ERU. An ERU is a common denominator that converts all classes of customers into a common unit of expression. An ERU is the water demand associated with a typical single-family residence.

Water impact fees for new residential customers will be charged on a per dwelling unit basis, with the fee based on the anticipated water demand compared to a typical single-family home. For nonresidential uses, water and wastewater impact fees are almost universally charged based on the size of the water meter, irrespective of land use. Table 7 is the recommended equivalency table, showing the capacity of water meters of various sizes and the equivalency factors. This is the same equivalency table used in the City's current utility impact fees.

Table 7
METER EQUIVALENCY FACTORS

Meter Size	Capacity (gpm)	ERUs/ Meter
5/8" x 3/4" Meter	10	1.0
1" Meter	25	2.5
1-1/2" Meter	50	5.0
2" Meter	80	8.0
3" Meter	160	16.0
4" Meter	250	25.0
6" Meter	500	50.0
8" Meter	800	80.0
10" Meter	1,150	115.0
12" Meter	1,550	155.0

Source: Midrange of normal operating flow rates in gallons per minute for simple (less than 3"), compound (3-8") and turbine (10-12") meters from American Water Works Association, AWWA Standards C700-95, C702-01, C701-88.

Customarily, the number of existing water ERUs is based on the number of water customers by meter size. However, the City does not have data on water customers by water meter size. The data that are available are the total number of water customers by account type (residential, residential/commercial, duplex, multi-family, commercial and municipal accounts). Consequently, the number of existing water service units can be estimated by (1) determining average daily consumption (gallons per day or gpd) for each customer type, (2) establishing the ratio of daily consumption for other customers to single-family customers, and (3) multiplying the ratio by total customer accounts for each category to determine the ERUs for water.

The average annual daily consumption for major customer types from customer billing data will be utilized in this study to determine the ratio of use between different customer classes. Based on production and customer data, the *2004 Annual Report* found that customer billing accounts for about 80 percent of the production, with 20 percent unaccounted for or utilized in line-flushing.

As shown in Table 8, the average annual billable consumption for single-family customers is 162 gpd, which equates to a per-capita consumption of approximately 67 gpd based on average single-family household size of 2.42 for Cape Coral in the 2000 Census. The average water consumption rate per household reflects the City's water conservation effort through its use of a separate irrigation water source. Based on customer billing information, approximately 82 percent of water customers utilize the City's separate irrigation water system.

Table 8
AVERAGE WATER CONSUMPTION

	Single-Family	Multi-Family	Commercial
Gallons Billed, January-December 2005	2,219,087,920	555,479,400	515,172,700
Average Res. Units/Non-Resid. Meters, 2005	37,531	13,647	1,816
Average Daily Demand (gpd)	162	112	777

Source: Cape Coral Utilities, "End of Month Report for Assessment, Lot Mowing, Stormwater, Solid Waste Management, and Utilities, January 2005 to December 2005."

The ratio of daily consumption for other customer classes to single-family customers is based on the average daily consumption for each customer type. As shown in Table 9, the City currently serves approximately 58,555 water ERUs.

Table 9
EXISTING WATER SERVICE UNITS

Customer Type	Utility Customers 12/2005	Gallons per Day (gpd)	Ratio to Single- Family	Equivalent Residential Units
Single Family	40,022	162	1.00	40,022
Multi-Family Units	13,935	112	0.69	9,615
Commercial	1,858	777	4.80	8,918
Total	55,815			58,555

Source: December 2005 utility accounts (dwelling units for residential and meters for commercial) from Cape Coral Utilities, "End of Month Report for Assessment, Lot Mowing, Stormwater, Solid Waste Management, and Utilities, January 2005 to December 2005;" gallons per day from Table 8.

Cost per Service Unit

As discussed in the introduction, the method utilized in determining the impact fee assumes that the existing system of facilities will need to be expanded proportional to growth in the customer base. Since growth cannot be served with older, depreciated facilities, but instead will require new facilities, it is appropriate to base the fees on the replacement cost of existing facilities, adjusted to reflect existing debt.

The City has begun planning for a new 12 mgd water treatment plant in northern Cape Coral with a planned completion date in 2008. This project will include a new well-field in the northern part of the city with 19 wells and 11 miles of pipeline for raw water transmission. Similar to the existing plant, the new facility will be designed to accommodate future expansion and utilizes the reverse osmosis water treatment process.

As shown in Table 10, the cost of the North Cape Coral water treatment facility provides the basis for determining the cost per gallon for the existing water treatment plant. The new plant costs include design, engineering, testing and construction. The property acquisition cost for the site was \$25 million, which is split evenly between the water treatment plant and the wastewater plant since both facilities will occupy the site. Based on the new plant cost of \$4.99 per gallon and the existing water treatment capacity, the current treatment plant replacement value is an estimated \$74.9 million.

Table 10
WATER TREATMENT PLANT COST

North Cape Water Treatment Plant Cost	\$47,410,000
North Cape Water Treatment Plant Land Cost	\$12,500,000
Total North Cape Water Treatment Plant Cost	\$59,910,000
Capacity (mgd)	12,000,000
Cost per Gallon	\$4.99
Existing SW Water Treatment Plant Capacity (mgd)	15,000,000
Existing SW Water Treatment Plant Replacement Cost	\$74,887,500

Source: Water treatment plant cost from City of Cape Coral, FY 2005-06 Annual Operating Budget, FY 2006 to 2010 Capital Improvements Program; land cost from City of Cape Coral Finance Department, April 25, 2006; existing and new treatment plant planned capacity from MWH, Facilities Planning Report for Cape Coral Water, Wastewater and Irrigation Facilities, 2004.

As part of the current expansion, the City has undertaken the construction of additional raw water wells. The new wells will have a design capacity of 600 gallons per minute (gpm), which is comparable to the existing wells that have an average capacity of 550 gpm. The current CIP includes the design and construction of a new well-field with 22 wells and transmission piping to provide raw water to the new North Cape Coral water treatment plant. Based on the cost of new wells and supporting infrastructure such as land, electrical supply and associated transmission lines for raw water, the value of the existing wells is an estimated \$47.7 million as shown in Table 11.

Table 11
WATER WELL COST

Planned North Cape Coral Well-Field Cost	\$40,322,000
Number of Planned Wells	22
Cost per Well	\$1,832,818
Number of Existing Wells	26
Existing Well Replacement Cost	\$47,653,273

Source: Well-field cost from City of Cape Coral, FY 2005-06 Annual Operating Budget, FY 2006 to 2010 Capital Improvements Program; existing and new well inventory from MWH, Facilities Planning Report for Cape Coral Water, Wastewater and Irrigation Facilities, 2004.

In addition to the water treatment plant and wells, the City's existing water system includes a significant investment in transmission lines. The per foot costs exclude water meters and hydrants that are typically installed by developers or existing land owners in expansion areas through a separate assessment. The City is primarily responsible for installation of water lines that are 10-inch diameter or larger. If a developer is required to provide a 10-inch or larger water line, a credit would need to be provided for those improvements. The replacement cost of the City's share of the water transmission system is about \$59 million, as shown in Table 12.

Table 12
WATER LINE COST

Pipe Diameter	Linear Feet	Replacement Cost/Foot	Replacement Cost
10"	139,434	\$46	\$6,413,964
12"	381,384	\$65	\$24,789,960
16"	88,932	\$80	\$7,114,560
18"	21,491	\$135	\$2,901,285
20"	65,712	\$150	\$9,856,800
24"	41,199	\$195	\$8,033,805
36"	777	\$380	\$295,260
Total	738,929		\$59,405,634

Source: Linear feet and replacement cost per foot from City of Cape Coral, April 14, 2005; replacement cost based on recent project bids and City Engineer's estimates.

The water distribution network includes gate and butterfly valves to control water flow. As shown in Table 13, the total value of the City's water valves is \$2.6 million.

Table 13
WATER VALVE COST

Valve Size (inches)	Quantity	Replacement Cost/Unit	Replacement Cost
10	171	\$2,223	\$380,133
12	400	\$2,540	\$1,016,000
Subtotal, Gate Valve			\$1,396,133
12	103	\$3,500	\$360,500
16	84	\$4,622	\$388,248
18	10	\$5,250	\$52,500
20	40	\$6,000	\$240,000
24	25	\$8,000	\$200,000
Subtotal, Butterfly Valve			\$1,241,248
Total			\$2,637,381

Source: Valve quantity and replacement cost from City of Cape Coral, April 14, 2005; replacement cost based on recent project bids and City Engineer's estimates.

Finally, the City maintains two storage and re-pump stations for water. The total capacity of the pumps at these two sites are 8,000 gpm, and the sites also have a combined three million gallons (mg) of tank storage capacity. The pumps are provided emergency backup power by an onsite gas or diesel backup engine. As shown in Table 14, the value of the land and equipment related to these facilities is \$4.1 million.

Table 14
WATER STORAGE AND REPUMP COST

Palm Tree Facility	\$1,833,000
Land	\$675,000
Subtotal, Palm Tree	\$2,508,000
Van Loon Facility	\$916,500
Land	\$675,000
Subtotal, Van Loon	\$1,591,500
Total	\$4,099,500

Source: City of Cape Coral Finance Department and City of Cape Coral Engineer, April 25, 2006.

Since the existing treatment plant and water wells do not currently operate at full capacity, the capital cost to serve existing customers is somewhat less than the full cost of the facility. To take this into account, the value of the water treatment plant and well system is adjusted to reflect the utilized capacity. The utilized capacity is based on actual water production, since water production data includes all water demand components such as line flushing and fire department use.

