

CHAPTER 2

CAPITAL IMPROVEMENT PROGRAM

As was stated in Chapter 1, we have calculated the Sewer System Capacity Charge using the marginal cost methodology. This is the most appropriate method for the City because the proposed capital improvements provide the capacity that will be available for growth. Figure 2.1 is a schematic diagram of the marginal cost method calculation of capacity charges. Under this method the following tasks are performed:

1. The capital improvement program (CIP) is specified and the various capital projects are allocated to either those which benefit existing customers (replacement and/or improvement projects) and whose costs are thus recovered via rates or those which benefit new applicants for service (expansion projects) and whose costs are thus recovered via capacity charges. This information was obtained from the following documents:
 - *Draft Engineer's Report Justification and Cost Allocation for Proposed Collection System and Treatment Plant Improvements*, Carollo Engineers, July 2006
 - *Final Wastewater Near Term Capacity Study*, Carollo Engineers, March 2006
 - City correspondence dated December 5, 2006
2. The CIP is further allocated between the functional cost categories of flow, BOD (Biochemical Oxygen Demand), and TSS (Total Suspended Solids). This information was obtained from the following document:
 - *Draft Engineer's Report Justification and Cost Allocation for Proposed Collection System and Treatment Plant Improvements*, Carollo Engineers, July 2006
 - *Addendum No. 1 to Above Reports*, Carollo Engineers, September 18, 2006.

Capital Improvement Program

Because the marginal cost method recovers the cost of the proposed CIP, the starting point in the calculation of capacity charges is the CIP. The costs (by phase) were obtained from the Carollo Engineers July 2006 draft report. The CIP costs are shown in Table 2.1. The costs total \$420,551,000. The CIP is divided into five categories of costs, collection system costs, Sutter Avenue Primary Treatment Facility costs, primary effluent outfall costs, Jennings Road Secondary Treatment Facility Expansion costs and Special Studies costs. Costs for each category are shown in Figure 2.2.

The details of these costs and their allocation between new customers and existing customers are presented in Tables 2.2 through 2.6 and are summarized in Table 2.1. As shown in Table 2.1, \$176,575,450 (excluding any financing costs) of the total \$420,551,000 CIP costs are to be recovered from new customers.

