

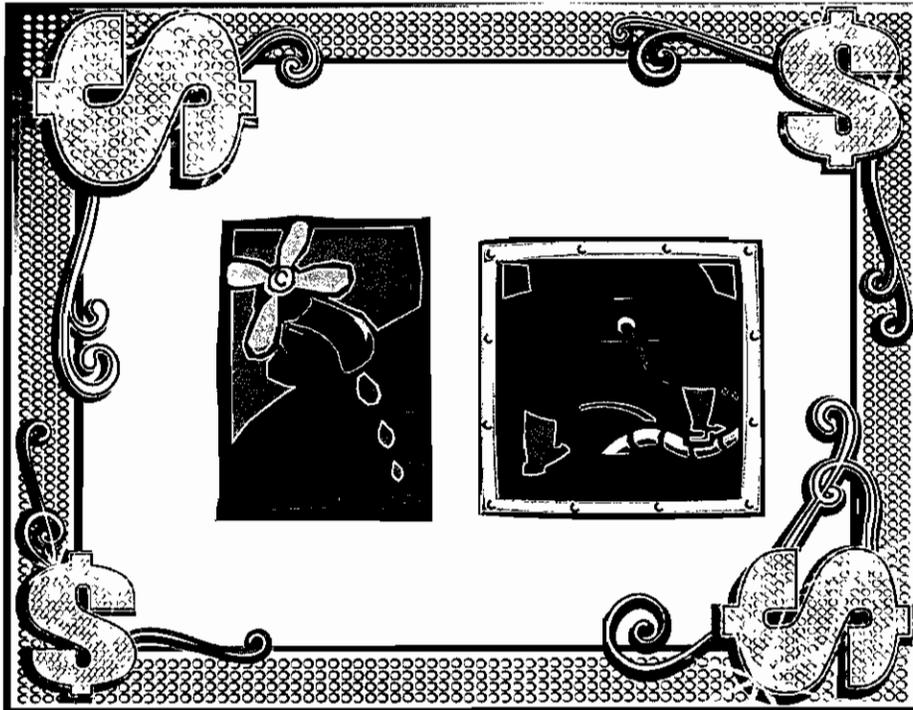
Water & Sewer Rate Task Force

Tuesday

June 5, 2012

Worksession

5:15 p.m.



City Hall Conference Room - Upstairs
491 E. Pioneer Avenue
Homer, Alaska 99603



**NOTICE OF MEETING
WORKSESSION**

1. CALL TO ORDER

2. APPROVAL OF THE AGENDA

3. PUBLIC COMMENTS REGARDING ITEMS ON THE AGENDA

4. NEW BUSINESS

- A. Water & Sewer 101 – The Basics of the System – Source to Consumer
 - 1. Why is Pressure Reducing Needed? What are the Costs for Maintenance and Operation?
 - 2. What are the Costs involved in Maintenance of the System?
 - 3. What Makes Homer’s System So Costly in Comparison to Similar Sized Cities?
 - 4. Discussion and information on the Associated Sale of Water and Production?

- B. Memorandum from Deputy City Clerk dated May 31, 2012 Page 5
 - Re: Rate Study from 2000-2001
 - 1. Rates and Information Provided by Public Works from 2000 Page 7

5. INFORMATIONAL ITEMS

- A. KPMG Peat Marwick Final Report to the City of Homer for the Water and Wastewater Utilities Rate Study, dated February 11, 1991 Page 33

6. COMMENTS OF THE AUDIENCE

7. COMMENTS OF THE TASK FORCE

8. ADJOURNMENT next WORKSESSION is scheduled for **TUESDAY, JULY 10, 2012** City Hall **Upstairs Conference Room at 5:15 p.m.** The next **REGULAR MEETING** is **TUESDAY JUNE 19, 2012** . at 5:15 p.m. in the Conference Room Upstairs in the City Hall located at 491 E. Pioneer Avenue, Homer Alaska.

Office of the City Clerk

Jo Johnson, CMC, City Clerk

Melissa Jacobsen, CMC, Deputy City Clerk II
Renee Krause, CMC, Deputy City Clerk I



491 E. Pioneer Avenue
Homer, Alaska 99603-7624
(907) 235-3130

(907) 235-8121
Extension: 2227
Extension: 2224

Fax: (907) 235-3143
Email: clerk@ci.homer.ak.us

MEMORANDUM

DATE: MAY 31, 2012

TO: WATER AND SEWER RATE TASK FORCE

FROM: RENEE KRAUSE, CMC, DEPUTY CITY CLERK

SUBJECT: RATE STUDY DOCUMENTATION FROM 2000 - 2001

I wanted to let the Task Force know that after careful research through our files I have not been able to locate any Rate Study Documentation that was produced on or about 2000-2001.

The only information I have relevant to Water/Sewer performed in the appropriate time period mentioned frequently by Mr. Castner and Mr. Moore was in changing the Methodology of the LID process.

I have been provided by Public Works a copy of the Water and Wastewater Utilities Rate Study performed by KMPG Peat Marwick February 11, 1991. This was a Document we did not have in our file.

The City Library is currently being relocated back into City Hall and I can do further research to see if there are any documents that may have been misfiled or not included in the Clerk's index file system.

City of Homer
2000 Budget
Water Rate Model

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City of Homer
2000 Budget

Water Rate Model

DEPRECIATION & FLEET ALLOCATION TO VARIABLE COST (\$148,000)

REVISION # 1 HYDRANT COST REIMBURSED FROM GENERAL FUND

INPUT DATA: ENTER THE CORRECT DATA IN THE HIGHLIGHTED BOXES.

REVENUE REQUIREMENTS		
Dept.	Component	Requirement
403	Pump Station	\$ 52,723
405	Water Reservoir Maintenance	\$ 16,592
404	Water Distribution Operations	\$ 113,330
407	Water Hydrants Maintenance	\$
401	Treatment Plant Operations	\$ 138,740
402	Treatment Plant Testing	\$ 28,041
406	Meter Operations	\$ 46,171
400	Administrative and General	\$ 361,820
400	Debt Service	\$ 150,000
400	Capital Reserve	\$ 120,000
400	Fleet Allocation	\$ 20,000

METER AND BILLING FIGURE FROM THE OVERHEAD BUDGET		\$ 12,286	Laurie has spreadsheet
PERCENTAGE OF FIXED COSTS ALLOCATED TO THE HOMER SPIT			
Dept.	Expenditure Component	Percentage (%)	
403	Pump Station	1%	Leave Fixed for now
405	Water Reservoir Maintenance	2%	Leave Fixed for now
404	Water Distribution Operations	1%	Leave Fixed for now
407	Water Hydrants Maintenance	0%	Leave Fixed for now

ESTIMATED ANNUAL WATER SALES IN GALLONS	132,274,130
ESTIMATED ANNUAL BULK WATER SALES IN GALLONS	5,260,000

INPUT DATA: ENTER THE CORRECT DATA IN THE HIGHLIGHTED BOXES.

DEPRECIATION & FLEET ALLOCATION TO VARIABLE COST (\$148,000)

REVISION # 1 HRYDARNT COST REIMBURSED FROM GENERAL FUND

NUMBER OF WATER CUSTOMERS BY METER SIZE

Meter Size	Total	Spit
5/8	1006	15
3/4	37	5
1	55	1
1 1/2	35	2
2	18	4
3	2	3
4	1	3
6	0	0
TOTAL	1154	27

City of Homer

2000 Budget

Water Rate Model

DEPRECIATION & FLEET ALLOCATION TO VARIABLE COST (\$148,000)

REVISION # 1 HYDRANT COST REIMBURSED FROM GENERAL FUND water1

MONTHLY RATES FOR THE CITY OF HOMER WATER CUSTOMERS

CUSTOMER CHARGE \$4.22

**COMMODITY CHARGE
PER 1,000 GALLONS** \$4.20

**BULK RATE PER
1,000 GALLONS** \$7.36

SERVICE CHARGE

Meter Size	General Service Charge	Spit Service Charge
5/8	\$ 19.46	\$ 87.28
3/4	\$ 29.19	\$ 130.92
1	\$ 48.65	\$ 218.20
1 1/2	\$ 97.31	\$ 436.41
2	\$ 155.69	\$ 698.26
3	\$ 340.57	\$ 1,527.43
4	\$ 613.02	\$ 2,749.38
6	\$ 1,362.27	\$ 6,109.73

EXCESS USE SURCHARGE

Meter Size	Monthly Use Exceeds	General Service Charge	Spit Service Charge
5/8	20,000 gallons	\$ 29.19	\$ 130.92
5/8	70,000 gallons	\$ 48.65	\$ 218.20
3/4	70,000 gallons	\$ 48.65	\$ 218.20

City of Homer
 2000 Budget
 Water Rate Model

DEPRECIATION & FLEET ALLOCATION TO VARIABLE COST (\$148,000)
 REVISION # 1 HYDRANT COST REIMBURSED FROM GENERAL FUND

<u>Annual Revenue Requirement</u>		<u>Allocation</u>					
Dept.	Expenditure Component	2000 Revenue Requirement	Meter and Billing Costs	Variable Costs	Fixed Costs	Fixed Costs Spilt	Spit (%)
	O&M Expenses:						
403	Pump Station	\$ 52,723			\$ 44,815	\$ 7,908	15
405	Water Reservoir Maintenance	\$ 16,592			\$ 12,444	\$ 4,148	25
404	Water Distribution Operations	\$ 113,830			\$ 96,756	\$ 17,075	15
407	Water Hydrants Maintenance	\$ -			\$ -	\$ -	0
401	Treatment Plant Operations	\$ 188,750		\$ 188,750			
402	Treatment Plant Testing	\$ 29,041		\$ 29,041			
406	Meter Operations	\$ 46,171	\$ 46,171				
400	Administrative and General	\$ 361,820	\$ 12,286	\$ 189,869	\$ 134,269	\$ 25,396	
	Capital Requirements:						
400	Debt Service	\$ 130,000			\$ 130,000		
400	Capital Reserve	\$ 128,000		\$ 128,000	\$ -	\$ -	
400	Fleet Allocation	\$ 20,000		\$ 20,000	\$ -	\$ -	
	Total	\$ 1,086,927	\$ 58,457	\$ 555,660	\$ 418,283	\$ 54,527	\$ 1,086,927
	Monthly Revenue Requirements	\$ 90,577	\$ 4,871	\$ 46,305	\$ 34,857	\$ 4,544	\$ 90,577
							Check:

City of Homer
2000 Budget
Water Rate Model

**DEPRECIATION & FLEET ALLOCATION TO VARIABLE COST (\$148,000)
REVISION # 1 HYDRANT COST REIMBURSED FROM GENERAL FUND
DETERMINATION OF CUSTOMER RATE**

Monthly Meter and Billing Costs:	\$4,871	
Average Number of Water Customers	1154	
Monthly Customer Rate	<table border="1"><tr><td>\$4.22</td></tr></table>	\$4.22
\$4.22		

DETERMINATION OF COMMODITY RATE

Annual Variable Cost	\$555,660	
Annual Water Sales in Gallons	132,274,130	
Commodity Rate Per 1000 Gallons	<table border="1"><tr><td>\$4.20</td></tr></table>	\$4.20
\$4.20		

DETERMINATION OF BULK RATE

Annual Bulk sales in Gallons	15,260,000	
Total Sales in Gallons	132,274,130	
Bulk % of Total:	11.54	
Annual Fixed Cost	\$418,283	
Fixed Cost to be paid by Bulk Users:	\$48,256	
Surcharge Per 1000 Gallons	\$3.16	
Commodity Rate Per 1000 Gallons	\$4.20	
Total Bulk Rate Per 1000 Gallons	<table border="1"><tr><td>\$7.36</td></tr></table>	\$7.36
\$7.36		

City of Homer
2000 Budget
Water Rate Model

**DEPRECIATION & FLEET ALLOCATION TO VARIABLE COST (\$148,000)
REVISION # 1 HYDRANT COST REIMBURSED FROM GENERAL FUND
DETERMINATION OF FIXED RATES**

Total annual revenue requirement to be covered by fixed \$ 418,283
Less amount charged to Bulk Users: \$ 48,256
Monthly revenue requirement: \$ 30,836

Meter Size	No. of Cust.	Equiv. Meters	Index Number	Fixed Rate	Monthly Revenue
5/8	1006	1	1.00	\$ 19.46	\$ 19,577.79
3/4	37	1.5	1.50	\$ 29.19	\$ 1,080.09
1	55	2.5	2.50	\$ 48.65	\$ 2,675.89
1 1/2	35	5	5.00	\$ 97.31	\$ 3,405.68
2	18	8	8.00	\$ 155.69	\$ 2,802.39
3	2	17.5	17.50	\$ 340.57	\$ 681.14
4	1	31.5	31.50	\$ 613.02	\$ 613.02
6	0	70	70.00	\$ 1,362.27	\$ -
Totals	1154				\$ 30,836.00

SPIT SURCHARGE

Total annual revenue requirement to be covered by fixed \$ 54,527
Monthly revenue requirement: \$ 4,544

Meter Size	No. of Cust.	Equiv. Meters	Index Number	Surcharge	Monthly Revenue
5/8	15	1	1.00	\$ 67.82	\$ 1,017.31
3/4	5	1.5	1.50	\$ 101.73	\$ 508.66
1	1	2.5	2.50	\$ 169.55	\$ 169.55
1 1/2	2	5	5.00	\$ 339.10	\$ 678.21
2	4	8	8.00	\$ 542.57	\$ 2,170.27
3	0	17.5	17.50	\$ 1,186.87	\$ -
4	0	31.5	31.50	\$ 2,136.36	\$ -
6	0	70	70.00	\$ 4,747.46	\$ -
Totals	27				\$ 4,544.00

TOTAL SPIT FIXED RATES

Meter Size	Fixed Rate
5/8	\$ 87.28
3/4	\$ 130.92
1	\$ 218.20
1 1/2	\$ 436.41
2	\$ 698.26
3	\$ 1,527.43
4	\$ 2,749.38
6	\$ 6,109.73

EXCESS USE SURCHARGE

Meter Size	Monthly Use Exceeds	General Service Charge	Spit Service Charge
5/8	20,000 gallons	\$ 29.19	\$ 130.92
5/8	70,000 gallons	\$ 48.65	\$ 218.20
3/4	70,000 gallons	\$ 48.65	\$ 218.20

Revised
September 1999

City of Homer
2000 Budget

Water Rate Model

DEPRECIATION & FLEET ALLOCATION TO VARIABLE COST (\$148,000)

REVISION # 1 HYDRANT COST REIMBURSED FROM GENERAL FUND

INPUT DATA: ENTER THE CORRECT DATA IN THE HIGHLIGHTED BOXES.