The ratio of maximum day to average day demand is a critical component of water utility planning. Water facilities must be designed to accommodate peak day (and in some cases peak hour) demand. The City's utility master plan uses a peaking factor of 1.20, based on recent demand trends. Based on mid-year demand projections for 2005 and 2006 from the 2004 utility master plan, maximum day demand for December 2005 (the date of the customer counts) is estimated to be 14.22 mgd. This indicates that existing customers utilize 95 percent of the 15 mgd capacity of the Southwest Reverse Osmosis Water Treatment Plant, as shown in Table 15. This utilization ratio will be used for other types of water facilities as well.

Table 15
WATER TREATMENT DEMAND AND CAPACITY

Year	Avg. Day Demand (mgd)	Peaking Factor	Max. Day Demand (mgd)
2000	8.30	1.20	9.96
2001	8.40	1.20	10.08
2002	8.70	1.20	10.44
2003	9.20	1.20	11.04
2004	10.03	1.20	12.04
2005 (mid-year)	11.30	1.20	13.56
2006 (mid-year)	12.40	1.20	14.88
Dec. 2005 Maximum Day Demand (mgd)			14.22
SW Water Treatment Plant Capacity (mgd)			15.00
Utilization Ratio			95%

Source: Average day water production and peaking factor from MWH, *Facilities Planning Report for Cape Coral Water, Wastewater and Irrigation Facilities*, 2004, Appendix Tables 1.2 and 1.3; estimated maximum day demand as of December 2005 is average of 2005 and 2006 mid-year projections; capacity of plant from same report, page 2-4.

As shown in Table 16, the portion of the water treatment facilities that serves existing customer demand has a replacement value of about \$179 million.

Table 16
ADJUSTED WATER TREATMENT FACILITY COST

Facility Type	Replacement Cost	Utilization Ratio	Utilized Cost
Treatment Plant	\$74,887,500	95%	\$71,143,125
Wells	\$47,653,273	95%	\$45,270,609
Water Line	\$59,405,634	95%	\$56,435,352
Water Valves	\$2,637,381	95%	\$2,505,512
Water Storage and Re-pump	\$4,099,500	95%	\$3,894,525
Total Utilized Cost			\$179,249,123

Source: Treatment plant replacement cost from Table 10; well replacement cost from Table 11; water line replacement cost from Table 12; water valve cost from Table 13; storage tank and re-pump cost from Table 14; utilization ratio from Table 15.

The water system cost per service unit is determined based on the system's utilized replacement cost and the current estimated service units. As shown in Table 17, dividing the replacement cost of existing utilized water facilities by existing service units results in a water cost of \$3,061 per ERU.

Table 17
WATER COST PER SERVICE UNIT

Water System Utilized Replacement Cost	\$179,249,123
Water Equivalent Residential Units (ERUs)	58,555
Cost per Equivalent Residential Unit (ERU)	\$3,061

Source: Water system replacement cost from Table 16; water ERUs from Table 9.

Net Cost per Service Unit

A reduction of impact fees to provide a credit for future funding to be generated by new development is required for outstanding debt on existing water facilities that have been counted in the existing level of service. The City has utilized revenue bonds and State of Florida revolving loan fund notes payable for water system expansion and capital facilities. The water system debt includes three outstanding revenue bond issues and two notes. Based on an analysis of the original debt issues, only one of the outstanding revenue bond issues is related to water facilities. The Series 2003 bond was issued to refund a 1993 refunding bond that was issued to refund the 1986 bond issue that was originally utilized to fund the construction of the water treatment plant expansion in 1985. As shown in Table 18, the total outstanding debt on the existing water treatment facilities is approximately \$13.4 million, which results in a debt credit of \$228 per ERU.

Table 18
WATER FACILITY DEBT CREDIT

Series 2003 Water Revenue Bond	\$13,375,000
Water Equivalent Residential Units (ERUs)	58,555
Debt Credit per ERU	\$228

Source: Outstanding debt based on principal balance for FY 2006 provided by Cape Coral County Finance Department, *FY 2005-06 Annual Operating Budget*; water ERUs from Table 9.

Normally, debt credit is provided only for outstanding debt at the time of calculation of water impact fees. However, water impact fees for Cape Coral are somewhat unique for two reasons. First, the debt that the City issued for the original purchase of the water system in 1975 was general obligation (GO) bond debt that was retired with property taxes, meaning that all property owners contributed toward the purchase of the system, regardless of whether they were water customers and regardless of whether their property was developed or not. Second, many of the new customers to the City's water system are not occupying newly-constructed buildings, but existing homes or businesses that are only now being connected to the utility system. These existing developments have been paying substantial property taxes used for the purchase of the water system, and these past payments should be taken into consideration in calculating an appropriate impact fee.

In calculating a credit for past debt service payments, credit will be provided only for payments used to retire principal, not for interest payments. This is done to be consistent with the cost analysis, which does not include any interest costs associated with debt financing.

Because of the time that has elapsed, it is not possible to determine the precise amount of the original \$23.1 million GO bond issue that was used to purchase the water and wastewater systems that was attributable to each facility. However, it is estimated, based on the relative sizes of the treatment plants (2 mgd water plant and 1.3 mgd wastewater plant) that 60.6 percent of the bond issue was used to purchase the water system and the remainder was used to purchase the wastewater system.

The original GO bond issue was refunded in 1978, 1984 and 1988. The last refunding issue was retired in fiscal year 2005. While most buildings connecting to the City's water system were not in existence when the GO debt payments began in 1976, some were. More were in existence since 1994, when the bulk of the principal was repaid. Newer units would have paid less, but the credit is calculated for the worst case, which is units that were in existence when the debt was incurred. Consequently, the past property tax credit is larger than it needs to be for most units.

The past property tax credit is calculated by dividing the amount of the principal payment made in each year by the total assessed property value to determine the equivalent mill rate (dollar payment per \$1,000 of assessed value). This is then multiplied by the average assessed value of a single-family detached dwelling unit for that year to determine the payment per unit. Finally, the original payment amount is multiplied by an inflation factor to determine the annual payment in current dollars. The annual current value payments are summed to yield the total past payment in current dollars. The result is a past property tax credit of \$397 per service unit, as shown in Table 19.

Table 19
WATER PAST PROPERTY TAX CREDIT

Year	Principal Payment	Total Assessed Property Value	Mill Rate	Avg. Unit Value	Original Payment	CPI Index	Current Value
1976	\$90,900	\$450,087,800	\$0.202	\$19,426	\$3.92	3.541	\$14
1977	\$121,200	\$493,191,360	\$0.246	\$21,369	\$5.26	3.325	\$17
1978	\$121,200	\$624,768,650	\$0.194	\$23,505	\$4.56	3.090	\$14
1979	\$0	\$663,812,070	\$0.000	\$25,856	\$0.00	2.775	\$0
1980	\$0	\$854,563,660	\$0.000	\$28,442	\$0.00	2.445	\$0
1981	\$0	\$1,406,192,215	\$0.000	\$31,286	\$0.00	2.217	\$0
1982	\$0	\$1,417,002,770	\$0.000	\$34,414	\$0.00	2.088	\$0
1983	\$0	\$1,388,802,680	\$0.000	\$38,856	\$0.00	2.023	\$0
1984	\$0	\$1,449,805,390	\$0.000	\$38,613	\$0.00	1.939	\$0
1985	\$0	\$1,768,771,700	\$0.000	\$39,385	\$0.00	1.873	\$0
1986	\$0	\$1,776,412,210	\$0.000	\$40,173	\$0.00	1.839	\$0
1987	\$0	\$1,854,114,670	\$0.000	\$40,977	\$0.00	1.774	\$0
1988	\$0	\$1,985,559,150	\$0.000	\$41,796	\$0.00	1.703	\$0
1989	\$0	\$2,167,011,280	\$0.000	\$44,928	\$0.00	1.625	\$0
1990	\$0	\$2,524,729,550	\$0.000	\$48,295	\$0.00	1.542	\$0
1991	\$0	\$3,115,727,790	\$0.000	\$51,914	\$0.00	1.479	\$0
1992	\$0	\$3,538,357,790	\$0.000	\$55,805	\$0.00	1.436	\$0
1993	\$0	\$3,535,576,040	\$0.000	\$59,987	\$0.00	1.394	\$0
1994	\$821,045	\$3,561,885,230	\$0.231	\$64,483	\$14.90	1.360	\$20
1995	\$1,185,853	\$3,601,126,430	\$0.329	\$69,316	\$22.80	1.322	\$30
1996	\$1,271,328	\$3,648,079,090	\$0.348	\$74,511	\$25.93	1.284	\$33
1997	\$1,368,508	\$3,632,010,230	\$0.377	\$80,095	\$30.20	1.255	\$38
1998	\$1,497,454	\$3,638,777,570	\$0.412	\$86,098	\$35.47	1.236	\$44
1999	\$1,623,370	\$3,742,215,220	\$0.434	\$92,551	\$40.17	1.209	\$49
2000	\$1,784,082	\$3,932,332,640	\$0.454	\$99,487	\$45.17	1.170	\$53
2001	\$796,980	\$4,237,777,910	\$0.188	\$106,943	\$20.11	1.138	\$23
2002	\$822,710	\$4,714,588,660	\$0.175	\$114,958	\$20.12	1.114	\$22
2003	\$781,159	\$5,608,534,540	\$0.139	\$123,574	\$17.18	1.095	\$19
2004	\$814,517	\$7,300,200,110	\$0.112	\$132,835	\$14.88	1.067	\$16
2005	\$308,822	\$9,428,023,860	\$0.033	\$142,791	\$4.71	1.032	\$5
2006	\$22,211	\$14,165,306,480	\$0.002	\$153,492	\$0.31	1.000	\$0
Total	\$13,431,339						\$397

Source: "Principal Payment" is portion of debt service payments that is attributable to retiring principal associated with 60.6% of the 1975 General Obligation Water and Sewer Bonds, including the 1978, 1984 and 1988 refunding issues; total assessed property value from City of Cape Coral Management/Budget Administrator, June 22, 2006; "Mill Rate" is principal payment per \$1000 of assessed value; "Avg Unit Value" is the average assessed value of a single-family detached unit (1976-1988 from Camp Dresser & McKee Inc., July 25, 1988 letter to City Attorney William M. Powell; 1989-2006 based on 7.49% annual growth from 1988-2005 and 2005 value from Management/Budget Administrator, June 22, 2006; "CPI Index" is inflation factor based on US Bureau of Labor Statistics, Consumer Price Index, All Items, All Urban Customers, April 2006.