Figure 2.1 Capacity Charge Calculation Methodology

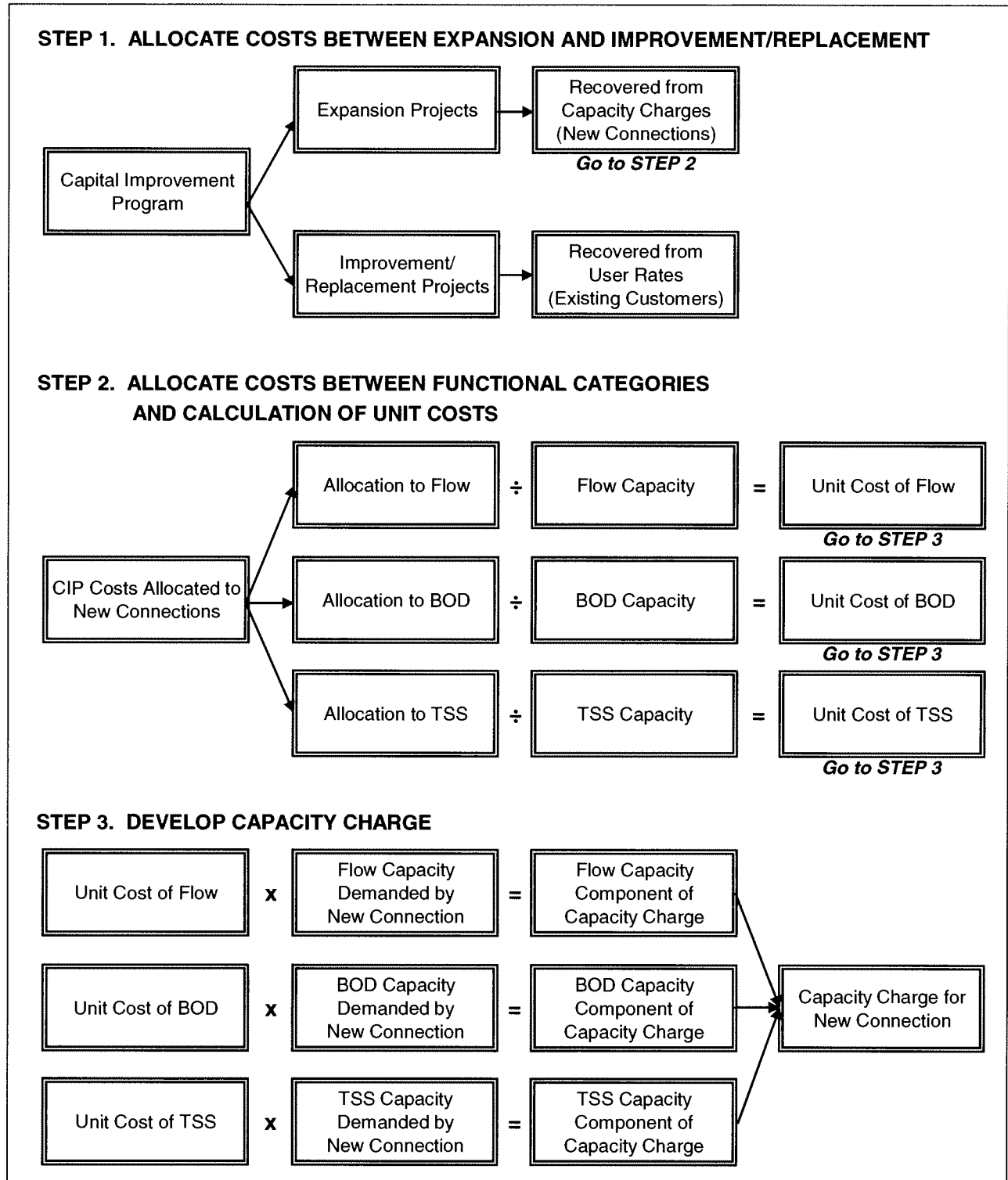
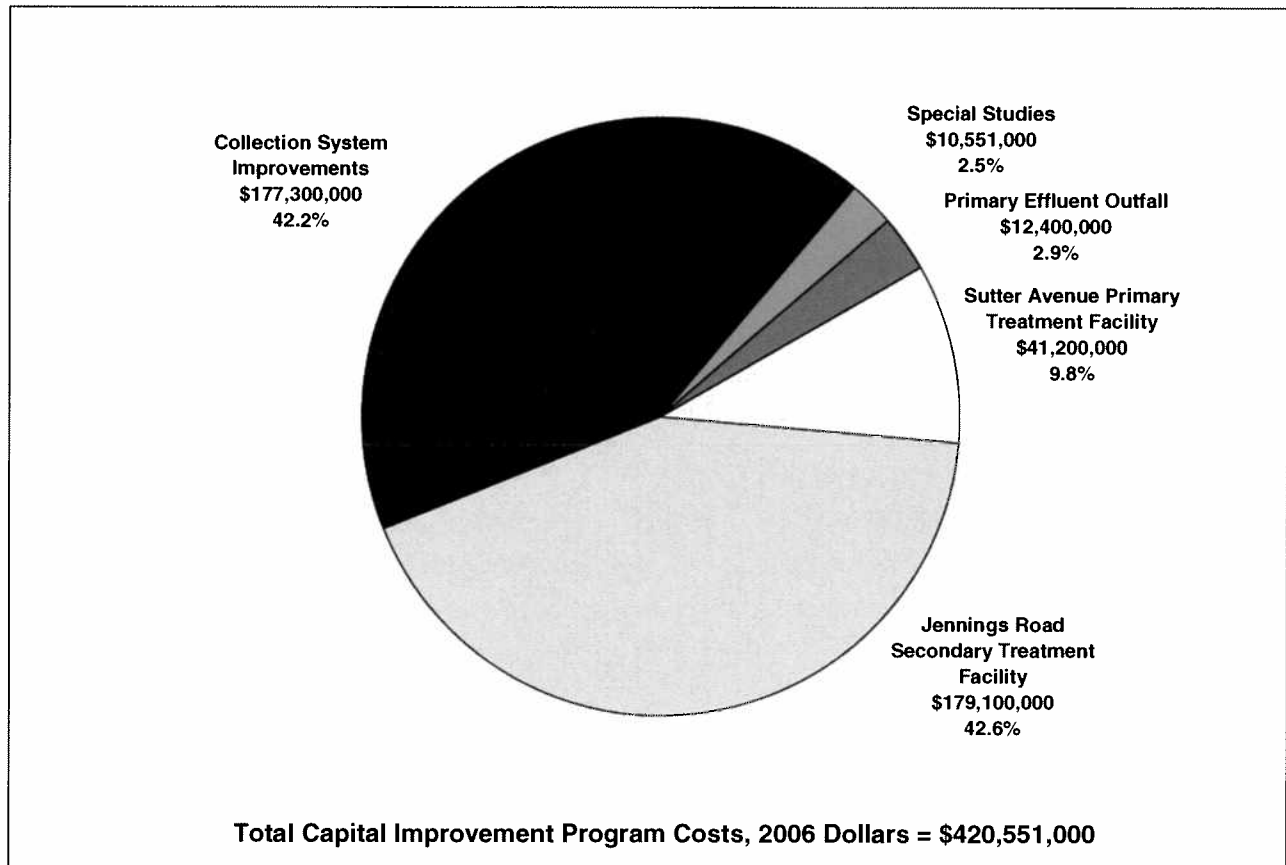
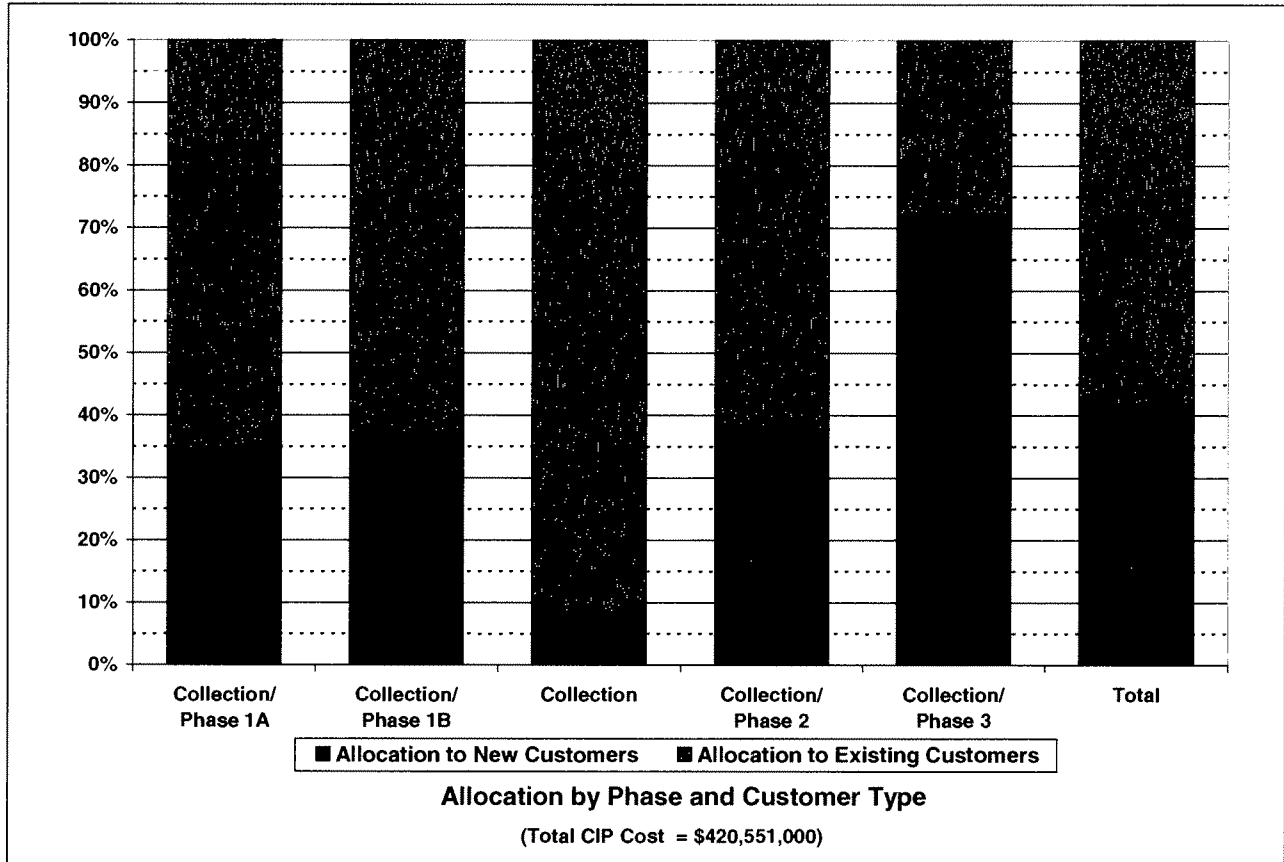