REVENUE REQUIREMENTS		
<u>Dept.</u>	<u>Component</u>	<u>Requirement</u>
403	Pump Station	\$ 52,722
405	Water Reservoir Maintenance	\$ 14,552
404	Water Distribution Operations	\$ 1,000
407	Water Hydrants Maintenance	\$ 1,000
401	Treatment Plant Operations	\$ 1,000
402	Treatment Plant Testing	\$ 1,000
406	Meter Operations	\$ 1,000
400	Administrative and General	\$ 1,000
400	Debt Service	\$ 1,000
400	Capital Reserve	\$ 1,000
400	Fleet Allocation	\$ 1,000

METER AND BILLING FIGURE FROM THE OVERHEAD BUDGET		
		\$ 1,000
PERCENTAGE OF FIXED COSTS ALLOCATED TO THE HOMER SPIT		
<u>Dept.</u>	<u>Expenditure Component</u>	<u>Percentage (%)</u>
403	Pump Station	
405	Water Reservoir Maintenance	
404	Water Distribution Operations	
407	Water Hydrants Maintenance	

Laurie has spreadsheet

Leave Fixed for now
Leave Fixed for now
Leave Fixed for now
Leave Fixed for now

ESTIMATED ANNUAL WATER SALES IN GALLONS	3,250,000
ESTIMATED ANNUAL BULK WATER SALES IN GALLONS	1,000,000

INPUT DATA: ENTER THE CORRECT DATA IN THE HIGHLIGHTED BOXES.
DEPRECIATION & FLEET ALLOCATION TO VARIABLE COST (\$148,000)
REVISION # 1 HRYDARNT COST REIMBURSED FROM GENERAL FUND

NUMBER OF WATER CUSTOMERS BY METER SIZE

Meter Size	Total	Spit
5/8	1450	15
3/4	37	5
1	55	1
1 1/2	35	2
2	18	4
3	2	0
4	1	0
6	0	0
TOTAL	1598	27

City of Homer
 2000 Budget
 Water Rate Model
 DEPRECIATION & FLEET ALLOCATION TO VARIABLE COST (\$148,000)
 REVISION # 1 HYDRANT COST REIMBURSED FROM GENERAL FUNI

water1

MONTHLY RATES FOR THE CITY OF HOMER WATER CUSTOMERS

CUSTOMER CHARGE \$3.05

**COMMODITY CHARGE
 PER 1,000 GALLONS** \$4.20

**BULK RATE PER
 1,000 GALLONS** \$12.01

SERVICE CHARGE

Meter Size	General Service Charge	Spit Service Charge
5/8	\$ 8.49	\$ 37.62
3/4	\$ 25.47	\$ 112.86
1	\$ 50.95	\$ 225.72
1 1/2	\$ 101.90	\$ 451.43
2	\$ 203.79	\$ 902.87
3	\$ 407.58	\$ 1,805.74
4	\$ 815.17	\$ 3,611.47
6	\$ 1,630.35	\$ 7,222.95

EXCESS USE SURCHARGE

Meter Size	Monthly Use Exceeds	General Service Charge	Spit Service Charge
5/8	20,000 gallons	\$ 25.47	\$ 112.86
5/8	70,000 gallons	\$ 50.95	\$ 225.72
3/4	70,000 gallons	\$ 50.95	\$ 225.72

City of Homer
2000 Budget
Water Rate Model

DEPRECIATION & FLEET ALLOCATION TO VARIABLE COST (\$148,000)
REVISION # 1 HYDRANT COST REIMBURSED FROM GENERAL FUND

<u>Annual Revenue Requirement</u>		<u>Allocation</u>					
<u>Dept.</u>	<u>Expenditure Component</u>	<u>2000 Revenue Requirement</u>	<u>Meter and Billing Costs</u>	<u>Variable Costs</u>	<u>Fixed Costs</u>	<u>Fixed Costs Spit</u>	<u>Spit (%)</u>
	O&M Expenses:						
403	Pump Station	\$ 52,723			\$ 44,815	\$ 7,908	15
405	Water Reservoir Maintenance	\$ 16,592			\$ 12,444	\$ 4,148	25
404	Water Distribution Operations	\$ 113,830			\$ 96,756	\$ 17,075	15
407	Water Hydrants Maintenance	\$ -			\$ -	\$ -	0
401	Treatment Plant Operations	\$ 188,750		\$ 188,750			
402	Treatment Plant Testing	\$ 29,041		\$ 29,041			
406	Meter Operations	\$ 46,171	\$ 46,171				
400	Administrative and General	\$ 361,820	\$ 12,286	\$ 189,869	\$ 134,269	\$ 25,396	
	Capital Requirements:						
400	Debt Service	\$ 130,000			\$ 130,000		
400	Capital Reserve	\$ 128,000		\$ 128,000	\$ -	\$ -	
400	Fleet Allocation	\$ 20,000		\$ 20,000	\$ -	\$ -	
	Total	\$ 1,086,927	\$ 58,457	\$ 555,660	\$ 418,283	\$ 54,527	\$ 1,086,927
	Monthly Revenue Requirements	\$ 90,577	\$ 4,871	\$ 46,305	\$ 34,857	\$ 4,544	\$ 90,577
							Check:

City of Homer
2000 Budget
Water Rate Model

**DEPRECIATION & FLEET ALLOCATION TO VARIABLE COST (\$148,000)
REVISION # 1 HYDRANT COST REIMBURSED FROM GENERAL FUND
DETERMINATION OF CUSTOMER RATE**

Monthly Meter and Billing Costs:	\$4,871
Average Number of Water Customers	1598
Monthly Customer Rate	\$3.05

DETERMINATION OF COMMODITY RATE

Annual Variable Cost	\$555,660
Annual Water Sales in Gallons	132,274,130
Commodity Rate Per 1000 Gallons	\$4.20

DETERMINATION OF BULK RATE

# of Customers (connected)	1,154
# of Customers (bulk water)	460
Bulk % of Total (based on # of connectic	28.50
Annual Fixed Cost	\$418,283
Fixed Cost to be paid by Bulk Users:	\$119,213
Annual Bulk Water Usage	15,260,000
Surcharge	\$7.81
Commodity Rate Per 1000 Gallons	\$4.20
Total Bulk Rate Per 1000 Gallons	\$12.01

City of Homer
2000 Budget
Water Rate Model

**DEPRECIATION & FLEET ALLOCATION TO VARIABLE COST (\$148,000)
REVISION # 1 HYDRANT COST REIMBURSED FROM GENERAL FUND
DETERMINATION OF FIXED RATES**

Total annual revenue requirement to be covered by fixed \$ 418,283
Less amount charged to Bulk Users: \$ 119,213
Monthly revenue requirement: \$ 24,922

Meter Size	No. of Cust.	Equiv. Meters	Index Number	Fixed Rate	Monthly Revenue
5/8	1450	1	1.00	\$ 8.49	\$ 12,312.40
3/4	37	1.5	3.00	\$ 25.47	\$ 942.54
1	55	2.5	6.00	\$ 50.95	\$ 2,802.13
1 1/2	35	5	12.00	\$ 101.90	\$ 3,566.35
2	18	8	24.00	\$ 203.79	\$ 3,668.25
3	2	17.5	48.00	\$ 407.58	\$ 815.17
4	1	31.5	96.00	\$ 815.17	\$ 815.17
6	0	70	192.00	\$ 1,630.33	\$ -
Totals	1598				\$ 24,922.00

SPIT SURCHARGE

Total annual revenue requirement to be covered by fixed \$ 54,527
Monthly revenue requirement: \$ 4,544

Meter Size	No. of Cust.	Equiv. Meters	Index Number	Surcharge	Monthly Revenue
5/8	15	1	1.00	\$ 29.13	\$ 436.92
3/4	5	1.5	3.00	\$ 87.38	\$ 436.92
1	1	2.5	6.00	\$ 174.77	\$ 174.77
1 1/2	2	5	12.00	\$ 349.54	\$ 699.08
2	4	8	24.00	\$ 699.08	\$ 2,796.31
3	0	17.5	48.00	\$ 1,398.15	\$ -
4	0	31.5	96.00	\$ 2,796.31	\$ -
6	0	70	192.00	\$ 5,592.62	\$ -
Totals	27				\$ 4,544.00

TOTAL SPIT FIXED RATES

Meter Size	Fixed Rate
5/8	\$ 37.62
3/4	\$ 112.86
1	\$ 225.72
1 1/2	\$ 451.43
2	\$ 902.87
3	\$ 1,805.74
4	\$ 3,611.47
6	\$ 7,222.95

EXCESS USE SURCHARGE

Meter Size	Monthly Use Exceeds	General Service Charge	Spit Service Charge
5/8	20,000 gallons	\$ 25.47	\$ 112.86
5/8	70,000 gallons	\$ 50.95	\$ 225.72
3/4	70,000 gallons	\$ 50.95	\$ 225.72

February 11, 1991

Mr. C.E. Swackhammer
City Manager
City of Homer
491 East Pioneer Avenue
Homer, Alaska 99603

Dear Mr. Swackhammer:

KPMG Peat Marwick is pleased to provide this final report for the Water and Wastewater Utilities Rate Study to the City of Homer (City). The objective of the study was to analyze the City's cost of providing water and wastewater services and develop rate structures that: generate appropriate levels of revenue; are equitable to users; and are simple to understand and administer. As part of the project, we developed a microcomputer-based model which can be used by the City to update utility rates in the future.

The study included evaluation of customer demand, capital and operating costs, expected revenue requirements and rate alternatives for the water and wastewater utilities. Important elements of the study included the treatment of wastewater costs associated with Kachemak City customers, development of reserves for funding systems replacement, repayment of debt incurred by the City's Water and Sewer Funds, and consideration of peak, summertime demands placed on the utility systems. The rate impact of each of these elements is described in this report.

The report includes the following chapters:

- Introduction and Utility Systems Overview;
- Customer Characteristics and Systems Growth;
- Revenue Requirements;
- Connection Fees;
- Cost of Service; and
- Rate Structures and Implementation Recommendations.

Underlying our analysis of costs and rates are operating information, historical budgets and budgetary projections of administrative, operations and maintenance, debt service and capital reserve costs that were provided by the City. We have not examined this information or underlying assumptions and, accordingly, do not express an opinion or any other form of assurance on this information. Further, there will usually be differences between projected and actual results because events and circumstances frequently do not occur as expected and those differences may be material. We understand that our report will be used internally by the City to help establish new rate structures and will be made available to the public under public information requirements.

Mr. C.E. Swackhammer
City Manager
City of Homer
February 11, 1991
Page 2

Peat Marwick is pleased to have this opportunity to assist the City of Homer in this important study. We anticipate that this study and the rate model will allow the City to implement revised rate structures that equitably generate the revenue necessary to continue high quality utility services. We would like to thank the various representatives of the City of Homer and Kachemak City who provided valuable assistance throughout the study and we look forward to working with you in the future.

Very truly yours,

KPMG Peat Marwick

CITY OF HOMER

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CHAPTER I

INTRODUCTION AND UTILITY SYSTEMS OVERVIEW

I. INTRODUCTION AND UTILITY SYSTEMS OVERVIEW

The City of Homer (City) provides water and wastewater services to City and local area residents through utility systems managed by the Department of Public Works and Utilities (Department). The Department serves approximately 1,000 metered water customers within the City and sells bulk water to other users. The wastewater system serves over 950 customers in Homer and Kachemak City and provides treatment facilities for customers with private septic systems.

Recently, a number of important changes have occurred in the City's utility systems which together have a significant impact on system costs and user rates. Among these recent developments are:

- A new state-of-the-art wastewater treatment plant was built that increased the administrative, operations and maintenance, and debt service costs associated with sewer service;
- Sewer service was expanded to the Homer Spit area;
- Kachemak City was added to the City's wastewater system in compliance with the United States Environmental Protection Agency's (EPA) National Pollution Discharge Elimination System Permit. Residents in Kachemak City previously relied entirely on private septic systems;
- Funding deficits developed in the Water and Sewer Funds which required loans from the City's General Fund; and
- City management determined that it is fiscally prudent to begin the development of financial reserves for eventual replacement of systems.

The City last undertook a comprehensive review of its utility rate structures in 1983. Until 1990, yearly cost increases were evaluated during preparation of the City's budget and across-the-board percentage rate increases were adopted. However, the structure of the underlying rates was not reviewed as part of this process.

In the Fall of 1990, the City retained Peat Marwick to perform a comprehensive Water and Wastewater Utilities Rate Study with the objective of developing equitable rate structures that could generate the level of revenues required to maintain the operations of the utility systems. The study included the analysis of costs associated with the new wastewater system users in Kachemak City and the development of a rate structure for these customers that previously were not served by a municipal utility system.