Reducing the cost per service unit by the amounts of the credits for outstanding revenue bond debt and past payments of general obligation bond debt principal results in a net cost of \$2,436 per ERU, as shown in Table 20.

Table 20
WATER NET COST PER SERVICE UNIT

Utilized Water Facility Cost per ERU	\$3,061
Outstanding Debt Credit per ERU	\$228
Past Property Tax Credit per ERU	\$397
Net Cost per Equivalent Residential Unit (ERU)	\$2,436

Source: Adjusted water treatment facility cost from Table 17; debt credit from Table 18; past property tax credit from Table 19.

Maximum Fee Schedule

The City's current water impact fee is structured to account for lower potable water demand per service unit as the result of the City's irrigation water service. For new customers who do not connect to the irrigation system, the fee is fifty percent higher. The basis for the increased fee for non-irrigation customers is the assumption that non-irrigation customers will utilize an estimated fifty percent more water based on minimal landscape irrigation needs during the relatively dry Florida winter months.

The cost per ERU calculated in Table 20 is based on the average consumption of 158 gpd per single-family equivalent customer. Based on prior studies, non-irrigation water customers utilize an estimated 50 percent more potable water than irrigation customers, because they use potable water for landscape watering. Water utility customer billing records from December 2005 show that 82 percent of water customers also utilize irrigation water. The 18 percent of customers that do not utilize irrigation water distort the total water use per ERU. As a result, the total cost per ERU needs to be adjusted for both irrigation and non-irrigation water users to reflect their ratio of potable water use to the average water use per ERU.

As shown in Table 21, the irrigation water customers utilize 92 percent of the overall average water consumption per ERU, while non-irrigation water customers utilize 138 percent. Based on the adjusted average demand, the adjusted net cost per ERU is \$2,241 for irrigation water customers and \$3,361 for non-irrigation water customers.

Table 21
WATER NET COST ADJUSTMENT

Customer Type	Avg. Demand per ERU (gpd)	Adjusted Demand (gpd)	% of Avg. Demand/ERU	Net Cost per ERU	Adjusted Cost per ERU
Irrigation	162	149	92%	\$2,436	\$2,241
Non-irrigation	162	224	138%	\$2,436	\$3,361

Source: Total demand per ERU from Table 9; adjusted average demand based on 82% of customers utilizing irrigation water from December 2005 customer billing data and the fact that non-irrigation water users consume 50% more potable water than irrigation water customers from Tetra Tech/Hartman & Associates, Inc., *City of Cape Coral, Water and Wastewater Impact Fee Study*, September 2004; net cost per ERU from Table 20.

The maximum water impact fees that may be charged by the City of Cape Coral for potable water service, with and without irrigation water service, are shown in Table 22.

Table 22
WATER NET COST SCHEDULE

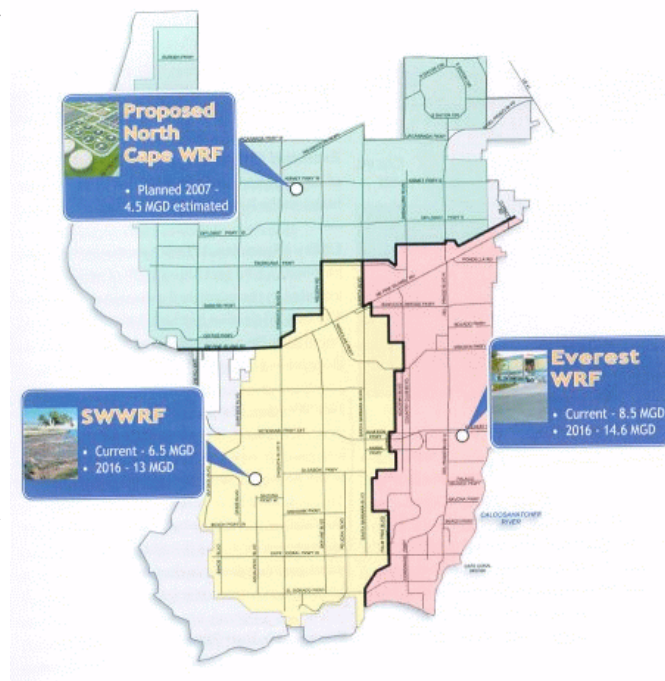
Housing Type/Meter Size	ERUs/Unit or Meter	Irrigation Customers		Non-Irrigation Customers	
		Net Cost/ERU	Net Cost/Unit or Meter	Net Cost/ERU	Net Cost/Unit or Meter
Single-Family Detached	1.00	\$2,241	\$2,241	\$3,361	\$3,361
Multi-Family	0.69	\$2,241	\$1,546	\$3,361	\$2,319
Nonresidential, 5/8" x 3/4" Meter	1.00	\$2,241	\$2,241	\$3,361	\$3,361
Nonresidential, 1" Meter	2.50	\$2,241	\$5,603	\$3,361	\$8,403
Nonresidential, 1-1/2" Meter	5.00	\$2,241	\$11,205	\$3,361	\$16,805
Nonresidential, 2" Meter	8.00	\$2,241	\$17,928	\$3,361	\$26,888
Nonresidential, 3" Meter	16.00	\$2,241	\$35,856	\$3,361	\$53,776
Nonresidential, 4" Meter	25.00	\$2,241	\$56,025	\$3,361	\$84,025
Nonresidential, 6" Meter	50.00	\$2,241	\$112,050	\$3,361	\$168,050
Nonresidential, 8" Meter	80.00	\$2,241	\$179,280	\$3,361	\$268,880
Nonresidential, 10" Meter	115.00	\$2,241	\$257,715	\$3,361	\$386,515
Nonresidential, 12' Meter	155.00	\$2,241	\$347,355	\$3,361	\$520,955

Source: Residential ERUs per unit from Table 9; nonresidential ERUs per meter from Table 7; net cost per ERU is adjusted net cost from Table 21.

WASTEWATER

The City of Cape Coral's wastewater system consists of gravity sewer mains, wastewater lift stations, force mains and two treatment plants. The treatment facilities consist of the Everest Parkway and Southwest Water Reclamation Facilities. The combined total permitted treatment capacity of the two facilities is 15.1 mgd. Treated effluent from both wastewater treatment facilities is distributed through a reuse system for irrigation water.

The existing plants generally serve the area south of Pine Island Road. The area currently served by wastewater is less than that served by potable water. However, current plans will expand the wastewater collection area to most areas served by potable water by the end of 2006. The City is planning to begin construction of a new North Cape Water Reclamation Facility in the north part of the city in 2007.