Figure 2.2 Capital Improvement Program Costs by Category



These total CIP costs, by phase, are presented in Table 2.7. The costs to be recovered via user charges from existing customers is presented in Table 2.8. These costs total \$243,975,550. The costs to be recovered via capacity charges from new customers is presented in Table 2.9. These costs total \$176,575,450. The allocation of costs by phase for existing customers and new customers is shown in Figure 2.3.

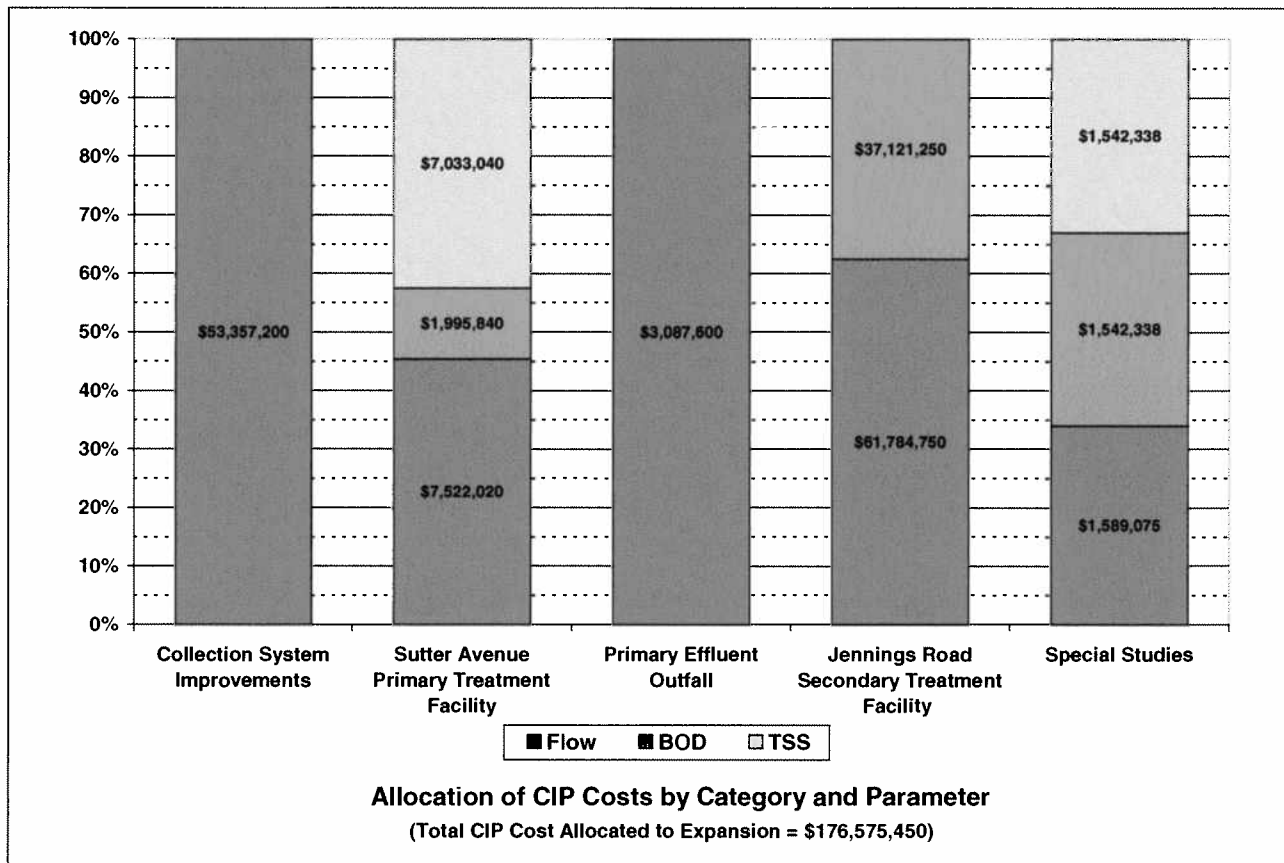
Figure 2.3 Allocation of CIP Costs by Phase and Customer Type