Our analysis and findings are described in the chapters that follow. This initial chapter provides an overview of the study approach and major assumptions, followed by a description of the current water and wastewater systems and rate structures.

STUDY APPROACH

Working with representatives of the City of Homer and Kachemak City, we reviewed historical information, compiled assumptions and projections, analyzed rate alternatives and developed recommendations for rate structures that will cover the City's cost of water and wastewater services.

Specifically, we performed the following activities for the water and wastewater systems:

- Reviewed the City's operational and financial environment including historical financial statements and budgets, the existing rate structures, existing operating and capital costs, customer growth history and projections, and the capital improvement plan;
- Analyzed the demand for services in Homer and Kachemak City including historical growth trends, population shifts, changes in usage/demand, growth forecasts, and volume assumptions;
- Compiled a five-year summary of required revenues and projected expenses for the water and wastewater systems including the development of capital replacement reserves;
- Evaluated connection fee costs and appropriate connection fee levels;
- Calculated the cost of service for retail water and wastewater services for the City and Kachemak City including administration, operations and maintenance, debt service and capital replacement reserves;
- Prepared and documented data sources and developed a microcomputer-based rate model for the City; and
- Analyzed rate alternatives, customer impacts and rate implementation policies and developed recommendations for retail water and wastewater rates and connection fees for both the City of Homer and Kachemak City.

Our evaluation of utility rates for the City was governed by a number of important criteria:

- **Equity** - Equity requires that rates and charges result in no undue discrimination among user classes and be based on cost of service. User charges must be commensurate with the benefit received.

I. Introduction and Utility Systems Overview

- **Efficiency** - Efficiency refers to the ability of the rate schedule to encourage wise use of City resources. Efficiency considerations require:
 1. That rates should be similar for customers served under similar conditions; and
 2. Rate payers should be able to understand rate schedules so that they can make rational decisions regarding their usage.
- **Revenue Adequacy** - This recognizes that rates are basically cost-driven. In evaluating the rate structure, it is necessary to determine revenue adequacy and the sensitivity of the structure to changes in demand for service. The stability of the revenue stream is also a consideration.
- **Administrative Simplicity** - Recognizes that limits must be placed on the complexity of the rate schedule, the frequency of billing and the degree of change to be introduced to administrative processes.
- **Legal Constraints** - The key considerations in this area are cost driven structures, appropriate statutes and regulations, and adequate support and documentation.

These criteria were carefully considered in our evaluation of:

- The recommended rate structures;
- Rate schedules; and
- Impact on customers.

Specific analysis procedures, costs and bases for our recommendations are discussed in later chapters.

KEY ASSUMPTIONS

The findings in this report are in part based on assumptions and projections of future information and conditions that were developed or reviewed and adopted by the City. While these assumptions represent the City's best estimates at this time, it is clear that the City is growing quickly and is likely to undergo additional change in the future. Therefore, the key assumptions on which this report is based should be carefully considered as decisions on future rates are made. We strongly recommend that the assumptions be evaluated annually by City staff to determine their appropriateness over time.

A number of the key assumptions helped to define the study including:

- Kachemak City's wastewater rates will be based on the guidelines outlined in the 1988 Intergovernmental Agreement and in recent meetings held between City and Kachemak City management. This includes consideration of estimated residential wastewater flows for Kachemak City, recognition of lump-sum capital contributions, and specific charge for the cost of pumping septic systems;
- A Capital Replacement Reserve based on a percentage of replacement costs will be incorporated into the water and wastewater rate structures to fund eventual replacement of the systems. This reserve requirement will be incorporated into Kachemak City's wastewater rates in lieu of depreciation expense. The actual percentage reserve to be included must be approved by policy makers as described later in this report;
- The repayment of General Fund loans for operating deficits in the Water Fund during 1990 and the Sewer Fund in 1991, will be repaid from user rates over a three year period. Each loan is for \$60,000. The Sewer Fund will also repay a \$978,432 General Fund loan over a 20-year period for administration, management and other costs associated with the construction of the new sewage treatment plant;
- A State loan of \$4.75 million for construction of the new treatment plant will be repaid by City residents beginning in 1992. This loan amount assumes that a recent wastewater plant construction delay claim of \$1.9 million will not be repaid from State grant funds;
- Rates for 1991 will include an entire year of costs based on the current budget;
- Water consumption will continue to increase on a trend with recent years; and
- The mix of water customers by class and meter size will not change dramatically over time.

These and other assumptions are described in more detail in later chapters.

WATER SYSTEM OVERVIEW

The City provides a treated water system for most of the area within the incorporated City limits. The source of Homer's water is a 145 million gallon storage reservoir created by a dam on Bridge Creek, one mile north of the City. Water is pumped from this reservoir to the City's water treatment plant prior to distribution. Additional storage of treated water is provided in storage tanks throughout the City.

I. Introduction and Utility Systems Overview

The City plans to connect all new development within the City limits to the water system and encourages growth within the City through provision of utility services. Planned system expansion includes the completion of the west side loop to add residents on the west side of the City to the system, and expansion of the reservoir to increase capacity.

Over the last few years, changes have occurred in customer demand and makeup. Since 1987, water sales have grown over 25%, while new connections grew only 2.5%. Increases in usage occurred in all classes of users: Residential 17%; Commercial 17%; Public Authority 21%; Spit 44% and Bulk Sales/Hydrants 54%. Most of the new connections were for Commercial enterprises. It is expected that per capita usage will continue to increase, as will the number of businesses served.

One of the most important features of the system is the high seasonal fluctuation in demand for services to the Homer Spit. The Homer Spit is a narrow strip of land projecting four miles out into Kachemak Bay. Nearly all of the activity on the Spit is related to fishing or tourism and is, therefore, highly concentrated in the summer months. The high seasonality requires infrastructure that can handle peak demands but which remains underutilized throughout most of the year.

The City's current rate structure includes a monthly fixed service charge, which includes the first 5,000 gallons of water consumption, and a commodity charge for each 1,000 gallons used in excess of 5,000 gallons. The monthly service charge is different for each customer class and meter size and, therefore, the customer makeup and usage is closely related to the amount of revenue generated by the rate structure. The commodity charge is a flat amount per 1,000 gallons that is the same for all customers. Table I-1 shows the City's current water rate structure.

TABLE I-1
EXISTING WATER RATE STRUCTURE

Monthly Service Charge (Includes 5,000 Gallons of Water)

<u>Meter Size</u>	<u>Residential</u>	<u>Commercial</u>	<u>Public Authority</u>	<u>Spit</u>
5/8"	18.85	28.94	20.15	60.85
3/4"	22.57	37.73	24.31	88.97
1"	30.00	55.29	32.63	145.05
1-1/2"	54.66	105.42	59.79	288.32
2"	81.01	162.20	88.97	459.90
3"	145.05	297.17	159.20	856.12
4"	224.65	477.59	247.64	1,415.08
6"	408.60	916.27	454.60	2,830.15

Commodity Charge

All services at \$2.13/1,000 gallons in excess of 5,000 gallons

Source: City of Homer

As the customer makeup and usage characteristics changed over time, service costs were incurred which were not recovered by user rates. Over the past year, the Water Fund had an operating deficit of \$60,000 which was funded by a temporary loan from the City's General Fund. This deficit, combined with expected service cost and usage increases in the coming years, were key reasons to reevaluate the City's water rate structure.

*I. Introduction and Utility Systems Overview***WASTEWATER SYSTEM OVERVIEW**

Substandard wastewater effluent discharges into Kachemak Bay prompted the EPA to issue a consent decree establishing a phased schedule for upgrading the City's wastewater treatment facilities. To help comply with this decree, the City adopted the Homer Wastewater Facilities Plan (Plan) in 1988. The Plan addresses water quality and sewage issues and recommends a solution for area-wide wastewater collection and treatment.

Under the Plan, the development of a new sewage treatment plant was begun in 1989. This plant is scheduled for start-up in April 1991, and final completion in October 1991. It is designed to serve both Homer and Kachemak City and to comply with EPA standards. In conjunction with the new treatment plant, the City also expanded and enhanced existing sewer services with new pump stations, an outfall line for the new treatment plant, and new sewage collection systems for Kachemak City and the Homer Spit. The City's latest cost estimate of the new plant and system expansion is \$18.4 million.

Due to the high cost of the new plant and system expansion, the City obtained grant funding through the EPA and the Alaska Department of Environmental Conservation, and a low-interest loan through the State of Alaska's Clean Water Fund. Kachemak City also provided a lump-sum capital contribution for their portion of the system as specified in the Intergovernmental Agreement.

The City is required to repay only the State Clean Water Fund Loan which is expected to total \$4.75 million. The debt service payments on the loan will be made from revenue raised from City sewer rates and a portion of City sales tax (1/4%) which is dedicated by ordinance to utility capital costs. By agreement, Kachemak City residents are not required to contribute additional funds to repay debt on the existing system.

As one of the conditions for receipt of the Alaska Department of Environmental Conservation grant, the City is required to conduct a wastewater system rate study. A rate study was also required in the Intergovernmental Agreement between Homer and Kachemak City as a condition to adding Kachemak City to the system.

Important to the development of wastewater rates are EPA regulations for utilities which use EPA grant funds for capital projects. The EPA requires that:

"...each user (or user class) pays its proportionate share of operation and maintenance (including replacement) costs of treatment works within the grantee's service area, based on the user's proportionate contribution to the total wastewater loading from all users (or user classes)."¹

¹Federal Register, Vol. 49, No. 34, Sec. 35.2140[a]; Friday, February 17, 1984.

I. Introduction and Utility Systems Overview

This regulation requires analysis of costs based on wastewater flows as opposed to other measures like number of customers or system's capacity.

The Alaska Public Utilities Commission also has general requirements for non-regulated utilities that specify that rate structures must be fair, equitable, and just.

The City's current wastewater rate structure is designed to comply with these guidelines by providing a flat rate for each 1,000 gallons of domestic water usage. High strength flows from restaurants and bakeries and other non-domestic customers have separate rates. This structure is presented in Table I-2 below.

Cost per 1,000 gallons of water consumption	
\$4.67	Restaurants and Bakeries
\$3.17	All other Domestic Strength Customers
\$2.56 + \$.00211 mg/l BOD*	All other Non-Domestic Strength Customers
*Biological Oxygen Demand	
<i>Source: City of Homer</i>	

Homer Spit

One part of the Plan was the connection of properties on the Spit to the wastewater system. This was an expensive project for many reasons. First, nearly all of the properties requiring sewer service are clustered at the far end of the Spit, which required laying large mains the entire length of the Spit. Second, the proximity of Kachemak Bay increases the maintenance costs of the infrastructure located on the Spit due to corrosion. Finally, the properties served are located at sea level and pumping equipment is required to transport the wastewater to the treatment plant located on the mainland.

Kachemak City

The Plan also included requirements to develop a collection system for Kachemak City. Due to its size, it was determined that the most cost-effective solution to providing for Kachemak City's needs was to tie into the City's system. Under the system selected, liquid wastes from Kachemak City residents are collected and pumped to the Homer treatment plant. The wastewater solids are retained in Kachemak City residents' septic systems and pumped by a commercial service every three years for transport to the Homer treatment plant.

This approach was outlined in an Intergovernmental Agreement in August, 1988, between representatives of the Cities of Homer and Kachemak. The Agreement outlined the specific financial and working relationship between the cities concerning the wastewater system. In fulfilling this agreement, Kachemak City paid to the City of Homer a \$145,833 zone connect fee, a \$147,297 equity buy-in fee, as well as specified shares of certain capital improvement costs, based on estimates of current and future wastewater volumes.

CHAPTER II

CUSTOMER CHARACTERISTICS AND SYSTEMS GROWTH

II. CUSTOMER CHARACTERISTICS AND SYSTEMS GROWTH

This chapter describes the City's water and wastewater utilities customer classes and historical consumption volumes and patterns, and presents 5-year projections of utility customers and consumption. The chapter includes separate sections for the water and wastewater utilities.

WATER SYSTEM

In 1990, the City provided over 149 million gallons of water to its 1,006 metered customers and other bulk water purchasers. Metered customers are classified by the City into four categories:

- Residential;
- Commercial;
- Public Authority; and
- Spit.

Bulk water purchases comprise less than 5% of total water consumption and are made by individuals or by water haulers which fill up trucks at a special meter at the Department or from fire hydrants.

The City aggregates customers into classes based on water consumption (usage) patterns. These classes each have different water service demand characteristics and require different levels of infrastructure to support them. For example, the residential class is characterized by small meters, and reasonable fluctuations in seasonal and per capita usage. The Spit on the other hand has very high proportional usage which is concentrated in a small number of large meters during the summer months. Aggregating users into classes based on common characteristics allows costs to be aggregated for common groups and rate structures to be simplified.

Water Meters

Within each customer class, customers have different size meters. Residential customers are typically provided with 5/8 inch meters. Larger water meters are generally installed for commercial and other customers requiring greater volumes of water. Meter sizes in the City system include:

- 5/8 inch;
- 3/4 inch;
- 1 inch;
- 1-1/2 inch;
- 2 inch;
- 3 inch;
- 4 inch; and
- 6 inch.

II. Customer Characteristics and Systems Growth

The systems required to support each size meter generally differ based on the capacity of the meter. For example more capacity (pipe, pumps, etc) is required to provide the water pressure to support a two-inch meter than that required to support a one inch meter. Therefore, the size of water meters provides one basis for estimating the portion of total systems capital cost associated with each user. Table II-1 shows customers by class and meter size for 1990.