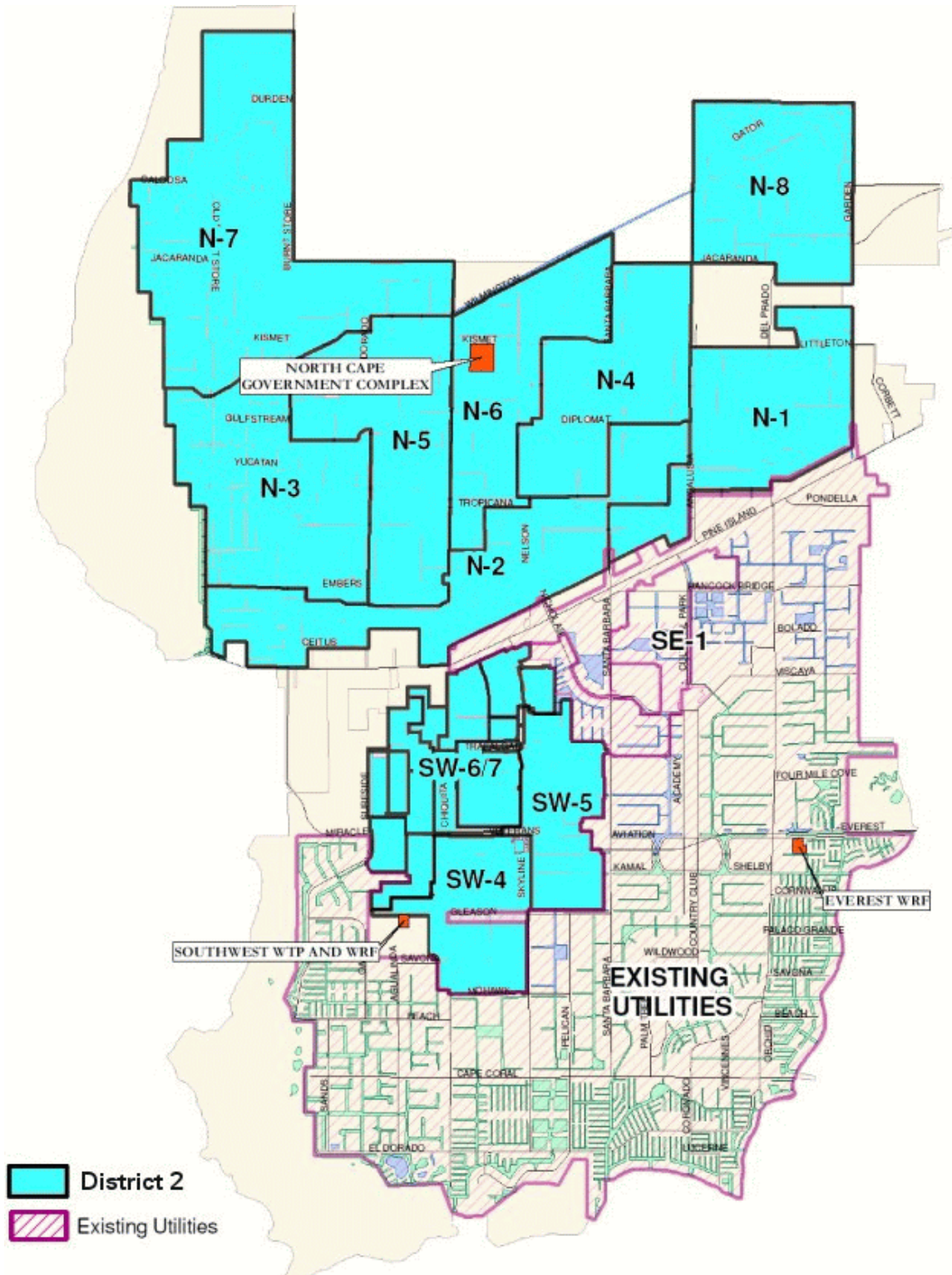


Service Areas and Benefit Districts

An impact fee service area is a geographic area subject to a single, uniform impact fee schedule. A benefit district is a geographic area, often a subarea of a service area, in which fees collected are earmarked to be spent. Wastewater impact fees will be assessed only on existing or new development that connects to the City's wastewater system. While the two existing treatment plants primarily serve different areas, wastewater can be transferred between them to take advantage of available capacity. The wastewater system provides a relatively uniform level of service to all its customers. It is recommended that the City's entire jurisdiction should continue to be treated as a single wastewater impact fee service area and benefit district for the purpose of major wastewater facilities.

In areas currently served by City wastewater, local facilities (pump stations and force mains of less than 10 inches in diameter) are put in by the City and paid for with assessments on existing property owners. For future utility expansions areas, however, the City would prefer to fund the improvements through impact fees, rather than through assessments. This area, referred to as "District 2," consists of utility expansion areas SW 4, SW 5, SW 6/7, and all of the utility expansion areas north of Pine Island Road (see Figure 5 on next page). In this area, the City will charge a higher wastewater impact fee that includes local facility costs. Some areas not currently served with City wastewater are not included in District 2, because the City expects that developers in these areas will provide the local force mains and lift stations for their developments.

Figure 5
WASTEWATER DISTRICT 2



Service Unit

As with the water impact fee calculation, the wastewater demand associated with different types of customers must be expressed in a common unit of measurement, called a “service unit.” This can be accomplished by developing factors that convert customer rate codes and daily consumption per rate code into multiples of an equivalent single-family residential unit or ERU. An ERU is a common denominator that converts all classes of customers into a common unit of expression. An ERU is the wastewater demand associated with a typical single-family residence.

For nonresidential uses, wastewater impact fees are almost universally charged based on the size of the water meter, irrespective of land use. The meter equivalency factors for wastewater are the same as those for water shown in Table 7. These factors are unchanged from the City’s current wastewater impact fees.

Approximately 88 percent of the City’s water customers utilize wastewater services, with the remainder utilizing private wastewater treatment facilities. As a result, the total number of wastewater ERUs is not the same as water ERUs.

Unlike potable water consumption, wastewater generation is not typically metered. Instead, wastewater demand is based on water use under the assumption that most water consumption returns to the wastewater treatment plant; this is particularly true for a city like Cape Coral that has a separate water source for irrigation.

The ratio of daily consumption for other customer classes to single-family customers is based on the average daily water consumption for each customer type. As shown in Table 9, the City currently serves approximately 51,144 wastewater ERUs.

Table 23
EXISTING WASTEWATER SERVICE UNITS

Customer Type	Utility Accounts 12/2005	Ratio to Single- Family	Equivalent Residential Units
Single Family	35,256	1.00	35,256
Multi-Family Units	11,923	0.69	8,227
Commercial	1,596	4.80	7,661
Total	48,775		51,144

Source: December 2005 utility accounts (dwelling units for residential and meters for commercial) from Cape Coral Utilities, “End of Month Report for Assessment, Lot Mowing, Stormwater, Solid Waste Management, and Utilities, January 2005 to December 2005”; single-family ratios from Table 8.

Cost per Service Unit

Major Facilities

Since growth generally cannot be served with older, depreciated facilities, but instead will require new facilities, it is appropriate to base the wastewater fees on the replacement cost of existing facilities

adjusted to reflect existing debt and current capacity level. The wastewater facilities considered in determining the impact fee include wastewater lift stations, force mains and the two water reclamation facilities. The replacement costs for the wastewater reclamation facilities are adjusted to reflect utilized capacity. They are also adjusted to account for the portion of those facilities attributed to irrigation water, since the treated wastewater from the City's two reclamation facilities is distributed to the City's residents and businesses for irrigation purposes.

The City's wastewater collection facilities include gravity mains that feed into wastewater lift stations where the wastewater is transferred to force mains for transport to the reclamation facilities. The City currently maintains approximately 581 miles of gravity sewer mains. However, the extension of gravity mains is generally funded through special assessments on new customers in utility expansion zones. As a result, the cost of gravity mains is not included in the impact fee calculation.

The replacement costs for the City's lift stations and force mains are included in the impact fee calculation. The City owns and operates master pumps which are equipped with backup power generation and electronic monitoring systems. Finally, the City's force mains transport wastewater from the lift stations to the City's reclamation facilities. The pumping facilities and force mains are assumed to operate at the wastewater system's capacity of 15.1 mgd.

The wastewater collection costs utilized in this study only include the City's force mains that are 10 inch diameter or larger. The replacement cost of the City's share of the collection costs related to force mains, aerial crossings and gate valves for wastewater transmission is approximately \$35 million, as shown in Table 24.

Table 24
WASTEWATER COLLECTION SYSTEM COST

Pipe Diameter	Units	Quantity	Unit Cost	Replacement Cost
10"	Linear Feet	52,326	\$51	\$2,668,626
12"	Linear Feet	90,223	\$68	\$6,135,164
16"	Linear Feet	61,226	\$73	\$4,469,498
18"	Linear Feet	613	\$120	\$73,560
20"	Linear Feet	22,819	\$134	\$3,057,746
24"	Linear Feet	20,440	\$202	\$4,128,880
30"	Linear Feet	2,683	\$310	\$831,730
36"	Linear Feet	6,797	\$371	\$2,521,687
42"	Linear Feet	5,375	\$430	\$2,311,250
Subtotal, Force Mains		262,502		\$26,198,141
Aerial Crossing	Each	49	\$180,000	\$8,820,000
10" Gate Valve	Each	10	\$2,650	\$26,500
12" Gate Valve	Each	21	\$2,875	\$60,375
16" Gate Valve	Each	5	\$3,100	\$15,500
Total Cost				\$35,120,516

Source: Cape Coral City Engineer, April 14, 2006.

As part of the wastewater system expansion plan, the City has undertaken the construction of additional lift stations to accommodate expansion of gravity mains and transfer wastewater to the force mains. Based on available cost data, the value of the City's pump stations is an estimated \$21.1 million, as shown in Table 25. The cost of the lift stations includes land, structure, generators, electrical, pipes and fittings.

Table 25
WASTEWATER PUMP FACILITY REPLACEMENT COST

Facility Type	Existing Quantity	Unit Cost	Replacement Cost
Three-Pump Station	19	\$1,100,000	\$20,900,000
Six-Pump Station	1	\$150,000	\$150,000
Total			\$21,050,000

Source: Cape Coral City Engineer, April 25, 2006.

The Everest Parkway Water Reclamation Facility was originally constructed in 1976 and serves the southeastern portion of the City with a capacity of 8.5 mgd. The Southwest Water Reclamation Facility has been in service since 1994 and serves the southwest portion of the City, with a capacity of 6.6 mgd.

The City's expansion plan includes increasing the capacity of the existing plants and the construction of a new facility to serve the northern portion of the City. The first phase of the new North Cape wastewater facility will provide 10 mgd of capacity. Plant expansions at both Everest and Southwest will increase current capacity to 15 mgd and 13.4 mgd, respectively. The first phase of the North Cape facility is included in the current five-year CIP, with construction planned for 2007. Similar to the existing plants, the new facility will be designed to accommodate future expansion and provide treated water for the City's irrigation system.