After separating the CIP costs into those that benefit new applicants for service (and are thus recovered via capacity charges) and those that benefit existing customers (and are thus recovered via user charges) the former costs are allocated to the functional cost categories of flow, BOD and TSS as presented in the Carollo Engineers July 2006 draft report and subsequent updates. The entire CIP was allocated to these functional cost categories as shown in Table 2.10.

Table 2.11 and Figure 2.4 summarize the costs to be recovered from new customers allocated by phase and functional cost category.

Figure 2.4 Allocation of CIP Costs to New Connections by Category and Flow/BOD/TSS



Capacity of New Facilities

The capacity available for new customers, provided by those facilities in the CIP allocable to growth, was developed from information in Table 4 of the July 2006 Carollo Engineers draft report and subsequent updates. The additional capacities provided by the facilities allocable to growth are 15.7 million gallons per day for flow, 54,300 pounds per day for BOD, and 43,100 pounds per day for TSS. The development of unit costs of capacity for new facilities for flow, BOD and TSS are shown in Table 2.12.

Unit Costs of Capacity for New Facilities

The costs allocated to the three functional cost categories are then divided by the respective amounts of capacity added (as shown in the CIP and summarized above) to determine the unit costs of capacity for flow, BOD and TSS. The cost information presented in Table 2.11 together with the capacity information presented in Table 2.12 are combined to calculate the unit costs of service in Table 2.13. The unit costs developed in Table 2.13 are summarized below:

Summary of FY 2006 Unit Cost Development from Table 2.13

<u>Category</u>	<u>Cost</u>	<u>Capacity</u>	<u>Unit Cost</u>	<u>Units</u>
Flow	\$127,340,645	15.7 mgd	\$8.111	per gpd
BOD	\$40,659,428	54,300 lbs/day	\$748.792	per lb-day
<u>TSS</u>	<u>\$8,575,378</u>	<u>43,100 lbs/day</u>	<u>\$198.965</u>	<u>per lb-day</u>
Total	\$176,575,450	-	-	

These unit costs will be used to develop capacity charges for any customer based on expected flows and strength loadings. This guarantees satisfaction of the proportionality requirement of the State of California Government Code regulating the calculation of capacity charges. That is, all new connections pay the same unit costs.

The unit costs shown above are in June 2006 dollars (and are thus for FY 2006) and do not include interest costs. Unit costs for subsequent fiscal years (FY 2007, FY 2008, etc.) will be developed based on projected capital cost inflation and the addition of interest costs. These unit costs will be developed in Chapter 3 and will be used to develop alternative capacity charges.

Table 2.1
Summary of Allocation of CIP Costs
Engineer's Report ⁽¹⁾

Facility Description	Engineer's Report Cost	Existing Customers		New Customers	
		Amount, \$	Amount, %	Amount, \$	Amount, %
Collection System Improvements	\$177,300,000	\$123,942,800	69.9%	\$53,357,200	30.1%
Sutter Avenue Primary Treatment Facility	\$41,200,000	\$24,649,100	59.8%	\$16,550,900	40.2%
Primary Effluent Outfall	\$12,400,000	\$9,312,400	75.1%	\$3,087,600	24.9%
Jennings Road Secondary Treatment Facility	\$179,100,000	\$80,194,000	44.8%	\$98,906,000	55.2%
Special Studies	\$10,551,000	\$5,877,250	55.7%	\$4,673,750	44.3%
Total Capital Improvements	\$420,551,000	\$243,975,550	58.0%	\$176,575,450	42.0%

Notes:

1. All data is from the Engineer's Report Justification and Cost Allocation for Proposed Collection System and Treatment Plant Improvements prepared by Carollo Engineers, Draft July 2006.
The data was subsequently updated by Carollo in a document entitled "Addendum No. 1 to Above Reports, September 18, 2006."

**Table 2.2
Collection System CIP Costs and Cost Allocation
Engineer's Report ⁽¹⁾**

Facility Description	Engineer's Report Cost	Existing Customers		New Customers	
		Amount, \$	Amount, %	Amount, \$	Amount, %
Capacity Improvements	\$63,600,000	\$53,424,000	84.0%	\$10,176,000	16.0%
Rehabilitation Improvements	\$66,800,000	\$63,192,800	94.6%	\$3,607,200	5.4%
New Service Improvements	\$37,900,000	\$0	0.0%	\$37,900,000	100.0%
Reliability Improvements	\$9,000,000	\$7,326,000	81.4%	\$1,674,000	18.6%
Total Collection System	\$177,300,000	\$123,942,800	69.9%	\$53,357,200	30.1%

Notes:

1. All data is from the Engineer's Report Justification and Cost Allocation for Proposed Collection System and Treatment Plant Improvements prepared by Carollo Engineers, Draft July 2006, Table 1 (page 2) and pp. 46-47.
The data was subsequently updated by Carollo in a document entitled "Addendum No. 1 to Above Reports, September 18, 2006."