TABLE II-1

**1990 AVERAGE MONTHLY WATER CUSTOMERS
BY CLASS AND METER SIZE**

<u>Meter Size</u>	<u>Residential</u>	<u>Commercial</u>	<u>Public Authority</u>	<u>Spit</u>	<u>Total</u>
5/8	726	104	8	11	849
3/4	18	18	0	6	42
1	29	23	10	1	63
1-1/2	18	8	3	5	34
2	1	6	4	3	14
3	0	1	1	1	3
4	0	0	0	1	1
6	0	0	0	0	0
TOTAL	<u>792</u>	<u>160</u>	<u>26</u>	<u>28</u>	<u>1,006</u>

Source: City of Homer

Almost 85% of the customer base has 5/8 inch meters and is made up primarily of residential and small commercial users. Few meters are in excess of 1-1/2 inches.

Seasonal Fluctuation

High seasonal fluctuation in demand is a significant factor influencing Homer's utilities. Homer's location, natural beauty and harbor facilities have made it a popular Alaska vacation destination during the warmer months. The area also supports a healthy fishing and fish processing industry during these same periods. Seasonal visitors, high levels of commercial and fish processing activity, and the typical increases in summertime water usage combine to create a high seasonal demand for water services during the summer months.

II. Customer Characteristics and Systems Growth

The City's water system was designed to accommodate these peak demand periods. Expenditures for larger reservoirs, water mains, and pumping equipment have been made even though much of this water delivery capacity is not used during much of the year.

To accurately assess the capital costs attributable to each customer class, it is necessary to determine which portion of the total water system capacity (i.e., plant, equipment, mains and other infrastructure) is required to serve each class. For the purposes of a rate structure, this can be performed using cost allocation techniques which consider peak load requirements.

Due to the high capital cost of developing the City's system to support peak requirements, peak load factors were calculated for each user class which are used in the allocations discussed in Chapter V. The factors were calculated by dividing each classes' highest month consumption by the average monthly consumption. The month of August was used as the high month and four years of data were combined to develop the factors. Peak load factors for the City's water system are illustrated in Table II-2.

<u>Customer Class</u>	<u>Peak Load Factor</u>
Residential	1.14
Commercial	1.35
Public Authority	1.15
Spit	2.22

Source: City of Homer

The highest seasonal fluctuation is on the Spit. Mainland commercial businesses have much smaller fluctuation followed by public authority and residential customers. A peak load factor of 2.22 means that the Spit class August consumption is 222% of the Spit average monthly consumption for the year.

*II. Customer Characteristics and Systems Growth***Water System Consumption and Customers Growth**

Exhibit II-3 shows historical system consumption and average number of customers by class for 1987 through 1990 and projections of consumption and customers for 1991 through 1995. These projections form the basis for allocation of systems costs which are described in Chapter V. They are based on assumptions provided by the City and were developed using trend analysis.

The City expects growth in customers in the residential, commercial and spit classes in addition to an increase in per customer usage. Overall water sales are expected to increase almost 28% from 1990 to 1995.

WASTEWATER SYSTEM

The section describes the wastewater system customer base, expected wastewater flows, seasonal demand and other attributes of the system.

Customer Base

The City's wastewater system has undergone significant change in the last two years. In 1990, the system served 908 Homer customers, most of which have water meters. The number of City customers was up 44 customers from the prior year, including 20 new connections from service being extended to the Spit. During 1990, the connection to Kachemak City was also completed which added another 66 customers to the system. These customers are not on the City water system.

Unlike the water system, it is generally not necessary to group customers into classes for rate purposes because the EPA requires that costs be recovered based on wastewater volumes. The one exception is for customers whose wastewater composition creates more intensive demands on the treatment process. In the City, these customers include primarily restaurants and bakeries.

Wherever possible, the City uses metered water usage to estimate wastewater flows for the purpose of calculating monthly bills. However, not all of the City's wastewater customers are on the water system. One of the City's long-term goals is to provide sewer service to all City properties and all new water system customers in the City must also connect to the wastewater system.

Kachemak City residents are not provided water from the City's system nor do they have meters to measure consumption. For the purposes of this study, wastewater flows were estimated by City and Kachemak City management to equal 6,284 gallons per month per connected household. This estimate per household is used to determine the 1991 through 1995 Kachemak City wastewater volumes in this report.

Customers and Water Sales by Class

AVERAGE MONTHLY METERED CUSTOMERS BY CLASS						
Year	Residential	Commercial	Public Authority	Spit		TOTAL
Historical						
1987	782	146	25	28		981
1988	776	148	26	27		977
1989	778	153	26	28		985
1990	792	160	26	28		1,006
Projections						
1991	790	164	26	29		1,009
1992	793	168	26	30		1,017
1993	797	173	26	31		1,027
1994	800	178	27	32		1,037
1995	803	183	27	33		1,046

TOTAL WATER SALES BY CLASS (thousand gallons)						
Year	Residential	Commercial	Public Authority	Spit	Bulk Sales & Hydrants	TOTAL
Historical						
1987	52,414	29,703	8,323	24,875	3,967	119,282
1988	53,245	31,330	9,460	36,463	4,834	135,332
1989	57,081	32,955	9,921	30,455	6,858	137,270
1990	61,574	34,808	10,807	35,771	6,061	149,021
Projections						
1991	63,495	36,541	11,250	37,441	7,506	156,233
1992	66,503	38,267	11,934	39,773	8,337	164,814
1993	69,511	39,993	12,619	42,105	9,167	173,395
1994	72,518	41,719	13,303	44,437	9,997	181,974
1995	75,526	43,445	13,988	46,769	10,828	190,556

Source: City of Homer

II. Customer Characteristics and Systems Growth

Wastewater Volumes

Table II-4 shows water consumption and number of customers for the wastewater system from 1989 through 1990, and projections of this information from 1991 through 1995 based on assumptions provided by the City. These projections were compiled using trend analysis on the historical data and comprise the basis for wastewater system rates. The large increase in consumption and customers in 1990 and 1991 reflects the addition of Spit properties to the system.

TABLE II-4

ANNUAL WATER CONSUMPTION BY WASTEWATER CUSTOMERS
1989-1990 Historical Data and Projections
from 1991-1995
(Thousands of Gallons)

<u>HISTORICAL</u>	<u>CONSUMPTION*</u>		<u>CUSTOMERS</u>	
	<u>Homer</u>	<u>Kachemak City</u>	<u>Homer</u>	<u>Kachemak City</u>
1989	88,518	N/A	864	0
1990	117,297	N/A	908	66
Projections				
1991	123,550	5,128	925	68
1992	129,924	5,279	943	70
1993	136,298	5,429	961	72
1994	142,671	5,580	979	74
1995	149,045	5,731	997	76

* Homer consumption based on metered water, Kachemak City consumption based on estimated average residential flows.

Source: City of Homer, Kachemak City

Homer wastewater flows are expected to increase in proportion to the growth in water usage during the projection period. A 32% increase is projected from 1990 to 1995. This increase includes the addition of Kachemak City's wastewater flows to the system.

II. Customer Characteristics and Systems Growth

Seasonal Demand

While the wastewater system is impacted by seasonal fluctuation, it is affected much less than the water system. Many of the largest water users, particularly on the Spit, do not dispose of all of their wastewater through the system. Seward Fisheries has its own outfall line into Kachemak Bay through which much of its wastewater is pumped. Separate meters are used to record domestic water consumption which is disposed of through the wastewater system.

Other Spit facilities which relate to the port and harbor also do not use the wastewater system. Finally, residential wastewater flows are less than total water consumption due to outdoor activities such as washing cars, and lawn and garden watering. These factors mitigate the highly seasonal characteristics of water usage and contribute to a much smoother demand for wastewater services.

III. REVENUE REQUIREMENTS

Revenues to be collected under the water and wastewater rate structures are defined by the costs of providing utility services. This chapter describes the water and wastewater systems costs that must be recovered through the new rate structures. These costs include:

- Capital Improvements;
- Administration, Operations and Maintenance;
- Debt Service; and
- Capital Replacement Reserves.

Each of these cost categories is discussed for the Water and Sewer Funds in this chapter.

CAPITAL IMPROVEMENTS

One of the primary costs of providing utility service is the cost of adding new capacity. These capital costs are typically defined in a Capital Improvement Program which outlines each capital project to be performed, its schedule and its funding source. By definition, capital improvement projects are typically related to adding to the system (new reservoirs, mains, etc.) as opposed to replacing existing capacity when it exceeds its useful life. Separate schedules are provided for water and wastewater utilities.

To the extent that capital improvement projects are planned to be paid for out of user charges, the Capital Improvement Planning process is integral to establishing rates. The City adopted its Capital Improvement Program (CIP) for 1990-1995 in January 1990.

The City currently has expansion plans for both the water and wastewater systems which are fully described in the Capital Improvement Program. However, the City does not anticipate funding any of these projects from user rates. Rather, projects with specific area benefits will be funded through special assessment bonds to be repaid by assessments levied on the benefitting property, and projects with more general benefits are expected to be funded through State or Federal grants. For the purposes of this study therefore, no future capital development costs have been included in the rate structures.

ADMINISTRATION, OPERATIONS AND MAINTENANCE

The City's adopted budget for 1991 provides administration and operations and maintenance budgets by system component for both the Water and Sewer Funds. System components include specific pumping operations, water treatment, reservoir maintenance, etc. and provide an appropriate level of detail for identifying which user classes benefit from particular costs.

III. Revenue Requirements

For the purpose of analysis of future water and wastewater costs, the 1991 budgeted costs for each fund were projected annually through 1995 by multiplying them by the expected annual rate of inflation (4.4%) used by the Homer Department of Finance in the budgeting process, and by the percentage increase in projected customers or water consumption. Budgeted costs that relate to customer services are increased based on inflation and customer growth. Budgeted costs that relate to the volume of delivered water are increased by inflation and water consumption. Due to the small amount of customer growth expected, costs that grow based on new customers will not increase significantly faster than inflation. However, consumption is expected to grow much more quickly and costs that increase based on usage are expected to grow much faster.

Budgeted Water Fund costs which are increased by inflation and the expected growth in number of customers include:

- Administration;
- Meter Operations;
- Meter Maintenance;
- Water Service Operation; and
- Water Service Maintenance.

For the Sewer Fund these budgeted costs include:

- Administration;
- Sewer Service Operation; and
- Sewer Service Maintenance.

All other costs are incurred in the delivery of water or transport and treatment of wastewater and are increased by expected inflation and the estimated percentage growth in annual consumption.

Exhibits III-1 and III-2 show the budgeted administration and operating and maintenance costs for 1991 and projections for both the Water and Sewer Funds from 1992 to 1995.

Overall, administration and operation and maintenance in the Water Fund budget is expected to grow 34% by 1995. The Sewer Fund budget is expected to grow 35% during this same period.

CITY OF HOMER

EXHIBIT III-1

Administrative, Operating and Maintenance Costs

WATER FUND

Budget Category	Budgeted		Projected		
	1991	1992	1993	1994	1995
Administration					
Salaries/Benefits	\$3,639	\$3,833	\$4,037	\$4,252	\$4,478
Supplies/Services	6,190	6,520	6,868	7,233	7,617
General Administrative/Fleet Allocation	72,928	76,820	80,913	85,217	89,744
Accounting/Fin Services	68,859	72,534	76,398	80,463	84,737
Public Works Administration	85,788	90,366	95,181	100,244	105,569
Motor Pool	32,511	34,246	36,071	37,989	40,007
Other Transfers	<u>44,108</u>	<u>46,462</u>	<u>48,937</u>	<u>51,541</u>	<u>54,278</u>
Total Administration	314,023	330,781	348,405	366,939	386,430
Operating and Maintenance					
Spit Pumping Operation	3,804	4,190	4,603	5,040	5,512
Spit Pumping Maintenance	2,314	2,548	2,799	3,067	3,353
Hillsite pumping Operation	22,038	24,271	26,659	29,209	31,932
Hillsite pumping Maintenance	3,751	4,131	4,537	4,972	5,435
Water Treatment Plant Operation	82,678	91,057	100,012	109,580	119,796
Water Treatment Plant Maintenance	24,293	26,755	29,386	32,198	35,199
Water Testing/Analysis	13,824	15,225	16,722	18,322	20,030
Water Testing/Analysis/Maintenance	1,225	1,349	1,482	1,624	1,775
Water Reservoir Operation	10,024	11,040	12,126	13,286	14,524
Water Reservoir Maintenance	10,748	11,837	13,001	14,245	15,573
Pressure Reducing Stations Operation	17,665	19,455	21,369	23,413	25,596
Pressure Reducing Stations Maintenance	8,928	9,833	10,800	11,833	12,936
Water Distribution System Operation	5,046	5,557	6,104	6,688	7,311
Water Distribution System Maintenance	13,400	14,758	16,209	17,760	19,416
Meter Operations	34,485	37,980	41,715	45,706	49,967
Meter Maintenance	8,845	9,741	10,699	11,723	12,816
Water Hydrant Operation	5,973	6,578	7,225	7,917	8,655
Water Hydrant Maintenance	20,810	22,919	25,173	27,581	30,153
Water Service Operation	6,326	6,967	7,652	8,384	9,166
Water Service Maintenance	<u>8,017</u>	<u>8,829</u>	<u>9,698</u>	<u>10,626</u>	<u>11,616</u>
Total Operating and Maintenance	<u>304,194</u>	<u>335,020</u>	<u>367,971</u>	<u>403,174</u>	<u>440,761</u>
Total Administrative, Operating and Maintenance Costs	\$618,217	\$665,801	\$716,376	\$770,113	\$827,191