As shown in Table 26, the cost of North Cape Coral wastewater treatment facility provides the basis for determining the cost per gallon for the existing water treatment plant. The new plant costs include design, engineering, property acquisition, testing and construction. Based on the new plant cost of \$6.33 per gallon, the current value of the existing treatment plants is estimated to be \$95.5 million.

Table 26
WASTEWATER TREATMENT PLANT COST

North Cape Water Reclamation Plant	\$45,000,000
North Cape WRF Land Cost	\$12,500,000
North Cape WRF Design and Engineering Cost	\$5,758,000
Total North Cape WRF Cost	\$63,258,000
Planned Capacity (Gallons per Day)	10,000,000
Cost per Gallon per Day	\$6.33
Existing Facilities Capacity (Gallons per Day)	15,100,000
Existing Water Treatment Plant Replacement Cost	\$95,519,600

Source: Water reclamation construction, land, design and engineering costs from City of Cape Coral Finance Department, April 26, 2006; existing and new treatment plant capacities from MWH, *Facilities Planning Report for Cape Coral Water, Wastewater and Irrigation Facilities*, 2004.

As mentioned in the introduction, the City of Cape Coral currently provides a portion of its non-potable water for irrigation from reclaimed effluent from the Everest and Southwest wastewater plants. The water reuse system avoids the need for the wastewater treatment plants to discharge effluent into the Caloosahatchee River except during wet weather events. Based on available cost data related to the new North Cape facility, it is estimated that the portion of facility costs attributed directly to wastewater treatment is 90 percent with the remaining 10 percent attributed to irrigation water. As shown in Table 27, the net replacement cost of the treatment plant attributable to wastewater is \$86 million.

Table 27
WASTEWATER TREATMENT PLANT COST ADJUSTMENT

Wastewater Treatment Plant Replacement Cost	\$95,519,600
Percent Attributable to Wastewater	90%
Attributable Replacement Value	\$85,967,640

Source: Wastewater treatment plant replacement cost from Table 26; percent attributable to wastewater based on facility cost estimate from City of Cape Coral Finance Department, April 26, 2006.

The wastewater treatment plants currently operate at slightly less than their rated capacity of 15.1 mgd. It is estimated that the average combined daily flow for both plants was 14.7 mgd as of December 2005, which is the date of the customer counts. This is 97 percent of the system's capacity of 15.1 mgd, as shown in Table 28.

Table 28
WASTEWATER TREATMENT DEMAND AND CAPACITY

Year	Annual Average Day Demand (mgd)		Total
	Everest WRF	Southwest WRF	
2003	6.58	5.50	12.08
2004	6.73	6.40	13.13
2005 (mid-year)	6.80	7.30	14.10
2006 (mid-year)	7.00	8.30	15.30
Dec. 2005	6.90	7.80	14.70
Capacity (mgd)	8.50	6.60	15.10
Utilization Ratio			97%

Source: Average daily flows from MWH, *Facilities Planning Report for Cape Coral Water, Wastewater and Irrigation Facilities*, 2004, Appendix Tables 1.11 and 1.13; estimated average day demand as of December 2005 is average of 2005 and 2006 mid-year projections; capacity of plants from Tetra Tech/HAI, Fiscal Year 2004 City of Cape Coral Water and Wastewater Annual Report, July 27, 2005, pages 3-20 and 3-25.

Since the existing wastewater facilities do not currently operate at full capacity, the capital cost to serve existing customers is somewhat less than the full cost of the facilities. To take this into account, the replacement cost of the wastewater facilities are adjusted to reflect the utilized capacity. As shown in

Table 29, the wastewater system cost utilized by existing customers is divided by existing wastewater service units to determine the wastewater cost of \$2,696 per equivalent residential unit.

Table 29
WASTEWATER COST PER SERVICE UNIT

Wastewater Collection System	\$35,120,516
Wastewater Pumps	\$21,050,000
Wastewater Treatment	\$85,967,640
Wastewater System Replacement Cost	\$142,138,156
Utilization Ratio	97%
Wastewater System Utilized Cost	\$137,874,011
Existing Wastewater ERUs	51,144
Cost per Equivalent Residential Unit (ERU)	\$2,696

Source: Wastewater collection system replacement from Table 24; wastewater pump replacement value from Table 25; treatment plant cost from Table 27; utilization ratio from Table 28; wastewater ERUs from Table 23.

Local Facilities

As noted earlier, in a portion of the city, the City intends to charge a higher impact fee that would also cover local facilities (pump stations and force mains less than 10 inches in diameter) as an alternative to property assessments. This section calculates the cost per service unit for these local facilities.

There are two approaches that can be used for the local facilities. One would be to use the replacement cost of existing local facilities, similar to how major lift station and force main costs were calculated. The other is to use planned improvement costs. This section calculated the fees both ways, and uses the lower cost to determine the fee.

The replacement cost of the City's local force mains is approximately \$17 million, as shown in Table 30.

Table 30
WASTEWATER LOCAL FORCE MAIN COST

Pipe Diameter	Units	Quantity	Unit Cost	Replacement Cost
4"	Linear Feet	57,051	\$21	\$1,198,071
6"	Linear Feet	331,231	\$33	\$10,930,623
8"	Linear Feet	117,633	\$45	\$5,293,485
Total Cost				\$17,422,179

Source: Cape Coral City Engineer, April 14, 2006.

Based on available cost data, the replacement value of the City's existing local pump stations is an estimated \$74.9 million, as shown in Table 31. The cost of the lift stations includes land, structure, generators, electrical, pipes and fittings.

Table 31
WASTEWATER LOCAL PUMP FACILITY REPLACEMENT COST

Facility Type	Existing Quantity	Unit Cost	Replacement Cost
Local Pump Station	225	\$333,000	\$74,925,000
Total			\$74,925,000

Source: Cape Coral City Engineer, April 25, 2006.

Since the existing wastewater facilities do not currently operate at full capacity, the capital cost to serve existing customers is somewhat less than the full cost of the facilities. To take this into account, the replacement cost of the wastewater facilities are adjusted to reflect the utilized capacity. As shown in Table 32, the wastewater system cost utilized by existing customers is divided by existing wastewater service units to determine the wastewater local facilities cost of \$1,751 per equivalent residential unit.

Table 32
WASTEWATER LOCAL COST PER SERVICE UNIT, ALTERNATIVE ONE

Wastewater Local Collection System	\$17,422,179
Wastewater Local Pumps	\$74,925,000
Wastewater Local System Replacement Cost	\$92,347,179
Utilization Ratio	97%
Wastewater Local System Utilized Cost	\$89,576,764
Existing Wastewater ERUs	51,144
Local Cost per Equivalent Residential Unit (ERU)	\$1,751

Source: Wastewater collection system replacement from Table 24; wastewater pump replacement value from Table 25; treatment plant cost from Table 27; utilization ratio from Table 28; wastewater ERUs from Table 23.

The alternative approach is an improvements-driven methodology that divides the cost of planned improvements needed to serve an area by the service units (ERUs) anticipated in the area. Preliminary estimates of costs of planned local lift stations and force mains to serve four expansion areas are summarized in the following table. The number of service units expected in each expansion area is estimated based on the City's historical experience of 1.4 ERUs per parcel. Dividing total planned improvements costs to serve this area by anticipated ERUs results in a cost of 1614 per ERU for local facilities, as shown in Table 33. This lower cost per service unit for local facilities will be used in the impact fee calculations.

Table 33
WASTEWATER LOCAL COST PER SERVICE UNIT, ALTERNATIVE TWO

Expansion Area	Local Lift Stations	Local Force Mains	Total Costs	Build-out ERUs	Cost/ERU
SW 5	\$2,750,000	\$5,705,200	\$8,455,200	4,799	\$1,762
SW 6/7	\$4,000,000	\$10,658,150	\$14,658,150	8,947	\$1,638
N 1	\$4,500,000	\$12,768,342	\$17,268,342	10,991	\$1,571
N 2	\$4,500,000	\$12,588,357	\$17,088,357	10,870	\$1,572
Total			\$57,470,049	35,607	\$1,614

Source:

Net Cost per Service Unit

As with the water facility impact fee calculation, a reduction of impact fees to provide a credit for future funding to be generated by new development is required for outstanding debt on wastewater facilities that have been counted in the existing level of service.

Based on an analysis of the original debt issues, the Series 1991 and Series 2000 outstanding revenue bond issues and State Revolving Loan Fund notes #090 and #100 are related to wastewater treatment or transmission facilities. The Series 1991 Bonds were issued for expansion of the Everest facility and extension of the wastewater outfall line. A portion of the 1991 Series bond has been retired; however, the remaining bond balance accretes to a value of \$5,680,000 due between 2008 and 2012. Approximately \$6.4 million of the \$12.6 million Series 2000 bond was issued to refund a 1986 bond that had originally been utilized to expand the Everest wastewater treatment facility from 4 mgd to 7.3 mgd (the plant was subsequently re-rated to 8.5 mgd). The remaining balance of the Series 2000 bond was utilized to refund a 1992 bond funded through assessments. Note #090 was issued in 1991 to fund the construction of the Southwest Area Water Reclamation Plant, and Note #100 was issued in 1992 to construct the utility transmission facilities associated with the “Orange Area” collection system.