**Table 2.3
Sutter Avenue Primary Treatment Facility CIP Costs and Cost Allocation
Engineer's Report ⁽¹⁾**

Facility Description	Engineer's Report Cost	Existing Customers		New Customers	
		Amount, \$	Amount, %	Amount, \$	Amount, %
Headworks Expansion	\$3,500,000	\$0	0.0%	\$3,500,000	100.0%
Primary Effluent Lift Station Expansion	\$9,300,000	\$6,984,300	75.1%	\$2,315,700	24.9%
Anaerobic Digester	\$4,800,000	\$2,985,600	62.2%	\$1,814,400	37.8%
Sludge Drying Beds Lining	\$7,600,000	\$4,727,200	62.2%	\$2,872,800	37.8%
Flood Control Levee & Stormwater Pump Sta.	\$16,000,000	\$9,952,000	62.2%	\$6,048,000	37.8%
Total Primary Treatment Facility	\$41,200,000	\$24,649,100	59.8%	\$16,550,900	40.2%

Notes:

1. All data is from the Engineer's Report Justification and Cost Allocation for Proposed Collection System and Treatment Plant Improvements prepared by Carollo Engineers, Draft July 2006, Table 1 (page 2) and page 48.

The data was subsequently updated by Carollo in a document entitled "Addendum No. 1 to Above Reports, September 18, 2006."

**Table 2.4
Primary Effluent Outfall CIP Costs and Cost Allocation
Engineer's Report ⁽¹⁾**

Facility Description	Engineer's Report Cost	Existing Customers		New Customers	
		Amount, \$	Amount, %	Amount, \$	Amount, %
Rehabilitation/Expansion of Existing Outfall	\$12,400,000	\$9,312,400	75.1%	\$3,087,600	24.9%
Total Primary Effluent Outfall	\$12,400,000	\$9,312,400	75.1%	\$3,087,600	24.9%

Notes:

1. All data is from the Engineer's Report Justification and Cost Allocation for Proposed Collection System and Treatment Plant Improvements prepared by Carollo Engineers, Draft July 2006, Table 1 (page 2) and page 48.
The data was subsequently updated by Carollo in a document entitled "Addendum No. 1 to Above Reports, September 18, 2006."

**Table 2.5
Jennings Road Secondary Treatment Facility Expansion CIP Costs and Cost Allocation
Engineer's Report ⁽¹⁾**

Facility Description	Engineer's Report Cost	Existing Customers		New Customers	
		Amount, \$	Amount, %	Amount, \$	Amount, %
DAF Facility	\$11,000,000	\$9,944,000	90.4%	\$1,056,000	9.6%
BNR/Tertiary Treatment Phase 1A (2.3 mgd)	\$8,600,000	\$0	0.0%	\$8,600,000	100.0%
BNR/Tertiary Treatment Phase 1B (2.5 mgd)	\$42,400,000	\$18,189,600	42.9%	\$24,210,400	57.1%
BNR/Tertiary Treatment Phase 2 (20 mgd)	\$85,800,000	\$36,808,200	42.9%	\$48,991,800	57.1%
BNR/Tertiary Treatment Phase 3 (5 mgd)	\$21,800,000	\$9,352,200	42.9%	\$12,447,800	57.1%
Improvements to Existing Facilities	\$9,500,000	\$5,900,000	62.1%	\$3,600,000	37.9%
Total Secondary Treatment Facility	\$179,100,000	\$80,194,000	44.8%	\$98,906,000	55.2%

Notes:

1. All data is from the Engineer's Report Justification and Cost Allocation for Proposed Collection System and Treatment Plant Improvements prepared by Carollo Engineers, Draft July 2006, Table 1 (page 2) and page 48.
The data was subsequently updated by Carollo in a document entitled "Addendum No. 1 to Above Reports, September 18, 2006."
The data for the DAF Facility was subsequently updated by Carollo in a document to be entitled "Addendum No. 2 to Above Reports."

Table 2.6
Special Studies Cost and Cost Allocation
Engineer's Report ⁽¹⁾

Facility Description	Engineer's Report Cost	Existing Customers		New Customers	
		Amount, \$	Amount, %	Amount, \$	Amount, %
Land Application Studies	\$1,000,000	\$1,000,000	100.0%	\$0	0.0%
Engineering System Analysis (deletion)	-\$199,000	\$0	0.0%	-\$199,000	100.0%
Engineering System Analyses	\$3,750,000	\$1,151,250	30.7%	\$2,598,750	69.3%
Wastewater Master Plan Updates	\$6,000,000	\$3,726,000	62.1%	\$2,274,000	37.9%
Total Land Application Studies	\$10,551,000	\$5,877,250	55.7%	\$4,673,750	44.3%

Notes:

1. All data is from the Engineer's Report Justification and Cost Allocation for Proposed Collection System and Treatment Plant Improvements prepared by Carollo Engineers, Draft July 2006, Table 1 (page 2) and page 48.

The data was subsequently updated by Carollo in a document entitled "Addendum No. 1 to Above Reports, September 18, 2006."