Source: City of Homer

Administrative, Operating and Maintenance Costs

SEWER FUND

Budget Category	Budgeted	Projected			
	1991	1992	1993	1994	1995
Administration					
Salaries/Benefits	\$2,067	\$2,200	\$2,341	\$2,490	\$2,648
Supplies/Services	6,940	7,387	7,860	8,361	8,890
General Administrative/Fleet Allocation	35,067	37,327	39,717	42,246	44,920
Accounting/Fin Services	56,784	60,443	64,314	68,409	72,740
Public Works Admin	123,961	131,949	140,400	149,339	158,793
Motor Pool	12,385	13,183	14,027	14,920	15,865
Other Transfers	<u>25,058</u>	<u>26,673</u>	<u>28,381</u>	<u>30,188</u>	<u>32,099</u>
Total Administration	262,262	279,162	297,040	315,953	335,955
Operating and Maintenance					
Sewer Treatment Plant Operation	119,033	130,574	142,905	156,073	170,130
Sewer Treatment Plant Maintenance	32,752	35,928	39,321	42,944	46,811
Collection System Operation	12,081	13,198	14,390	15,662	17,018
Collection System Maintenance	6,421	7,015	7,648	8,324	9,045
Sewer Testing & Analysis Operation	21,105	23,151	25,338	27,673	30,165
Sewer Testing & Analysis Maintenance	959	1,052	1,151	1,257	1,371
Pump/Lift Station Operation	12,760	13,940	15,199	16,542	17,975
Pump/Lift Station Maintenance	8,777	9,588	10,454	11,379	12,364
Sewer Service Operation	4,602	5,027	5,482	5,966	6,483
Sewer Service Maintenance	<u>1,160</u>	<u>1,267</u>	<u>1,382</u>	<u>1,504</u>	<u>1,634</u>
Total Operating & Maintenance	<u>219,650</u>	<u>240,740</u>	<u>263,270</u>	<u>287,324</u>	<u>312,996</u>
Total Administrative, Operating and Maintenance Costs	\$481,912	\$519,902	\$560,310	\$603,277	\$648,951

Source: City of Homer

DEBT SERVICE

Both the Water and Sewer Funds have incurred debt to finance construction and capital purchases in the development, replacement and expansion of the systems. In addition, both funds have experienced recent operating deficits necessitating short-term loans from the City's General Fund. As a result, both funds have substantial debt service requirements, much of which must be repaid from revenues raised from user rates.

Exhibit III-3 presents the projected debt service for the outstanding obligations of the Water Fund and the Sewer Fund. This schedule does not include Special Assessment Bonds which are repaid from special property assessments and do not require funds from user charges.

The Water Fund has outstanding debt to be repaid from water rates which includes: a \$375,000 general obligation bond issued in 1965; a \$635,000 revenue bond issued in 1989; and the \$60,000 loan issued from the General Fund in 1990. The total principal and interest (debt service) of these obligations totals \$112,403 in 1991. In addition, the 1989 revenue bond has a debt service coverage requirement of 1.3 times of the bond's debt service amount. This requires that the Water Fund collect from rate payors an additional 30% of the \$66,403 debt service amount, which is placed in reserve. The coverage requirement amount totals \$19,921 in 1991. Therefore, the total revenue requirement resulting from Water Fund debt is \$132,324 in 1991 and decreases to \$122,087 in 1995.

The Sewer Fund debt includes: a \$1,030,000 revenue bond from 1987; an expected \$60,000 General Fund loan for an operating deficit in 1991; a \$978,432 General Fund loan for administration and other costs related to construction of the new sewer treatment plan; and a \$4,750,000 loan from the Alaska DEC to pay the local share of the new treatment plant. The DEC loan will be converted to a bond and requires an initial \$121,595 interest payment in 1991 and regular principle and interest payments beginning in 1992. The General Fund loans will be repaid beginning in 1992. The total debt service of Sewer Fund obligations totals \$237,758 in 1991, grows to \$603,902 in 1992 when the DEC principal and General Fund loans repayment begin, and then gradually decreases to \$582,490 in 1995.

The City also has a portion (0.25% of sales) of City sales tax revenues that are dedicated to paying for the costs of construction or debt service for the Sewer Fund. The City's projected revenue from this source in 1991 totals \$170,000, resulting in a net debt service revenue requirement to be recovered from wastewater rates of \$67,758. Estimated sales tax collected for the Sewer Fund is expected to grow to \$201,953 by 1995.

CITY OF HOMER

EXHIBIT III-3

Projected Debt Service Schedule

		WATER FUND				
Type of Debt:	Amount	1991	1992	1993	1994	1995
1965	General Obligation Bond: \$375,000					
	Interest	\$3,600	\$3,600	\$2,250	\$1,538	\$788
	Principal	18,000	18,000	19,000	20,000	21,000
1989	Revenue Bond: \$635,000					
	Interest	46,403	44,923	42,333	39,743	37,153
	Principal	20,000	20,000	35,000	35,000	40,000
	Coverage Requirement 30%	19,921	19,477	23,200	22,423	23,146
1990	General Fund Loan: \$60,000					
	Interest	4,400	2,750	1,100	0	0
	Principal	20,000	20,000	20,000	0	0
TOTALS						
	Interest	\$54,403	\$51,273	\$45,683	\$41,281	\$37,941
	Principal	58,000	58,000	74,000	55,000	61,000
	Coverage Requirement	<u>19,921</u>	<u>19,477</u>	<u>23,200</u>	<u>22,423</u>	<u>23,146</u>
	TOTAL REVENUE REQUIREMENT	\$132,324	\$128,750	\$142,883	\$118,704	\$122,087

		SEWER FUND				
Type of Debt:	Amount	1991	1992	1993	1994	1995
1987	Revenue Bond: \$1,030,000					
	Interest	\$86,163	\$84,213	\$82,188	\$79,737	\$77,200
	Principal	30,000	30,000	35,000	35,000	40,000
1989	Revenue Bond: \$4,750,000					
	Interest	121,595	239,305	231,913	224,167	216,049
	Principal	0	153,990	161,382	169,128	177,246
1991	General Fund Loan: \$60,000					
	Interest	0	4,400	2,750	1,100	0
	Principal	0	20,000	20,000	20,000	0
1991	General Fund Loan: \$978,432					
	Interest	0	39,137	37,823	36,456	35,035
	Principal	0	32,857	34,172	35,539	36,960
TOTALS						
	Interest	\$207,758	\$367,055	\$354,674	\$341,460	\$328,284
	Principal	30,000	236,847	250,554	259,667	254,206
	Less Sales Tax Revenues	<u>170,000</u>	<u>177,480</u>	<u>185,289</u>	<u>193,442</u>	<u>201,953</u>
	TOTAL REVENUE REQUIREMENT	\$67,758	\$426,422	\$419,939	\$407,685	\$380,537

Source: City of Homer

CAPITAL REPLACEMENT RESERVES

Generally, utility rate structures include a charge for depreciation or development of capital replacement reserves to provide for eventual replacement of the system when it reaches the end of its useful life. While these costs are often high, establishing reserves protects the utility’s long-term ability to provide quality service.

In the City’s case, much of the water and wastewater utilities infrastructure has been developed using grant funds. However, based on discussion with City management, it is not clear that 100% grant funds will be available in future years when water and wastewater system replacement is required. Therefore, it is fiscally prudent to build a reasonable capital replacement reserve requirement into the rate structures. Further, the Intergovernmental Agreement with Kachemak City specifies that depreciation will be included in their wastewater rates. For the purposes of this study, it is assumed that a reserve of 25% of the Water and Sewer Plant replacement costs is a reasonable measure to include in Homer and Kachemak City rates which balances affordability with fiscal prudence. Importantly, the level of reserve funding is a policy question that deserves careful consideration and must ultimately be approved by policy makers.

The development of the capital replacement reserves is based on a 20-year useful life and calculated on a straight-line basis. Table III-4 displays the calculation of the reserve for each fund.

TABLE III-4

CAPITAL REPLACEMENT RESERVE
(20-Year Life)

	<u>Water Fund</u>	<u>Sewer Fund</u>
Estimated capacity replacement cost	<u>\$12,000,000</u>	<u>\$20,000,000</u>
25% capacity replacement	<u>\$3,000,000</u>	<u>\$5,000,000</u>
Annual reserve requirement	<u>\$150,000</u>	<u>\$250,000</u>

TOTAL REVENUE REQUIREMENTS

The total projected revenue requirements for the Water and Sewer Funds for 1991-1995 include: administration, operation and maintenance costs, debt service costs and capital replacement reserve costs. These costs are summarized in Table III-5. The 1991 costs are based primarily on the City's adopted budget. Costs for 1992-1995 are projected as described earlier in this chapter. Overall, costs in the Water Fund are projected to increase 13% from 1991 to 1995, while the Sewer Fund is expected to increase 40% during the same period. Most of the Sewer Fund increase occurs in 1992 with the increase in debt service on the wastewater plant loan of \$4.75 million. These costs form the basis of the rates described in the remaining chapters.

III. Revenue Requirements

TABLE III-5

TOTAL REVENUE REQUIREMENTS TO BE GENERATED FROM RATES

	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>
WATER FUND					
Administration, Operations and Maintenance	\$ 618,217	\$ 665,801	\$ 716,376	\$ 770,113	\$ 827,191
Debt Service	132,324	128,750	142,883	118,704	122,087
Capital Replacement Reserve	<u>150,000</u>	<u>150,000</u>	<u>150,000</u>	<u>150,000</u>	<u>150,000</u>
TOTAL REVENUE REQUIREMENT	<u>\$900,541</u>	<u>\$944,551</u>	<u>\$1,009,259</u>	<u>\$1,038,817</u>	<u>\$1,099,278</u>
SEWER FUND					
Administration, Operations and Maintenance	\$481,912	\$ 519,902	\$ 560,310	\$ 603,277	\$ 648,951
Debt Service	67,758	426,422	419,939	407,685	380,537
Capital Replacement Reserve	<u>250,000</u>	<u>250,000</u>	<u>250,000</u>	<u>250,000</u>	<u>250,000</u>
	<u>\$799,670</u>	<u>\$1,196,324</u>	<u>\$1,230,249</u>	<u>\$1,260,962</u>	<u>\$1,279,488</u>

Source: City of Homer

CHAPTER IV
CONNECTION FEES

IV. CONNECTION FEES

The cost of connecting new customers to municipal water and wastewater systems can be significant. These costs include the actual labor, materials and administrative costs associated with connecting a new customer, in addition to the cost of the portion of the system's capacity that will be used by the new customer. It is generally recognized that existing customers should not be required to pay for adding new customers to the system or for developing excess capacity in expectation of future growth. Many utilities recover these costs by charging Connection Fees to new customers which include an operating and capital component.

The City currently charges Connection Fees for both the water and wastewater systems, that are designed to reimburse the City for the operating costs of connecting new customers. The City does not currently include a capital "buy-in" component in the connection fees. This chapter describes the calculation of Connection Fee levels for the water and wastewater systems.

WATER CONNECTION FEES

The City currently charges \$250 for a new connection to the water system. The objective of this fee is to recover the costs of installing the customer's water meter and performing the administrative tasks necessary to begin service and billing. In 1990, the City connected 16 new customers to the water system.

The City's operating costs for new connections are included in the Water Service Operations and Meter Operations categories in the Water Fund budget. Public Works has estimated that 15% of the Meter Operations budget and 54% of the Water Service budget was used for new connections in 1990. Table IV-1 shows the total budgeted costs associated with water connections for 1990 and expected for 1991.

TABLE IV-1
WATER FUND
1990 AND 1991 BUDGETED OPERATING COSTS
FOR NEW CONNECTIONS

<u>Budget Category</u>	<u>1990</u>	<u>1991</u>
Meter Operations	\$13,390	\$10,513
Water Service Operations	<u>4,988</u>	<u>5,207</u>
TOTAL COST OF CONNECTIONS	<u>\$18,378</u>	<u>\$15,720</u>

Source: City of Homer

Dividing the 1990 budgeted operating cost by the 16 connections performed in 1990 provides the operations cost component of an individual connection. This cost was \$1,149 in 1990.

The second component of the Connection Fee is the cost of the capacity that will be used by the new customer. While not currently charged by the City, capacity "buy-in" is a legitimate cost that is attributable to new customers. We recommend that the City amend their Connection Fee policy to include capital costs where appropriate.

The capital component of the Connection Fee can be calculated by determining the capital cost of the system's excess capacity that was built to provide for future growth. Importantly, if the cost of additional capacity was funded by State or Federal grants or Special Assessments levied on property, it is inappropriate to include these cost in the Connection Fee because the cost would be recovered twice.

The City's existing water system has primarily been funded by grants and special assessment financing. The December 31, 1989 Financial Report for the City shows that Net Plant in Service is \$9,811,994, while Contributed Capital From Grants and Other Contributions totals \$9,318,736. The difference of \$493,258 is a measure of the cost of the existing system that is not grant funded. Total principal on Assessment Bonds outstanding coincidentally totals \$493,279. Therefore, it does not appear appropriate to include a capital component in the Water Connection Fee at this time.

Based on the 1990 City budget, the Water Connection Fee should equal \$1,149 per new connection. Overall, the current water Connection Fee of \$250 is well below the cost of a new connection.

WASTEWATER CONNECTION FEES

The City currently charges \$200 per connection to the City's wastewater system. The current fee is designed to recover the costs of administration and inspection necessary for connecting a new customer and establishing billing service. As stated earlier, the Connection Fee does not currently contain a capital component. In 1990, the City connected 28 new customers to the wastewater system.

Several of these new customers are located on the Spit and were connected in conjunction with the completion of wastewater service in that location. All remaining Spit properties with metered water service are scheduled to be connected to the wastewater system in 1991 with the exception of:

- The fuel float;
- The main dock;
- Seward Fisheries (non-domestic water only);
- The steel grid; and
- The small boat harbor.