As shown in Table 34, the total outstanding debt on the existing wastewater treatment facilities is approximately \$33.9 million. Dividing this by existing wastewater service units results in a debt credit of \$663 per equivalent residential unit.

Table 34
WASTEWATER FACILITY DEBT CREDIT

Series 1991 Revenue Bond	\$5,680,000
Series 2000 Revenue Bond	\$6,035,000
Revolving Loan Fund Note #090	\$11,722,777
Revolving Loan Fund Note #110	\$10,480,435
Total Outstanding Debt	\$33,918,212
Wastewater ERUs	51,144
Debt Credit per Equivalent Residential Unit (ERU)	\$663

Source: Outstanding principal balance and original debt issue data from City of Cape Coral, *FY2005-06 Annual Operating Budget, Debt Management Policy*, 2005; wastewater ERUs from Table 23.

As noted in the water section, debt credit is normally provided only for outstanding debt at the time of calculation of utility impact fees. However, wastewater impact fees for Cape Coral are somewhat unique for two reasons. First, the debt that the City issued for the original purchase of the wastewater system in 1975 was general obligation (GO) bond debt that was retired with property taxes, meaning that all property owners contributed toward the purchase of the system, regardless of whether they were wastewater customers and regardless of whether their property was developed or not. Second, many of the new customers to the City's wastewater system are not occupying newly-constructed buildings, but existing homes or businesses that are only now being connected to the utility system. These existing developments have been paying substantial property taxes used for the purchase of the wastewater system, and these past payments should be taken into consideration in calculating an appropriate impact fee.

In calculating a credit for past debt service payments, credit will be provided only for payments used to retire principal, not for interest payments. This is done to be consistent with the cost analysis, which does not include any interest costs associated with debt financing.

Because of the time that has elapsed, it is not possible to determine the precise amount of the original \$23.1 million GO bond issue that was used to purchase the water and wastewater systems that was attributable to each facility. However, it is estimated, based on the relative sizes of the treatment plants (2 mgd water plant and 1.3 mgd wastewater plant) that 39.4 percent of the bond issue was used to purchase the wastewater system and the remainder was used to purchase the water system.

The original GO bond issue was refunded in 1978, 1984 and 1988. The last refunding issue was retired in fiscal year 2005. While most buildings connecting to the City's wastewater system were not in existence when the GO debt payments began in 1976, some were. More have been in existence since 1994, when the bulk of the principal was repaid. Newer units would have paid less, but the credit is calculated for the worst case, which is units that were in existence when the debt was incurred. Consequently, the past property tax credit is larger than it needs to be for most units.

The past property tax credit is calculated by dividing the amount of the principal payment made in each year by the total assessed property value to determine the equivalent mill rate (dollar payment per \$1,000 of assessed value). This is then multiplied by the average assessed value of a single-family detached dwelling unit for that year to determine the payment per unit. Finally, the original payment amount is

multiplied by an inflation factor to determine the annual payment in current dollars. The annual current value payments are summed to yield the total past payment in current dollars. The result is a past property tax credit of \$258 per service unit, as shown in Table 35.

Table 35
WASTEWATER PAST PROPERTY TAX CREDIT

Year	Principal Payment	Total Assessed Property Value	Mill Rate	Avg. Unit Value	Original Payment	CPI Index	Current Value
1976	\$59,100	\$450,087,800	\$0.131	\$19,426	\$2.54	3.541	\$9
1977	\$78,800	\$493,191,360	\$0.160	\$21,369	\$3.42	3.325	\$11
1978	\$78,800	\$624,768,650	\$0.126	\$23,505	\$2.96	3.090	\$9
1979	\$0	\$663,812,070	\$0.000	\$25,856	\$0.00	2.775	\$0
1980	\$0	\$854,563,660	\$0.000	\$28,442	\$0.00	2.445	\$0
1981	\$0	\$1,406,192,215	\$0.000	\$31,286	\$0.00	2.217	\$0
1982	\$0	\$1,417,002,770	\$0.000	\$34,414	\$0.00	2.088	\$0
1983	\$0	\$1,388,802,680	\$0.000	\$38,856	\$0.00	2.023	\$0
1984	\$0	\$1,449,805,390	\$0.000	\$38,613	\$0.00	1.939	\$0
1985	\$0	\$1,768,771,700	\$0.000	\$39,385	\$0.00	1.873	\$0
1986	\$0	\$1,776,412,210	\$0.000	\$40,173	\$0.00	1.839	\$0
1987	\$0	\$1,854,114,670	\$0.000	\$40,977	\$0.00	1.774	\$0
1988	\$0	\$1,985,559,150	\$0.000	\$41,796	\$0.00	1.703	\$0
1989	\$0	\$2,167,011,280	\$0.000	\$44,928	\$0.00	1.625	\$0
1990	\$0	\$2,524,729,550	\$0.000	\$48,295	\$0.00	1.542	\$0
1991	\$0	\$3,115,727,790	\$0.000	\$51,914	\$0.00	1.479	\$0
1992	\$0	\$3,538,357,790	\$0.000	\$55,805	\$0.00	1.436	\$0
1993	\$0	\$3,535,576,040	\$0.000	\$59,987	\$0.00	1.394	\$0
1994	\$533,814	\$3,561,885,230	\$0.150	\$64,483	\$9.67	1.360	\$13
1995	\$771,000	\$3,601,126,430	\$0.214	\$69,316	\$14.83	1.322	\$20
1996	\$826,573	\$3,648,079,090	\$0.227	\$74,511	\$16.91	1.284	\$22
1997	\$889,756	\$3,632,010,230	\$0.245	\$80,095	\$19.62	1.255	\$25
1998	\$973,592	\$3,638,777,570	\$0.268	\$86,098	\$23.07	1.236	\$29
1999	\$1,055,458	\$3,742,215,220	\$0.282	\$92,551	\$26.10	1.209	\$32
2000	\$1,159,947	\$3,932,332,640	\$0.295	\$99,487	\$29.35	1.170	\$34
2001	\$518,168	\$4,237,777,910	\$0.122	\$106,943	\$13.05	1.138	\$15
2002	\$534,898	\$4,714,588,660	\$0.113	\$114,958	\$12.99	1.114	\$14
2003	\$507,883	\$5,608,534,540	\$0.091	\$123,574	\$11.25	1.095	\$12
2004	\$529,570	\$7,300,200,110	\$0.073	\$132,835	\$9.70	1.067	\$10
2005	\$200,785	\$9,428,023,860	\$0.021	\$142,791	\$3.00	1.032	\$3
2006	\$14,441	\$14,165,306,480	\$0.001	\$153,492	\$0.15	1.000	\$0
Total	\$13,431,339						\$258

Source: "Principal Payment" is portion of debt service payments that is attributable to retiring principal associated with 39.4% of the 1975 General Obligation Water and Sewer Bonds, including the 1978, 1984 and 1988 refunding issues; total assessed property value from City of Cape Coral Management/Budget Administrator, June 22, 2006; "Mill Rate" is principal payment per \$1000 of assessed value; "Avg Unit Value" is the average assessed value of a single-family detached unit (1976-1988 from Camp Dresser & McKee, Inc., July 25, 1988 letter to City Attorney William M. Powell; 1989-2006 based on 7.49% annual growth from 1988-2005 and 2005 value from Management/Budget Administrator, June 22, 2006; "CPI Index" is inflation factor based on US Bureau of Labor Statistics, Consumer Price Index, All Items, All Urban Customers, April 2006.

Reducing the cost per service unit for major facilities by the amounts of the credits for outstanding revenue bond debt and past payments of general obligation bond debt principal results in a net cost of \$1,775 per ERU, as shown in Table 36. No credits are applicable for local facilities that will be included in the impact fee for District 2, since these facilities have been funded by assessments in the rest of the city.

Table 36
WASTEWATER NET COST PER SERVICE UNIT

	Major Facilities	Local Facilities
Facility Cost per Equivalent Residential Unit (ERU)	\$2,696	\$1,614
Outstanding Debt Credit per ERU	\$663	\$0
Past Property Tax Credit per ERU	\$258	\$0
Net Cost per Equivalent Residential Unit (ERU)	\$1,775	\$1,614

Source: Wastewater facility cost per ERU from Table 29; outstanding debt credit from Table 34; past property tax credit from Table 35.

Maximum Fee Schedule

The maximum wastewater impact fees that may be charged by the City of Cape Coral, based on the methodology, data and assumptions used in this report, are shown in Table 37. The net cost of major facilities would be charged city-wide, while the net cost of local facilities would only be charged in District 2.

Table 37
WASTEWATER NET COST SCHEDULE

Housing Type/Meter Size	ERUs/ Unit or Meter	Net Cost/ERU		Net Cost/Unit or Meter	
		Major	Local	Major	Local
Single-Family Detached	1.00	\$1,775	\$1,614	\$1,775	\$1,614
Multi-Family	0.69	\$1,775	\$1,614	\$1,224	\$1,114
Nonresidential, 5/8" x 3/4" Meter	1.00	\$1,775	\$1,614	\$1,775	\$1,614
Nonresidential, 1" Meter	2.50	\$1,775	\$1,614	\$4,437	\$4,035
Nonresidential, 1-1/2" Meter	5.00	\$1,775	\$1,614	\$8,873	\$8,070
Nonresidential, 2" Meter	8.00	\$1,775	\$1,614	\$14,197	\$12,912
Nonresidential, 3" Meter	16.00	\$1,775	\$1,614	\$28,394	\$25,824
Nonresidential, 4" Meter	25.00	\$1,775	\$1,614	\$44,366	\$40,350
Nonresidential, 6" Meter	50.00	\$1,775	\$1,614	\$88,731	\$80,700
Nonresidential, 8" Meter	80.00	\$1,775	\$1,614	\$141,970	\$129,120
Nonresidential, 10" Meter	115.00	\$1,775	\$1,614	\$204,082	\$185,610
Nonresidential, 12" Meter	155.00	\$1,775	\$1,614	\$275,067	\$250,170

Source: Residential ERUs per unit from Table 9; nonresidential ERUs per meter from Table 7; net cost per ERU from Table 36.