**Table 2.7
Capital Improvement Program Costs and Schedule**

Facility Description	Engineer's Report Cost	Planned Construction ⁽¹⁾				
		Collection/Phase 1A 2008	Collection/Phase 1B 2009	Collection 2010	Collection/Phase 2 2012	Collection/Phase 3 2020
Collection System Improvements						
Capacity Improvements	\$63,600,000	\$8,500,000		\$2,000,000	\$43,300,000	\$9,800,000
Rehabilitation Improvements	\$66,800,000			\$20,000,000	\$20,000,000	
New Service Improvements	\$37,900,000					\$37,900,000
Reliability Improvements	\$9,000,000				\$6,100,000	
Subtotal Collection System Improvements	\$177,300,000					
Sutter Avenue Primary Treatment Facility						
Headworks Expansion	\$3,500,000				\$3,500,000	
Primary Effluent Lift Station Expansion	\$9,300,000				\$9,300,000	
Anaerobic Digester	\$4,800,000				\$4,800,000	
Sludge Drying Beds Lining	\$7,600,000				\$7,600,000	
Flood Control Levee & Stormwater Pump Sta.	\$16,000,000				\$16,000,000	
Subtotal Sutter Avenue Primary Treatment Facility	\$41,200,000					
Primary Effluent Outfall						
Rehabilitation/Expansion of Existing Outfall	\$12,400,000					
Jennings Road Secondary Treatment Facility						
DAF Facility	\$11,000,000					
BNR/Tertiary Treatment Phase 1A (2.3 mgd)	\$8,600,000					
BNR/Tertiary Treatment Phase 1B (2.5 mgd)	\$42,400,000		\$42,400,000			
BNR/Tertiary Treatment Phase 2 (20 mgd)	\$65,800,000					
BNR/Tertiary Treatment Phase 3 (5 mgd)	\$21,800,000					
Improvements to Existing Facilities	\$9,500,000					\$21,800,000
Subtotal Jennings Road Secondary Treatment Facility	\$179,100,000				\$65,800,000	
Special Studies ⁽²⁾						
Land Application Studies	\$1,000,000					
Engineering System Analysis (deletion)	-\$199,000					
Engineering System Analyses	\$3,750,000		\$150,000	\$150,000	\$300,000	\$2,850,000
Wastewater Master Plan Updates	\$6,000,000			\$1,000,000		\$5,000,000
Subtotal Special Studies	\$10,551,000					
Total Capital Improvements	\$420,551,000	\$51,101,000	\$116,650,000	\$23,150,000	\$152,300,000	\$77,350,000

Notes:

- The planned construction schedule for collection system improvements is based on the Engineer's Report, Justification and Cost Allocation for Proposed Collection System and Treatment Plant Improvements prepared by Carollo Engineers, Draft July 2006, Appendix B.
The planned construction schedule for treatment and disposal improvements is from the Engineer's Report Justification and Cost Allocation for Proposed Collection System and Treatment Plant Improvements prepared by Carollo Engineers, Draft July 2006, Appendix C.
- Engineering System Analyses are allocated among phases based on updates provided by Carollo in a document entitled "Addendum No. 1 to Above Reports, September 18, 2006."

Number of Engineering System Analyses per phase >	1	1	2	19
Cost per Engineering System Analysis >	\$150,000	\$150,000	\$150,000	\$150,000
Cost per phase for Engineering System Analyses >	\$300,000	\$150,000	\$300,000	\$2,850,000

Wastewater Master Plan Updates are allocated among phases based on updates provided by Carollo in a document entitled "Addendum No. 1 to Above Reports, September 18, 2006."

**Table 2.8
Capital Improvement Program Costs Allocation to Existing Customers**

Facility Description	Engineer's Report Cost	Planned Construction ¹⁾			
		Collection/Phase 1A 2008	Collection/Phase 1B 2009	Collection 2010	Collection/Phase 2 2012
Collection System Improvements					
Capacity Improvements	\$53,424,000	\$7,140,000		\$1,680,000	\$36,372,000
Rehabilitation Improvements	\$63,192,800			\$18,920,000	\$18,920,000
New Service Improvements	\$0				\$0
Reliability Improvements	\$7,326,000				\$2,360,600
Subtotal Collection System Improvements	\$123,942,800				
Sutter Avenue Primary Treatment Facility					
Headworks Expansion	\$0				\$0
Primary Effluent Lift Station Expansion	\$6,984,300				\$6,984,300
Anaerobic Digester	\$2,985,600				\$2,985,600
Sludge Drying Beds Lining	\$4,727,200				\$4,727,200
Flood Control Levee & Stormwater Pump Sta.	\$9,952,000				\$9,952,000
Subtotal Sutter Avenue Primary Treatment Facility	\$24,649,100				
Primary Effluent Outfall					
Rehabilitation/Expansion of Existing Outfall	\$9,312,400	\$9,312,400			
Jennings Road Secondary Treatment Facility					
DAF Facility	\$9,944,000	\$9,944,000			
BNR/Tertiary Treatment Phase 1A (2.3 mgd)	\$0	\$0			
BNR/Tertiary Treatment Phase 1B (2.5 mgd)	\$18,189,600			\$18,189,600	
BNR/Tertiary Treatment Phase 2 (20 mgd)	\$36,808,200				\$36,808,200
BNR/Tertiary Treatment Phase 3 (5 mgd)	\$9,352,200				\$9,352,200
Improvements to Existing Facilities	\$5,900,000	\$5,900,000			
Subtotal Jennings Road Secondary Treatment Facility	\$80,194,000				
Special Studies					
Land Application Studies	\$1,000,000	\$1,000,000			
Engineering System Analysis (deletion)	\$0				
Engineering System Analyses	\$1,151,250	\$92,100		\$46,050	\$874,950
Wastewater Master Plan Updates	\$3,726,000			\$621,000	\$3,105,000
Subtotal Special Studies	\$5,877,250				
Total Capital Improvements	\$243,975,550	\$33,388,500	\$73,202,950	\$21,267,050	\$94,552,900
					\$21,564,150