In addition to these connections, the City now has responsibility for providing new connection service to properties in Kachemak City that are adjacent to the new sewer line.

Based on recent connection history, the City expects to complete an average of 20 new connections per year through 1995. This projection is composed of 18 connections per year in Homer and 2 connections per year in Kachemak City.

The Department's estimate of the cost for new connections in 1990 is \$5,250. Based on the 28 new connections, the operating component of the connection fee is calculated at \$188. Budgeted Connection Fee costs for 1991 are \$5,481.

The capital component of the Connection Fee represents that portion of system capacity that will be used by new users. While not currently included in the wastewater Connection Fee, capital "buy-in" is a legitimate cost associated with new connections. We recommend that a capital component be included in future Connection Fees where appropriate.

IV. Connection Fees

The Intergovernmental Agreement with Kachemak City specified the capital contribution to be paid for joining the City's system. Therefore, Kachemak City residents have already paid for their portion of excess capacity and should not be required to pay additional capital charges through Connection Fees. Kachemak City Connection Fees should equal the operating cost of \$188.

Over time, excess capacity has been developed in the wastewater system to service new Homer residents. The City's December 1989 Financial Statements contain the following information which can be used to calculate the City's net equity in the wastewater system:

Net Sewer Plant (total system cost less accumulated depreciation)	\$ 17,815,324
Less Net Grants/Contributions	(13,326,369)
Less Bonds Outstanding	<u>(3,910,385)</u>
NET EQUITY	\$ <u>578,570</u>

Assuming that any additional system additions after December 1989 will be financed with bonds which are repaid out of the user rate structure, \$578,570 represents the net capital investment to date in developing system capacity.

The City's Final Wastewater Facility Plan projected a system capacity of 880,000 gallons per day in the year 2007. In 1990, the system's 974 customers generated flows of approximately 340,000 gallons per day, or 39% of the systems capacity. Assuming that 80% of capacity will be utilized at build-out, and the current mix of customers and usage patterns, the number of customers on the existing system could double to approximately 1,948. Dividing the Net Equity by the total expected number of customers in 2007 provides an equity buy-in per customer of \$297.

Adding the operating costs for administration and inspection related to a new customer to the capital costs results in a total Connection Fee of \$485. This is an increase of 143% over the existing \$200 fee.

CHAPTER V
COST OF SERVICE

V. COST OF SERVICE

This chapter presents the analysis of the cost of service that must be supported by the water and wastewater rate structures. The cost of service is the combination of administrative, operations and maintenance, debt service and capital reserve costs for each system. These costs were described initially in Chapter III. In this Chapter, the allocation of costs to water customer classes, and Kachemak City and Homer wastewater system users is provided. This analysis forms the basis for the rate structures that are discussed in the next chapter.

WATER FUND COST OF SERVICE

In the City, water service is provided to the four classes of customers that were described in Chapter II:

- Residential;
- Commercial;
- Public Authority; and
- Spit.

In addition there are costs associated with providing bulk water. The next section describes the allocation of costs to these classes.

Bases For Allocation

To develop equitable rates for each class of user, the total costs of providing water service must be allocated to user classes based on the relative benefit each class derives from each type of cost. There are a number of allocation methods including:

- **Indirect allocation** - in which overhead or administrative costs are allocated to direct operational cost centers based on actual costs, personnel costs or some other appropriate measure;
- **Number of Customers** - in which costs are allocated to customer classes based on the number of meters in the class. This approach is generally used when costs relate to customers as opposed to consumption, for example meter reading and maintenance;
- **Water Consumption** - whereby costs are allocated to user classes based on the relative amount of water used by each class. Water consumption is typically used when costs vary with the amount of water provided;
- **Equivalent Meters** - which is a measure of the relative size of meters installed. Equivalent meters are a measure of the capacity of the system and are typically used in the allocation of capital costs;

- **Peak Demand** - is a measure which considers users that require large amounts of capacity during relatively short periods. Peak demand is allocated based on load factors that are the relationship of high demand periods and average demand periods; and
- **Capacity** - is a relative measure which combines the components of meter equivalents and peak demand. Due to the significant seasonality in water usage in the City, this measure is weighted 80% to peak demand and 20% to equivalent meters for the purpose of this study.

Exhibit V-1 shows the allocation percentages for each customer class based on the approaches discussed above. Indirect allocation is not illustrated.

Each allocation base provides a different treatment of costs. For example, costs allocated based on customers would be attributed 78.31% to the residential class, while costs allocated based on consumption would be 40.65% related to residential customers.

Allocation assumptions for each major type of cost is discussed below including:

- Administration;
- Operations and Maintenance;
- Debt Service; and
- Capital Replacement Reserves.

Cost estimates are based on the City's adopted 1991 Final Budget and the projections shown in Chapter III.

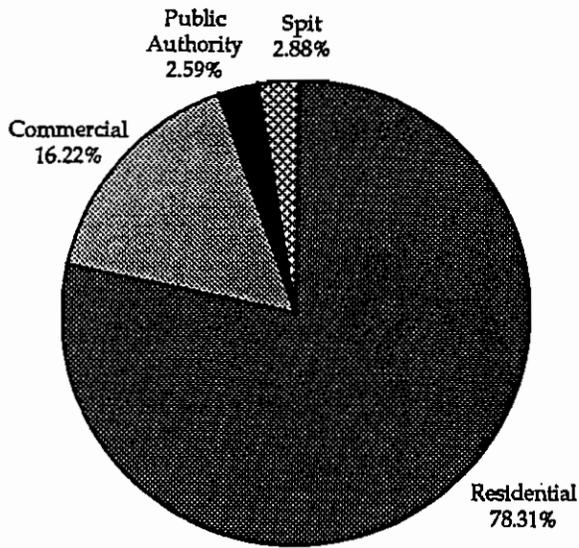
Administration

The budgeted administrative costs relate to overhead in the City and Department of Public Works and Utilities. Based on discussions with City Staff, these costs are indirect in nature and relate to the entire Water Fund. These indirect costs include:

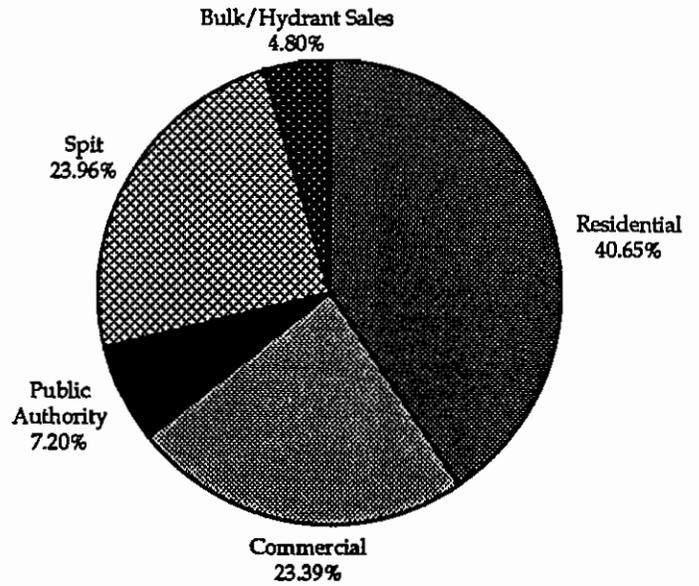
- Salaries and Benefits;
- Supplies and Services;
- Capital Outlays;
- General Administration and Fleet Allocations;
- Accounting and Financial Services;
- Public Works Administration;
- Motor Pool; and
- Other Transfers.

1991 Water Fund Cost Allocation Percentages by Customer Class

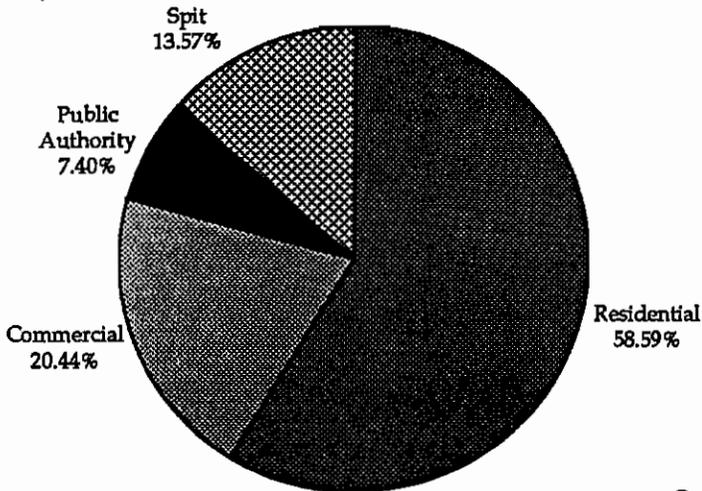
Number of Customers



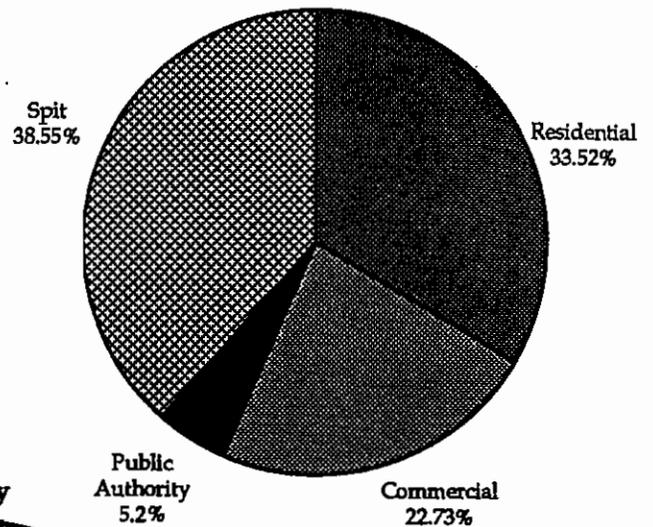
Consumption



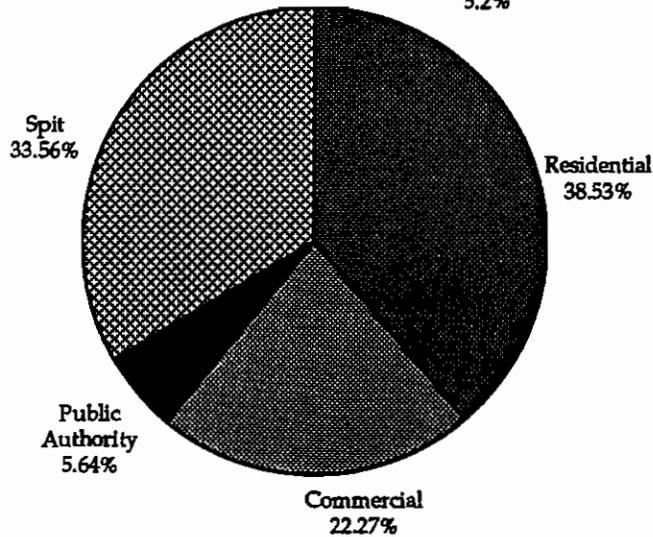
Equivalent Meters



Peak Demand



Capacity



As they represent general support and management services of the entire Water Fund, these budgeted cost are allocated to the direct budgeted operations and maintenance costs based on the total operations and maintenance budget. The results of this allocation for 1991 are shown in Exhibit V-2.

This same procedure was performed to allocate the projected costs for years 1992 through 1995 that are described in Chapter III.

Operations and Maintenance

Once administration is applied to budgeted operations and maintenance costs, these costs can be allocated to customer classes based on the nature of each type of cost. Three bases of allocation are used for the fully burdened operations and maintenance costs: consumption, number of customers, and equivalent meters.

Budgeted costs that are allocated based on total water consumption are those costs that vary based on water usage. These include operations and maintenance of:

- Pumping facilities;
- Water treatment plant;
- Water testing and analysis;
- Reservoir;
- Pressure reducing stations; and
- Water distribution system.

The budgeted costs for hydrant operations and maintenance, and water service operations and maintenance are allocated based on the number of customers in each class. Budgeted costs for meter operations and maintenance are allocated based on equivalent meters due to the increased levels of service given to large meters by the Department.

Table V-3 summarizes the operations and maintenance cost categories and the basis for allocation of each.

WATER FUND

1991 BUDGETED OPERATING AND MAINTENANCE COSTS
AFTER ALLOCATION OF ADMINISTRATION COSTS *

<u>OPERATING AND MAINTENANCE</u>	<u>1991</u>
Spit Pumping Operation	\$7,732
Spit Pumping Maintenance	4,703
Hillsite pumping Operation	44,788
Hillsite pumping Maintenance	7,623
Water Treatment Plant Operation	168,027
Water Treatment Plant Maintenance	49,371
Water Testing/Analysis	28,095
Water Testing/Analysis/Maintenance	2,490
Water Reservoir Operation	20,372
Water Reservoir Maintenance	21,843
PR Stations Operation	35,901
PR Stations Maintenance	18,144
Water Distribution System Operation	10,255
Water Distribution System Maintenance	27,233
Meter Operations	70,084
Meter Maintenance	17,976
Water Hydrant Operation	12,139
Water Hydrant Maintenance	42,292
Water Service Operation	12,856
Water Service Maintenance	<u>16,293</u>
TOTAL OPERATING AND MAINTENANCE	\$618,217

* Administration Costs Allocated Based on Budgeted Operations and Maintenance Costs.

Source: City of Homer

To determine a relative measure of capacity requirements by customer class, a combination of equivalent meters and peak usage was used. The meter equivalent standards were derived based on the maximum continuous flow specifications of the meters in use in the City. The meter equivalent standards and meters by size and class are provided in Chapter II.