IRRIGATION

According to the 2004 utilities master plan, the City of Cape Coral reclaims approximately 90 percent of its treated wastewater for irrigation. At each wastewater treatment plant there is five million gallon prestressed concrete ground storage tank used for effluent storage and pumps to cycle reclaimed water through the irrigation system. During the dry months, the demand for the reuse irrigation system exceeds the reclaimed water produced, and the City utilizes five canal pump stations that draw and process irrigation water from the city's fresh water canals.

The City's irrigation water system primarily serves areas south of Pine Island Road. Current expansion plans will extend the irrigation transmission system to remaining areas south of Pine Island Road, as well as north of Pine Island upon completion of new wastewater facilities in that area.

Service Area and Benefit District

An impact fee service area is a geographic area subject to a single, uniform impact fee schedule. A benefit district is a geographic area, often a subarea of a service area, in which fees collected are earmarked to be spent. Irrigation impact fees will be assessed only on existing or new development that connects to the City's irrigation water system. The irrigation water system provides a relatively uniform level of service to all its customers. It is recommended that the City's entire jurisdiction should continue to be treated as a single irrigation impact fee service area and benefit district.

Service Unit

The demand associated with different types of customers must be expressed in a common unit of measurement, called a "service unit" that is expressed as a multiple of the irrigation water demand associated with a typical single-family residence.

For nonresidential uses, irrigation impact fees will be charged based on the size of the water meter, irrespective of land use. The meter equivalency factors for irrigation are the same as those for water and wastewater shown in Table 7.

The City does not meter most irrigation customers. Since demand for irrigation is related to lot size, the demand per irrigation ERU in this study is based on the irrigation demand for an average single-family lot of 10,000 square feet (four units per acre). The irrigation water demand for multi-family customers is based on the relative ratio of daily water consumption for multi-family units to single-family units from water utility customer billing data shown in Table 9.

The 2004 impact fee study utilized an assumed average consumption of 500 gpd for irrigation users. The 500 gpd irrigation demand assumption corresponds with the average annual daily watering needs for a standard quarter-acre residential lot of one-half inch per week and will be utilized in the calculation of the irrigation impact fee in this study. The relative irrigation demand and ERUs per unit associated with both single-family and multi-family units are shown in Table 38.

Table 38
IRRIGATION SERVICE UNIT MULTIPLIERS

Land Use	gpd/ Unit	ERUs/ Unit
Single-Family Detached	500	1.00
Multi-Family	345	0.69

Source: Single-family gallons per day based on irrigation water consumed for standard 10,000 sq. ft. lot at 1/2" per week annually; multi-family gpd based on relative ERUs per unit for multi-family units from Table 9.

Cost Per Service Unit

As with water and wastewater facilities, the irrigation impact fees are based on the replacement cost of existing facilities, adjusted to reflect existing debt. The irrigation facilities considered in determining the impact fee include a share of the wastewater treatment facilities, two 5.0 mg prestressed concrete ground storage tanks located at the wastewater treatment facilities, five canal pump stations, eight high service pumps that pump the irrigation water into the distribution system, and reuse mains for distribution of irrigation water.

The City of Cape Coral currently provides a portion of its non-potable water for irrigation from reclaimed effluent from the Everest and Southwest wastewater plants. The water reuse system avoids the need for the wastewater treatment plants to discharge effluent into the Caloosahatchee River except during wet weather events. Each wastewater treatment plant has a concrete tank that provides temporary storage for 5 mg of treated irrigation water and high service pumps to cycle the reclaimed water into the irrigation water distribution system. The value of the additional irrigation water processing, pump and storage equipment at the wastewater treatment plants is an estimated 10 percent based on cost estimates for the North Cape wastewater treatment plant. As a result, this analysis allocates 10 percent of the wastewater treatment plant facilities replacement cost to irrigation. As shown in Table 39, the net replacement cost of the treatment plant attributable to wastewater is \$0.63 per gallon per day.

Table 39
IRRIGATION SHARE OF WASTEWATER TREATMENT PLANT

Wastewater Treatment Plant Replacement Cost	\$95,519,600
Percent Attributable to Irrigation	10%
Irrigation Share of Net Replacement Value	\$9,551,960
Capacity (Gallons per Day)	15,100,000
Net Replacement Value per Gallon per Day	\$0.63

Source: Treatment plant cost from Table 26; percent attributable to irrigation from City of Cape Coral Finance Department, April 26, 2006; existing treatment plant capacity from MWH, *Facilities Planning Report for Cape Coral Water, Wastewater and Irrigation Facilities*, 2004.

During the relatively dry winter months, irrigation water demand exceeds the daily output of treated irrigation water from the City's wastewater treatment plants. The City owns and operates five canal pump stations that augment the irrigation water supply during the dry months. The pumps draw water from the City's fresh water canals and pump it into the reuse distribution system after filtering and disinfecting the water.

The canal pump stations are designed to look like residential single-family homes and provide up to 85.2 mgd of irrigation and fire protection water for current and future needs. Based on FY 2004 canal pump rate data from the *Fiscal Year 2004 Water and Wastewater Annual Report*, the average pump rate was 16.6 mgd with a peak month rate of 25.5 mgd and low month of 2.4 mgd. However, the five canal pumps have a combined pumping capacity of 85.2 mgd, which provides significant capacity for future growth and fire service needs. As shown in Table 40, the total replacement cost for the canal and irrigation pump stations is approximately \$2.6 million.

Table 40
CANAL PUMP STATION COST

Facility Type	Equipment Cost	Land Cost	Replacement Cost
Canal Pump Station #2	\$299,400	\$300,000	\$599,400
Canal Pump Station #3	\$264,600	\$300,000	\$564,600
Canal Pump Station #4	\$217,600	\$300,000	\$517,600
Canal Pump Station #5	\$168,200	\$300,000	\$468,200
Canal Pump Station #8	\$135,200	\$300,000	\$435,200
Total			\$2,585,000

Source: Replacement cost for canal pump based on original 1993 construction cost and 2006 land cost from City of Cape Coral, April 25, 2006; construction costs adjusted by *Engineering News Record* (ENR), Construction Cost Index (CCI), March 2006.

Canal water pumping during the dry season has put a strain on the capacity levels of the fresh water canals and the City has started to raise canal weirs (facilities that divert water flow) and install transfer pumps to provide sufficient irrigation water in the canals. As shown in Table 41, the estimated value of canal weirs and transfer pumps are \$2.5 million based on recently completed project costs.

Table 41
CANAL WEIR AND TRANSFER PUMP COST

Facility	Year	Original Cost	CCI Adj.	Replacement Cost
Pine Island Pump	2001	\$225,000	1.208	\$271,800
Chiquita Blvd Pump	2002	\$176,000	1.172	\$206,272
Santa Barbara Pump	2006	\$200,000	1.000	\$200,000
Gator Slough Phase IV	2005	\$916,292	1.033	\$946,530
Gator Slough Phase V	2006	\$566,535	1.000	\$566,535
Gator Slough Phase II	2000	\$74,476	1.231	\$91,680
Interconnect Basin	2002	\$172,160	1.172	\$201,772
Total				\$2,484,589

Source: Replacement cost based on original installation and material cost from City of Cape Coral, April 25, 2006; construction costs adjusted by the *Engineering News-Record* Construction Cost Index (CCI), March 2006.

As shown in Table 42, the total cost of City's canal water facilities for irrigation are an estimated \$5.1 million. Based on the canal water pumping capacity of 85.2 mgd, the total canal cost is \$0.03 per gallon per day.

Table 42
CANAL WATER COST

Irrigation Canal Pumps	\$2,585,000
Canal Weirs	\$2,484,589
Total Canal Facility Cost	\$5,069,589
Pump Capacity (Gallons per Day)	85,200,000
Canal Cost per Gallon per Day	\$0.03

Source: Replacement cost for irrigation canal pumps from Table 40 and replacement cost for canal weirs from Table 41; existing canal irrigation capacity based on high service canal pump capacity from *Fiscal Year 2004 City of Cape Coral Water and Wastewater Annual Report*.

Since the City utilizes two sources for irrigation water, it is necessary to allocate the cost for each source based on the average share of production from each source in order to determine an overall average cost per gallon per day for irrigation water production. Based on data from 2004, the total average annual daily irrigation supply was 30.2 mgd, with wastewater facilities providing 45 percent (13.6 mgd) and canal water providing the remaining 55 percent (16.6 mgd). Based on this analysis, the weighted average production cost per gallon per day is \$0.30, as shown in Table 43.

Table 43
IRRIGATION WATER PRODUCTION COST

Facility Type	Cost/ Gallon per Day	Annual Share	Wtd. Cost/ Gallon per Day
Wastewater Reuse	\$0.63	45%	\$0.28
Canal Water	\$0.03	55%	\$0.02
Weighted Average Cost per Gallon per Day			\$0.30

Source: Wastewater reuse cost from Table 43; canal water cost from Table 42; annual share based on actual irrigation water use from *Fiscal Year 2004 City of Cape Coral Water and Wastewater Annual Report*.