Notes:

1. The allocation between existing customers and new development is based on the allocations shown in Tables 2.2 - 2.6.

Table 2.9
Capital Improvement Program Costs Allocation to New Customers

Facility Description	Engineer's Report Cost	Planned Construction ⁽¹⁾				
		Collection/Phase 1A 2008	Collection/Phase 1B 2009	Collection 2011	Collection/Phase 2 2016	Collection/Phase 3 2023
Collection System Improvements						
Capacity Improvements	\$10,176,000	\$1,360,000		\$320,000	\$6,928,000	\$1,568,000
Rehabilitation Improvements	\$3,607,200			\$1,080,000	\$1,080,000	
New Service Improvements	\$37,900,000					
Reliability Improvements	\$1,674,000					
Subtotal Collection System Improvements	\$53,357,200	\$1,134,600			\$539,400	
Sutter Avenue Primary Treatment Facility						
Headworks Expansion	\$3,500,000			\$3,500,000		
Primary Effluent Lift Station Expansion	\$2,315,700			\$2,315,700		
Anaerobic Digester	\$1,814,400			\$1,814,400		
Sludge Drying Beds Lining	\$2,872,800			\$2,872,800		
Flood Control Levee & Stormwater Pump Sta.	\$6,048,000			\$6,048,000		
Subtotal Sutter Avenue Primary Treatment Facility	\$16,550,900					
Primary Effluent Outfall						
Rehabilitation/Expansion of Existing Outfall	\$3,087,600	\$3,087,600				
Jennings Road Secondary Treatment Facility						
DAF Facility	\$1,056,000	\$1,056,000				
BNR/Tertiary Treatment Phase 1A (2.3 mgd)	\$8,600,000	\$8,600,000				
BNR/Tertiary Treatment Phase 1B (2.5 mgd)	\$24,210,400			\$24,210,400		
BNR/Tertiary Treatment Phase 2 (20 mgd)	\$48,991,800					
BNR/Tertiary Treatment Phase 3 (5 mgd)	\$12,447,800				\$48,991,800	
Improvements to Existing Facilities	\$3,600,000	\$3,600,000				
Subtotal Jennings Road Secondary Treatment Facility	\$98,906,000					
Special Studies						
Land Application Studies	\$0	\$0				
Engineering System Analysis (deletion)	-\$199,000	-\$199,000				
Engineering System Analyses	\$2,598,750	\$207,900		\$103,950	\$207,900	\$1,975,050
Wastewater Master Plan Updates	\$2,274,000			\$379,000		\$1,895,000
Subtotal Special Studies	\$4,673,750	\$17,712,500		\$43,447,050	\$57,747,100	\$55,785,850
Total Capital Improvements	\$176,575,450	\$17,712,500	\$43,447,050	\$1,882,950	\$57,747,100	\$55,785,850

Notes:

1. The allocation between existing customers and new development is based on the allocations shown in Tables 2.2 - 2.6.

**Table 2.10
Capital Improvement Program Costs and Allocation of Costs to Billable Constituents**

Facility Description	Engineer's Report Cost	Percent Allocation ⁽¹⁾		Cost Allocation	
		Flow	BOD	Flow	BOD
Collection System Improvements					
Capacity Improvements	\$63,600,000	100.0%	0.0%	\$63,600,000	\$0
Rehabilitation Improvements	\$66,800,000	100.0%	0.0%	\$66,800,000	\$0
New Service Improvements	\$37,900,000	100.0%	0.0%	\$37,900,000	\$0
Reliability Improvements	\$9,000,000	100.0%	0.0%	\$9,000,000	\$0
Subtotal Collection System Improvements	\$177,300,000	100.0%	0.0%	\$177,300,000	\$0
Sutter Avenue Primary Treatment Facility					
Headworks Expansion	\$3,500,000	90.0%	0.0%	\$3,150,000	\$0
Primary Effluent Lift Station Expansion	\$9,300,000	100.0%	0.0%	\$9,300,000	\$0
Anaerobic Digester	\$4,800,000	0.0%	0.0%	\$0	\$4,800,000
Sludge Drying Beds Lining	\$7,600,000	0.0%	0.0%	\$0	\$7,600,000
Flood Control Levees & Stormwater Pump Sta.	\$16,000,000	34.0%	33.0%	\$5,440,000	\$5,280,000
Subtotal Sutter Avenue Primary Treatment Facility	\$41,200,000	43.4%	12.8%	\$17,890,000	\$5,280,000
Primary Effluent Outfall					
Rehabilitation/Expansion of Existing Outfall	\$12,400,000	100.0%	0.0%	\$12,400,000	\$0
Jennings Road Secondary Treatment Facility					
DAF Facility	\$11,000,000	100.0%	0.0%	\$11,000,000	\$0
BNR/Tertiary Treatment Phase 1A (2.3 mgd)	\$8,600,000	100.0%	0.0%	\$8,600,000	\$0
BNR/Tertiary Treatment Phase 1B (2.5 mgd)	\$42,400,000	57.5%	42.5%	\$24,380,000	\$18,020,000
BNR/Tertiary Treatment Phase 2 (20 mgd)	\$85,800,000	57.5%	42.5%	\$49,335,000	\$36,465,000
BNR/Tertiary Treatment Phase 3 (5 mgd)	\$21,800,000	57.5%	42.5%	\$12,535,000	\$9,265,000
Improvements to Existing Facilities	\$9,500,000	60.0%	20.0%	\$7,600,000	\$1,900,000
Subtotal Jennings Road Secondary Treatment Facility	\$179,100,000	63.3%	36.7%	\$113,450,000	\$65,650,000
Special Studies					
Land Application Studies	\$1,000,000	34.0%	33.0%	\$340,000	\$330,000
Engineering System Analysis (deletion)	-\$199,000	34.0%	33.0%	-\$67,660	-\$65,670
Engineering System Analyses	\$3,750,000	34.0%	33.0%	\$1,275,000	\$1,237,500
Wastewater Master Plan Updates	\$6,000,000	34.0%	33.0%	\$2,040,000	\$1,980,000
Subtotal Special Studies	\$10,551,000	34.0%	33.0%	\$3,587,340	\$3,481,830
Total Capital Improvements	\$420,551,000	77.2%	17.7%	\$324,627,340	\$74,411,830