The other measure of capacity is peak usage and the related peak load factors. Peak load factors account for the impact of the highly seasonal consumption patterns of the water system. Peak load factors were also described in Chapter II.

The capacity allocation is calculated by combining the equivalent meter allocation percentages with the peak load factor allocation percentages. Department personnel have indicated that a significant amount of the system's capacity has been developed because of high seasonal use rather than the number of total users. Therefore, the capacity allocation is weighted 80% to the peak load factor and 20% to equivalent meters.

Capital Replacement Reserve

The capital replacement reserve relates to the eventual cost of replacing the system. As they are capital in nature, these costs are also allocated based on the capacity measurement. The total capital replacement reserve is calculated as 25% of system replacement cost as described in Chapter III. This reserve totals \$150,000 per year over 20 years.

Table V-4 summarizes the cost of service allocated to each customer class. The costs in this exhibit represent the revenue requirements for each class and form the basis for the water rates discussed in the next chapter.

V. Cost of Service

TABLE V-4
WATER FUND
COSTS OF SERVICE BY CUSTOMER CLASS
1991-1995

Allocation Basis	Residential	Commercial	Public Authority	Spit	Bulk Sales and Hydrants	New Connections	Total
Operations and Maintenance	\$283,251	\$130,104	\$39,028	\$129,256	\$20,858	\$15,720	\$618,217
Debt Service	50,995	29,467	7,460	44,402	0	0	132,324
Capital Replacement	<u>57,807</u>	<u>33,403</u>	<u>8,456</u>	<u>50,334</u>	<u>0</u>	<u>0</u>	<u>150,000</u>
Budgeted 1991 Cost of Service	<u>\$392,053</u>	<u>\$192,974</u>	<u>\$54,944</u>	<u>\$223,992</u>	<u>\$20,858</u>	<u>\$15,720</u>	<u>\$900,541</u>
Projected Cost of Service:							
1992	\$410,106	\$201,950	\$57,965	\$234,122	\$23,650	\$16,758	\$944,551
1993	\$436,218	\$215,567	\$62,176	\$250,844	\$26,597	\$17,857	\$1,009,259
1994	\$449,095	\$221,413	\$64,408	\$255,169	\$29,711	\$19,021	\$1,038,817
1995	\$473,879	\$234,156	\$68,419	\$269,564	\$33,008	\$20,252	\$1,099,278

Source: City of Homer

Bulk Sales and Hydrants

Water is provided to non-connected customers by bulk sales delivered by truck or by connecting to a nearby hydrant. Customers who purchase bulk water are currently charged only the commodity fee based on the volume of water purchased. This fee covers only variable water delivery costs. Therefore, they do not currently pay any of the debt service or capital replacement costs associated with the system.

As discussed above, debt service and capital replacement costs are allocated to customer classes (for connected customers) based on system capacity measurements. However, these measurements are not available for non-connected customers because such customers do not have meters. Nevertheless, it is appropriate for non-connected customers to pay for a portion of capital costs.

Since bulk and hydrant sales are primarily made to residences, these customers should pay debt service and capital replacement costs in the same proportion as do metered residential customers. Since non-connected customers do not pay a monthly service charge, this cost must be recovered through an increased commodity charge. Table V-4 displays the residential class debt service cost for 1991 of \$50,995 and the capital replacement cost of \$57,807 for a total of \$108,802. The total water consumption for the residential class is projected to be 63,495,000 gallons. The combined debt service and capital reserve cost per 1,000 gallons of water consumption is \$1.71.

SEWER FUND COST OF SERVICE

The EPA requires utilities which receive grant funds to base wastewater rates primarily on wastewater flows. Flows are estimated by the City based on historical water usage where meters are used, and engineering estimates if meters are not available. Kachemak City flows were estimated by the City and Kachemak City.

Similar to the Water Fund, the first cost of service allocation step is to apply budgeted administrative costs to the operations and maintenance budget categories. This allocation is based on each budgeted cost's share of the operations and maintenance costs relative to each category's share of the total operations and maintenance budget. The results of this allocation are shown in Exhibit V-5.

Operations and maintenance costs were then categorized into treatment plant operations and maintenance, and collection system operations and maintenance. This provided a basis for estimating costs associated with treating pumped septage that are used to develop a rate for those customers that are not connected to the wastewater system. Operations and maintenance costs are then allocated to customer types based on wastewater flows.

Debt service costs are also allocated to customers based on flows. However, since Kachemak City residents have paid for a portion of the capital cost of the system through a lump-sum contribution, the debt service allocation is adjusted to remove Kachemak City customers from the formula. Total debt service to be allocated for rate recovery purposes is net of expected sales tax revenues as described in Chapter III.

Finally, the cost of pumping Kachemak City septic systems was directly applied to Kachemak City residents, as it relates only to those customers.

SEWER FUND

1991 BUDGETED OPERATING AND MAINTENANCE COSTS
AFTER ALLOCATION OF ADMINISTRATION COSTS *

<u>OPERATING AND MAINTENANCE</u>	<u>1991</u>
Sewer Treatment Plant Operation	\$261,158
Sewer Treatment Plant Maintenance	71,858
Collection System Operation	26,506
Collection System Maintenance	14,088
Sewer Testing & Analysis Operation	46,304
Sewer Testing & Analysis Maintenance	2,104
Pump/Lift Station Operation	27,995
Pump/Lift Station Maintenance	19,257
Sewer Service Operation	10,097
Sewer Service Maintenance	<u>2,545</u>
TOTAL OPERATING AND MAINTENANCE	\$481,912

* Administration Costs Allocated Based on Budgeted Operations and Maintenance Costs.

Source: City of Homer

V. Cost of Service

Restaurants, bakeries and certain other non-domestic customers have been historically charged different rates than domestic sewer customers based on the different biochemical demands that their sewage imposes on the treatment plant. The current incremental cost of their operations and maintenance is equal to 4.67/3.17 for restaurants and bakeries, and $(2.56 + .00211 \text{ mg/l BOD})/3.17$ for the other non-domestic sewer customers. Based on discussions with the Department, these ratios still reflect cost experience and were therefore used to allocate treatment plant operations and maintenance costs to these customers. Based on the allocations described, total cost of service is provided in Exhibit V-6 for 1991-1995.

SEWER FUND COST OF SERVICE BY CUSTOMER TYPE
1991-1995

<u>Cost Item</u>	<u>Domestic Customers</u>	<u>Restaurants and Bakeries</u>	<u>Other Non- domestic</u>	<u>Septage Customers</u>	<u>Kachemak City</u>	<u>New Connections</u>	<u>TOTAL</u>
Operations and Maintenance							
Treatment Plant	\$297,032	\$19,632	\$18,493	\$32,536	\$13,731	\$0	\$381,424
Collection System	<u>79,945</u>	<u>3,587</u>	<u>5,536</u>	<u>0</u>	<u>3,696</u>	<u>5,481</u>	<u>98,245</u>
Total Operations and Maintenance	376,977	23,219	24,029	32,536	17,427	5,481	479,669
Debt Service	55,434	2,487	3,839	5,998	0	0	67,758
Capital Replacement	197,076	8,842	13,647	21,326	9,109	0	250,000
Pumping Cost	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>2,243</u>	<u>0</u>	<u>2,243</u>
Total 1991 Cost of Service	\$629,487	\$34,548	\$41,515	\$59,860	\$28,779	\$5,481	\$799,670
<u>PROJECTED</u>							
Total 1992 Cost of Service	959,103	48,824	62,789	90,008	29,878	5,722	1,196,324
Total 1993 Cost of Service	991,782	49,773	63,459	88,167	31,094	5,974	1,230,249
Total 1994 Cost of Service	1,021,609	50,599	63,904	86,182	32,431	6,237	1,260,962
Total 1995 Cost of Service	1,041,027	50,999	63,657	83,399	33,895	6,511	1,279,488

Source: City of Homer

CHAPTER VI

RATE STRUCTURES AND IMPLEMENTATION RECOMMENDATIONS

VI. RATE STRUCTURES AND IMPLEMENTATION RECOMMENDATIONS

As described in Chapter I, our evaluation of potential rate alternatives for the City was governed by a number of important criteria:

- **Equity** - Requires that rates and charges result in no undue discrimination among user classes and be based on cost of service.
- **Efficiency** - Refers to the ability of the rate schedule to encourage wise use of resources.
- **Revenue Adequacy** - Recognizes that rates are basically cost-driven. The stability of the revenue stream is also a consideration.
- **Administrative Simplicity** - Recognizes that limits must be placed on the complexity of the rate schedule, the frequency of billing and the degree of change to be introduced to administrative processes.
- **Legal Constraints** - Relate to cost-driven structures, statutes and regulations, and adequate support and documentation.

These criteria were carefully considered in our evaluation of:

- The recommended rate structures;
- Rate schedules;
- Impact on customers; and
- Comparable rates in other municipalities.

Each of these areas is described for the water and wastewater systems below. The final portions of this chapter discuss rates in other municipalities and policies for maintaining the rates.

WATER UTILITY RATES

Based on the rate development criteria; discussions with City staff; and review of the City's costs, water supply, and usage characteristics; the current structure of user classes and meter and commodity-based rates is a reasonable approach to continue. This structure includes:

- A monthly fixed service charge for water service and 5,000 gallons of water. This rate must be set at a level which recoups all debt service and capital replacement reserve costs for each meter size and customer class, plus the operational costs of serving a customer and delivering 5,000 gallons of water;
- A commodity charge for incremental water usage over the initial 5,000 gallons which covers the operating cost of delivering additional water; and

VI. Rate Structures and Implementation Recommendations

- A Connection Fee which covers the cost of adding a new customer to the system.

This type of structure requires that cost of service be carefully allocated to customer classes and meter sizes. However, this should be a large effort only initially as allocations are defined. Once established, the allocations should be reviewed annually and modified if cost categories or customer classes change. Retaining the current structure will also be much simpler from an implementation perspective considering the current systems and understanding of this approach in the City. The individual components of the recommended water rate structure are described below, with the exception of Connection Fees which were described in Chapter IV.

Monthly Service Charge

To determine the monthly service charge, it is necessary to allocate the cost of service by customer class found in Chapter V to the various sizes of meters. Chapter V described the various allocation basis used for operations and maintenance, debt service, and capital replacement costs. These same allocation bases were used to determine the respective share of each class's costs associated with each size of meter.

The monthly service charge should be set at a level to recover: the fixed operating costs of serving a customer; the delivery cost of the first 5,000 gallons of water; and a portion of the total debt service and capital replacement costs. To calculate the budgeted fixed operating costs, meter operations and maintenance costs, water hydrant operations and maintenance costs, and water service operations and maintenance costs for each class are allocated to meter sizes based on number of customers.

The cost of water delivery is based on variable operations and maintenance costs and is calculated as described in the next section on commodity charges. These water delivery costs are the same for each customer because each customer in the City is provided 5,000 gallons of water with the payment of the service charge. Debt service and capital replacement reserve costs are allocated within customer classes by equivalent meters and therefore vary for each meter size.

The use of equivalent meters for capital cost allocations significantly impacts the three inch and four inch monthly service charges on the Spit because there is only one customer for each meter size. Considering that future growth on the Spit in these meter sizes will affect capital cost allocations, it is recommended that the three inch and four inch spit service charges be set below the calculated cost levels of \$1,569 and \$4,390 to \$1,200 and \$3,000, respectively.

The recommended rate schedule for the 1991 service charge is shown in Table VI-1. For comparison purposes, the current rates are shown followed by the new recommended rates.

VI. Rate Structures and Implementation Recommendations

TABLE VI-1
RECOMMENDED 1991 SERVICE CHARGES
(Includes 5,000 Gallons of Water)

Meter Size	Residential		Commercial		Public Authority		Spit	
	Current	Recomm	Current	Recomm	Current	Recomm	Current	Recomm
5/8"	18.85	35.40	28.94	45.13	20.15	50.43	60.85	94.35
3/4"	22.57	40.31	37.73	53.28	24.31	55.04	88.97	116.05
1"	30.00	50.15	55.29	69.58	32.63	67.54	145.05	169.43
1-1/2"	54.66	74.75	105.42	110.32	59.79	96.04	288.32	267.90
2"	81.01	104.26	162.20	159.21	88.97	130.25	459.90	398.06
3"	145.05	233.78	297.17	599.21	159.20	438.12	856.12	1,200.00
4"	224.65	362.07	477.59	719.40	247.64	522.48	1,415.08	3,000.00
6"	408.60	658.54	916.27	1,380.19	454.60	959.14	2,803.15	4,500.00

The percentage and absolute dollar change between the current and recommended rates is different for each class and meter size due to two primary factors. First, the current rate structure has, over time, developed inequities which were corrected with the reallocation of costs. This changed the mix of costs paid by each class. Second, numerous cost increases occurred which are allocated in different ways. Some of the increases were in fixed costs such as debt service, while some were variable like operations and maintenance. All users have equal shares of variable costs, but different shares of fixed costs. Since the major components of cost increase are the new capital replacement reserve costs and increased debt service, differences by class are in some cases significant.

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Commodity Charge

The water commodity charge, which is the same for all water purchasers, must recover the costs of the operations and maintenance of the water delivery system. These costs vary according to the total demand for water.

Table VI-2 displays budgeted costs for 1991 which are recovered in the commodity charge, the current commodity charge and the recommended 1991 commodity charge. Costs include operations and maintenance costs of the treatment plant, and the water distribution system. The total amount of these costs in 1991 is \$446,576. This is divided by the projected 156.2 million gallons of water sold in 1991 to derive the 1991 commodity charge of \$2.86 per thousand gallons. The cost of the first 5,000 gallons of consumption ($\$2.86 \times 5$) or \$14.30 is included in the water charge for each customer.