The City distributes irrigation water to its customers through more than 130 miles of irrigation water mains that range in size from 10 inches through 42 inches in diameter. The replacement cost of the irrigation mains is about \$87 million, and, based on the maximum daily irrigation water flow, the cost per gallon per day is \$2.12 as shown in Table 44.

Table 44
IRRIGATION MAIN COST

Pipe Diameter	Linear Feet	Replacement Cost/Foot	Replacement Cost
10"	99,761	\$53	\$5,287,333
12"	262,191	\$77	\$20,188,707
16"	134,434	\$82	\$11,023,588
20"	65,601	\$150	\$9,840,150
24"	51,864	\$197	\$10,217,208
30"	67,864	\$334	\$22,666,576
36"	19,526	\$380	\$7,419,880
42"	734	\$460	\$337,640
Total	701,975		\$86,981,082
Irrigation Main Capacity (gpd)			41,000,000
Irrigation Main Cost Per Gallon per Day			\$2.12

Source: Linear feet and replacement cost per foot from City of Cape Coral, April 14, 2006; capacity based on average 1999-2003 maximum day irrigation demand from MWH, *Facilities Planning Report for Cape Coral Water, Wastewater and Irrigation Facilities*, 2004, Figure 1.23.

The City's distribution of irrigation water includes irrigation valves to control the water flow. These valves are sized to fit the irrigation lines and their cost varies by size and type. The replacement cost of the irrigation main gate and butterfly valves is about \$6.7 million. Based on the maximum daily irrigation water flow, the cost per gallon per day is \$0.16, as shown in Table 45.

Table 45
IRRIGATION VALVE COST

Valve Size (inches)	Quantity	Replacement Cost/Unit	Replacement Cost
10	130	\$2,644	\$343,720
12	259	\$2,875	\$744,625
16	142	\$3,100	\$440,200
18	1	\$4,300	\$4,300
20	52	\$5,850	\$304,200
24	44	\$10,200	\$448,800
30	59	\$16,250	\$958,750
36	18	\$29,500	\$531,000
42	3	\$37,500	\$112,500
Subtotal, Gate Valve			\$3,888,095
12	3	\$3,500	\$10,500
16	142	\$4,457	\$632,894
20	52	\$6,060	\$315,120
24	44	\$11,028	\$485,232
30	59	\$16,234	\$957,806
36	18	\$19,480	\$350,640
42	3	\$25,000	\$75,000
Subtotal, Butterfly Valve			\$2,827,192
Total, Valve Costs			\$6,715,287
Irrigation Valve Capacity (gpd)			41,000,000
Irrigation Valve Cost Per Gallon per Day			\$0.16

Source: Linear feet and replacement cost per foot from City of Cape Coral, April 14, 2006; capacity based on average 1999-2003 maximum day irrigation demand from MWH, *Facilities Planning Report for Cape Coral Water, Wastewater and Irrigation Facilities*, 2004, Figure 1.23.

The water and wastewater debt credit accounted for all of the outstanding debt associated with utility facilities counted in the existing level of service. The City may have utilized a portion of the debt included in the water and wastewater analysis for irrigation facilities; however, these cannot be identified based on the available bond data. As a result, the irrigation system net cost per service unit is determined based on the system's replacement cost per gallon per day and the demand per service unit. As shown in Table 46, multiplying the replacement cost per gallon per day for existing irrigation facilities by the irrigation demand per ERU results in an irrigation water cost of \$1,210 per ERU.

Table 46
IRRIGATION FACILITY COST PER SERVICE UNIT

Irrigation Production Cost per Gallon per Day	\$0.30
Irrigation Main Cost per Gallon per Day	\$2.12
Irrigation Valve Cost per Gallon per Day	\$0.16
Irrigation System Cost per Gallon per Day	\$2.42
Gallons per Day per Equivalent Residential Unit (ERU)	500
Cost per Equivalent Residential Unit (ERU)	\$1,210

Source: Irrigation water production cost per gpd from Table 43; main cost per gpd from Table 44; valve cost per gpd from Table 45; gpd per ERU from Table 38.

Maximum Fee Schedule

The maximum irrigation impact fees that may be charged by the City of Cape Coral, based on the methodology, data and assumptions used in this report, are shown in Table 47.

Table 47
IRRIGATION NET COST SCHEDULE

Housing Type/Meter Size	ERUs per Unit or Meter	Net Cost per ERU	Net Cost per Unit or Meter
Single-Family Detached	1.00	\$1,210	\$1,210
Multi-Family	0.69	\$1,210	\$835
Nonresidential, 5/8" x 3/4" Meter	1.00	\$1,210	\$1,210
Nonresidential, 1" Meter	2.50	\$1,210	\$3,025
Nonresidential, 1-1/2" Meter	5.00	\$1,210	\$6,050
Nonresidential, 2" Meter	8.00	\$1,210	\$9,680
Nonresidential, 3" Meter	16.00	\$1,210	\$19,360
Nonresidential, 4" Meter	25.00	\$1,210	\$30,250
Nonresidential, 6" Meter	50.00	\$1,210	\$60,500
Nonresidential, 8" Meter	80.00	\$1,210	\$96,800
Nonresidential, 10" Meter	115.00	\$1,210	\$139,150
Nonresidential, 12" Meter	155.00	\$1,210	\$187,550

Source: Residential ERUs per unit from Table 38; nonresidential ERUs per meter from Table 7; net cost per ERU is cost per ERU from Table 46.

APPENDIX

Table 48
UTILITY CAPITAL IMPROVEMENT PROGRAM, 2006 to 2010

Project	2006	2007	2008	2009	2010	Total
New North RO Plant	\$18,444,000	\$41,269,000	\$14,230,000			\$73,943,000
Interconnect Water Mains	\$1,659,000	\$5,968,000				\$7,627,000
North RO Wellfield	\$6,162,000	\$24,461,000	\$8,233,000			\$38,856,000
North RO Deep Injection Well		\$5,152,000	\$732,333			\$5,884,333
Everest WRF Expansion	\$14,477,000	\$34,994,000	\$24,256,000	\$3,947,000		\$77,674,000
Forcemain Interconnect	\$2,814,000	\$2,935,000	\$1,558,000	\$450,000	\$73,000	\$7,830,000
Infiltration/Inflow Testing	\$8,985,000	\$3,015,000				\$12,000,000
South RO Wellfield	\$12,351,000	\$12,753,000				\$25,104,000
South RO Plant Expansion	\$2,837,655	\$4,426,000				\$7,263,655
SW WRF Expansion	\$8,572,836	\$33,790,216	\$32,032,939	\$1,801,754	\$31,820,002	\$108,017,747
Sludge Transport and Storage		\$1,370,000				\$1,370,000
SW Deep Injection Well		\$5,152,000	\$732,333			\$5,884,333
Water Main Extend, Palm Tree Blvd		\$862,000				\$862,000
Galvanized Pipe Replacement		\$4,500,000	\$2,500,000			\$7,000,000
Aquifer Storage Recovery (ASR)		\$15,860,000	\$11,860,000	\$9,360,000	\$9,360,000	\$46,440,000
Gator Slough VI Irrigation Weir		\$475,000				\$475,000
Well Vault Modifications		\$42,436	\$43,709	\$45,020	\$46,371	\$177,536
VFDs for Wells		\$45,000	\$30,000			\$75,000
VFDs Transfer Pump		\$92,700				\$92,700
Security Upgrade		\$200,000				\$200,000
Storage Mezzanine		\$40,000				\$40,000
Drop Ceiling		\$75,000				\$75,000
Computer Office Renovation		\$30,000				\$30,000
Canal Station A/C Replacement		\$20,600				\$20,600
Hancock/grinders		\$500,000				\$500,000
Sewage Lift Stations Rehab			\$625,000	\$660,000	\$750,000	\$2,035,000
Potable Water Transmission Lines		\$1,400,000	\$1,680,000	\$2,320,000	\$2,560,000	\$7,960,000
Irrigation Transmission Lines		\$1,340,000	\$1,680,000	\$2,320,000	\$2,560,000	\$7,900,000
Wastewater Transmission Lines		\$3,220,000	\$5,080,000	\$7,020,000	\$7,680,000	\$23,000,000
New North Cape Common Facility		\$2,605,000	\$15,853,000	\$15,853,000	\$12,670,000	\$46,981,000
Bio Solids Facility		\$4,000,000	\$36,000,000			\$40,000,000
New Production Well		\$582,000				\$582,000
New Maint. Shop/Storage, Water		\$25,000	\$100,000			\$125,000
New Maint. Shop/Storage, Sewer		\$25,000	\$100,000			\$125,000
Re-Pipe RO Plant Master Lift Sta.		\$200,000				\$200,000
SW Refurbish Sand Filters		\$1,500,000				\$1,500,000
Land UT Ext Surplus	\$30,000	\$31,500	\$33,075	\$34,729	\$36,465	\$165,769
Everest Deep Injection Well		\$5,152,000	\$732,333			\$5,884,333
Total	\$76,332,491	\$218,108,452	\$158,091,722	\$43,811,503	\$67,555,838	\$563,900,006

Source: City of Cape Coral Finance Department, May 22, 2006.