Notes:

1. All allocation data is from the Engineer's Report Justification and Cost Allocation for Proposed Collection System and Treatment Plant Improvements prepared by Carollo Engineers, Draft July 2006, Table 12 (page 52) and pp. 50-54.

**Table 2.11
Summary of New Customers CIP Cost Allocation to Cost Components**

Facility Description	New Customers		Percent Allocation		Cost Allocation ⁽¹⁾			
	Total Cost	Flow	Flow	BOD	TSS	Flow		TSS
						BOD	TSS	
Collection System Improvements	\$53,357,200	100.00%	100.00%	0.00%	0.00%	\$53,357,200	\$0	\$0
Sutter Avenue Primary Treatment Facility	\$16,550,900	45.45%	45.45%	12.06%	42.49%	\$7,522,020	\$1,995,840	\$7,033,040
Primary Effluent Outfall	\$3,087,600	100.00%	100.00%	0.00%	0.00%	\$3,087,600	\$0	\$0
Jennings Road Secondary Treatment Facility	\$98,906,000	62.47%	62.47%	37.53%	0.00%	\$61,784,750	\$37,121,250	\$0
Special Studies	\$4,673,750	34.00%	34.00%	33.00%	33.00%	\$1,589,075	\$1,542,338	\$1,542,338
Total	\$176,575,450	72.12%	72.12%	23.03%	4.86%	\$127,340,645	\$40,659,428	\$8,575,378
Total by Phases								
Collection/Phase 1A	\$17,712,500	95.90%	95.90%	4.08%	0.02%	\$16,986,626	\$722,937	\$2,937
Collection/Phase 1B	\$43,447,050	55.38%	55.38%	28.36%	16.27%	\$24,060,143	\$12,319,564	\$7,067,344
Collection	\$1,882,950	83.07%	83.07%	8.46%	8.46%	\$1,564,203	\$159,374	\$159,374
Collection/Phase 2	\$57,747,100	63.71%	63.71%	36.18%	0.12%	\$36,788,371	\$20,890,122	\$68,607
Collection/Phase 3	\$55,785,850	85.94%	85.94%	11.77%	2.29%	\$47,941,302	\$6,567,432	\$1,277,117
Total	\$176,575,450	72.12%	72.12%	23.03%	4.86%	\$127,340,645	\$40,659,428	\$8,575,378

Notes:

1. Cost allocation amounts are the sum of the product of the costs for each project shown in Table 2.10 multiplied by the percent allocation to new customers for each project shown in Tables 2.2 - 2.6.

**Table 2.12
Capacity Added by CIP**

Item	EDUs ⁽¹⁾	Flow ⁽²⁾	BOD ⁽²⁾	TSS ⁽²⁾
Capacity Added by CIP	54,138 < EDU	15.7 < mgd	54,300 < pounds/day	43,100 < pounds/day

Notes:

1. The number of Equivalent Dwelling Units added by the CIP is calculated as shown below:

	<u>MGD</u>	<u>GPD/EDU *</u>	<u>GPD/MGD</u>	<u>EDU</u>
Projected	41.5	x 290	= 1,000,000	143,103
Current	25.8	x 290	= 1,000,000	88,966
Capacity Added by CIP	15.7			54,138

* Flow per equivalent dwelling unit is from a Public Works Memo from the Assistant Civil Engineer to the Deputy Public Works Director dated May 25, 2006, regarding Estimated Sewer Flow Projections. Data from the memo used to develop flow per EDS as shown below:

2.9	People per Equivalent Dwelling Unit
<u>100</u>	Gallons per day per capita
290	Gallons per day per Equivalent Dwelling Unit

2. Flow and loading data is from the Engineer's Report Justification and Cost Allocation for Proposed Collection System and Treatment Plant Improvements prepared by Carollo Engineers, Draft July 2006, Table 4 (page 6).

	<u>MGD</u>	<u>BOD</u>	<u>TSS</u>
Projected	41.5	143,600	113,900
Current	25.8	89,300	70,800
Capacity Added by CIP	15.7	54,300	43,100

**Table 2.13
Capacity Charge Unit Costs, 2006**

Item	Flow	BOD	TSS
New Customers CIP Costs ⁽¹⁾	\$127,340,645	\$40,659,428	\$8,575,378
Capacity Added by CIP ⁽²⁾	15.7 <mgd	54,300 <pounds/day	43,100 <pounds/day
Unit Cost of Capacity			
Conversion for mgd to gpd	1,000,000 <gpd/mgd		
Unit cost of capacity ⁽³⁾	\$8.111 < per gpd	\$748.792 < per lb-day	\$198.965 < per lb-day

Notes:

1. From Table 2.11
2. From Table 2.12
3. Unit costs are the total costs divided by added capacity divided by the conversion factor.