The commodity charge for bulk water and hydrant sales to non-connected customers should also include a surcharge of \$1.71 per 1,000 gallons to pay for debt service and capital replacement costs. The total commodity charge for non-connected customers is \$4.57 per thousand gallons. This surcharge is further discussed in Chapter V.

VI. Rate Structures and Implementation Recommendations

TABLE VI-2

**1991 BUDGETED WATER FUND
COSTS RECOVERED BY COMMODITY CHARGE**

<u>Cost Categories</u>	<u>Budgeted Costs</u>
Spit Pumping Operation	\$ 7,731
Spit Pumping Maintenance	4,703
Hillsite Pumping Operations	44,788
Hillsite Pumping Maintenance	7,623
Water Treatment Plant Operation	168,027
Water Treatment Plant Maintenance	49,371
Water Testing/Analysis	28,095
Operations Water Testing/Analysis Maintenance	2,490
Water Reservoir Operation	20,372
Water Reservoir Maintenance	21,843
PR Stations Operation	35,901
PR Stations Maintenance	18,144
Water Distribution System Operation	10,255
Water Distribution System Maintenance	<u>27,233</u>
TOTAL COSTS	<u>\$446,576</u>
Expected Gallons 1991 (in thousands)	<u>156,233</u>
Rate Per 1,000 Gallons in 1991	<u>\$2.86</u>
Rate Per 1,000 Gallons in 1990	<u>\$2.13</u>

Source: City of Homer

The primary reason for the commodity charge increase is that rates were set too low in 1990 to recoup operating costs. This is illustrated by the Water Fund's need to borrow \$60,000 from the General Fund to sustain operations.

VI. Rate Structures and Implementation Recommendations

Customer Bills in 1991

As part of our evaluation, we reviewed the impact of the recommended rates on customer bills. We compared sample bills under the current and recommended rates for 1991 for an average residential customer with a 5/8 inch meter, and a commercial customer with a 1 inch meter. The sample bills include both service charges and commodity charges.

Sample bills are shown in Table VI-3. For the purpose of this discussion, these bills assume that water consumption is equal to the projected 1991 mean consumption for the residential class, 5/8 inch meter of 5,411 gallons per month, and 19,793 gallons per month for the commercial class, 1 inch meter.

	<u>Residential 5/8"</u>		<u>Commercial 1"</u>	
	<u>1990</u> <u>Current</u>	<u>1991</u> <u>Recomm</u>	<u>1990</u> <u>Current</u>	<u>1991</u> <u>Recomm</u>
Average Monthly Consumption	5,411	5,411	19,793	19,793
Service Charge:				
Operation and Maintenance				
Water Delivery		\$14.30		\$14.30
Customer Services		11.27		14.54
Debt Service		4.60		19.10
Capital Replacement		5.23		21.64
Total Service Charge	18.85	35.40	55.29	69.58
Commodity Charge	<u>0.88</u>	<u>1.18</u>	<u>31.51</u>	<u>42.31</u>
TOTAL MONTHLY BILL	<u>\$19.73</u>	<u>\$36.58</u>	<u>\$86.80</u>	<u>\$111.89</u>

VI. Rate Structures and Implementation Recommendations

Much of the increase in water bills is due to the addition of the capital replacement reserve. This cost, which was not included in the rates in the past, is the single largest component of the recommended rate structure for the commercial 1 inch meter charge, and represents 40% of the increase in the new rate for the 5/8 inch residential customer.

A significant portion of the remaining bill increase is a 34% increase in the commodity charge. This cost reflects overall cost increases and affects both the service charge and the commodity charge. Importantly, operations and maintenance costs are not adequately recovered under the current rate structure and there is a large "catch-up" component in the increase.

Rates for 1992 through 1995

Each year it is recommended that the underlying information on which water rates are based be reviewed and updated. This includes budget amounts, customer mix, water consumption, inflation rates and debt requirements. Rates for each subsequent year should then be recalculated based on this most current information. We have separately delivered a rate model for this purpose.

To provide the City with an indication of expected rate growth from 1992 through 1995, we have analyzed the cost of service by year that was projected in Chapter V. Overall, the water system is stable from a capital development standpoint and, with the exception of a principal payment increase in 1993, debt service and capital replacement are projected to be flat for the next four years. Also, annual customer growth is expected to be proportionally small (less than 1%). Therefore, the primary increases in costs is expected to be caused by inflation. This will impact operations and maintenance costs only as debt service and capital replacement are fixed. Overall, customers can therefore expect regular increases of approximately 5% per year in both service and commodity charges.

Determination of the Capital Replacement Reserve Percentage

The most significant cause of water rate increases from 1990 through 1995 will be the addition of the capital replacement reserve into the rate structure. For the purpose of analysis, it is assumed that a reserve of 25% of water system replacement costs will be added into the rate structure in 1991.

This assumption was selected based on discussion with City management and our analysis of rate increases. Overall, the reserve percentage must balance planning for the future and affordability of rates. Due to the difficulty in determining the amount of grant funds that may be available in the future, we strongly recommend that a reserve fund be established.

Water Rate Impact of Capital Replacement Recovery

COMPARISON OF RECOMMENDED MONTHLY SERVICE CHARGE
UNDER DIFFERENT CAPITAL REPLACEMENT RECOVERY PERCENTAGES

Meter Size	Residential	Commercial	Public Authority	Spit
0% CAPITAL REPLACEMENT RESERVE				
5/8	\$30.17	\$36.47	\$44.37	\$71.30
3/4	32.47	40.29	45.82	81.47
1	37.09	47.93	52.39	101.80
1 1/2	48.61	67.03	65.75	152.64
2	62.45	89.94	81.78	213.65
3	174.17	296.17	226.08	583.14
4	269.75	489.18	376.89	1,424.59
6	490.64	938.50	691.88	2,194.19
RECOMMENDED RATES (25% Capital Replacement Reserve)				
5/8	\$35.40	\$45.13	\$50.43	\$94.35
3/4	40.31	53.28	55.04	116.05
1	50.15	69.58	67.54	159.43
1 1/2	74.75	110.32	96.04	267.90
2	104.26	159.21	130.25	398.06
3	233.78	599.21	438.12	1,200.00
4	362.07	719.40	522.48	3,000.00
6	658.54	1,380.19	959.14	4,500.00
50% CAPITAL REPLACEMENT RESERVE				
5/8	\$40.62	\$53.79	\$56.49	\$117.40
3/4	48.16	66.27	64.17	150.62
1	63.22	91.22	82.68	217.06
1 1/2	100.88	153.61	126.33	383.16
2	146.08	228.47	178.72	582.47
3	293.38	902.25	650.17	1,816.86
4	454.38	949.63	667.90	4,575.41
6	826.45	1,821.89	1,226.09	6,805.81

 VI. Rate Structures and Implementation Recommendations

Rate Schedules

The wastewater rate schedule is determined by allocating budgeted operating and maintenance, debt service and capital replacement reserve costs to customers based on flows (water consumption) and strength of the sewage. These costs are identified in Chapter V. Total budgeted costs are divided by the projected wastewater flows for the City, Kachemak City, high strength users, and septage customers to develop the necessary rates.

Kachemak City customers do not have metered water service. Therefore, the City and Kachemak City developed estimates of water usage based on measurement of liquid waste through the Kachemak City pump station connecting to Homer's collection system. This was estimated to equal 6,284 gallons per household per month which is equal to 5,126,236 gallons for Kachemak City in 1991.

The 1991 expected flows on which costs are allocated include:

	<u>Gallons</u>
City of Homer:	
Domestic strength customers	110,895,693
Restaurants and bakeries	4,975,266
Other non-domestic strength customers	<u>7,679,381</u>
Total	123,550,340
Septage	400,000
Kachemak City	<u>5,127,744</u>
Total system	<u>129,078,084</u>

Table VI-5 displays the recommended wastewater rate schedules for 1991 and the expected rates for 1992 through 1995.

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Customer Bills

As part of the analysis we reviewed the impact of the recommended rates on customer bills. For this evaluation we compared bills at current and recommended rates for Homer and Kachemak City households. The bills are broken down in order to see the different cost components of the rate structures.

These bills are shown in Table VI-6. These sample bills show three cases: a Homer residential bill with average water consumption (5,411 gallons); a Homer estimated customer with water consumption per month that is the same estimated consumption per household for Kachemak City (6,284 gallons per month) and the monthly Kachemak City bill.

VI. Rate Structures and Implementation Recommendations

TABLE VI-6
WASTEWATER BILL COMPARISON

	1991 <u>Homer</u>	1992 <u>Homer</u>	1993 <u>Homer</u>	1994 <u>Homer</u>	1995 <u>Homer</u>	1991 <u>Homer</u>	1991 <u>Kachemak</u>
Estimated water consumption	5,411 ¹	6,284 ²	6,284 ²				
Operations and Maintenance	\$18.39	\$18.96	\$19.55	\$20.21	\$20.87	\$21.36	\$21.36
Debt Service	2.70	16.26	15.32	14.26	12.79	3.14	N/A
Capital Replacement	9.64	9.20	8.80	8.44	8.11	11.19	11.19
Subtotal	30.73	44.42	43.67	42.91	41.77	35.69	32.55
Septic pumping	N/A	N/A	N/A	N/A	N/A	N/A	2.75
TOTAL	\$30.73	\$44.42	\$43.67	\$42.91	\$41.77	\$35.69	\$35.30
Current Bill	\$17.15	\$17.15	\$17.15	\$17.15	\$17.15	\$19.92	N/A

¹ Average Homer residential consumption.
² Average Kachemak City consumption estimate.

The resulting charges are \$30.57 for the average Homer customer, based on 5,411 gallons per month, and \$35.28 for the Kachemak City customer. This exhibit also illustrates the comparability of Homer and Kachemak City rates under similar usage assumptions.

In 1992, the Homer customer's bill will increase by approximately \$13.69, mostly due to a large increase in debt service. This debt service increase will not impact the Kachemak bill, however, as Kachemak City customers do not pay debt service costs attributable to the City of Homer.

Analysis of Key Assumptions

The handling of two important assumptions significantly impacts wastewater rates. These are the percentage of the capital replacement reserve and whether the \$1,954,650 wastewater treatment plant construction delay claim will be repaid from user rates.

VI. Rate Structures and Implementation Recommendations

Similar to the water rate structure, the wastewater rates are significantly impacted by the level of capital replacement reserve that is recovered through user rates. For the purpose of analysis, Exhibit VI-7 shows rates and sample monthly bills under 0%, 25% and 50% capital replacement reserve assumptions.

All customers are impacted by changing the reserve percentage.

The City is currently working with the Alaska DEC to determine the appropriate funding of the delay claim that the City paid to the wastewater plant contractor. Payment of the delay claim is included in the recommended rate structure shown earlier in this chapter. Exhibit VI-8 shows the impact on rates and customer bills if the claim is paid by the State or from sources other than rates. Rates for both 1991 and 1992 are shown because of the large increase in 1992 rates due to beginning repayment principal of the DEC loan. Should the State pay the delay claim, the 1992 average monthly Homer residential sewer bill for a customer with consumption equal to 6,284 gallons will decrease 15.1% from \$51.59 to \$44.80.

OTHER KENAI PENINSULA CITIES' RATES

One of the analysis we performed was a comparison of Homer's recommended utility rates with other Kenai Peninsula cities. While rate structures vary among different cities, comparison is possible under similar usage assumptions. We compiled rate information from the cities of Seward, Kenai and Soldotna for this comparison.

Seward

Seward residences are not metered and monthly fees are based on a concept called equivalent residential units (ERU's). A single family house is considered to be 1 ERU; an apartment is .75 ERU. Commercial establishments are assigned ERU factors based on their size and type of activity. The current monthly charge per ERU is \$20. For commercial establishments which are metered, there is a minimum monthly charge based on the size of the intake line and a declining block rate for water starting at \$2.50 per thousand gallons for the first 50,000 gallons.

Sewer charges in Seward depend on whether the customer has metered water service. For non-metered customers (most), the rate is 1.2 times the water rate. Metered customers (large industrial/commercial establishments) are charged a monthly fee based on the size of their water intake line and a declining block rate based on metered water consumption, or actual sewage discharge, if metered. This rate starts at \$3.00 per thousand gallons for the first 10,000 gallons.

COMPARISON OF RECOMMENDED 1991 WASTEWATER RATES
UNDER DIFFERENT CAPITAL REPLACEMENT RECOVERY PERCENTAGES

CUSTOMER TYPE	RECOVERY PERCENTAGE		
	0%	25%	50%
HOMER (per 1,000 gal.)			
Domestic	\$3.90	\$5.68	\$7.45
Restaurants and Bakeries	5.17	6.94	8.72
Non-Domestic	3.63	5.41	7.18
KACHEMAK CITY (Monthly, including pumping)	\$24.11	\$35.30	\$46.45
SEPTAGE CUSTOMERS (per 1,000 gal.)	\$96.34	\$149.65	\$202.96

COMPARISON OF 1991 AVERAGE MONTHLY BILLS BASED ON 6,284 GALLONS
UNDER DIFFERENT CAPITAL REPLACEMENT RECOVERY PERCENTAGES

CUSTOMER TYPE	RECOVERY PERCENTAGE		
	0%	25%	50%
HOMER DOMESTIC	\$24.51	\$35.69	\$46.82
KACHEMAK CITY	\$24.11	\$35.30	\$46.45

COMPARISON OF RECOMMENDED WASTEWATER RATES
WITH AND WITHOUT \$1,954,650 CONSTRUCTION DELAY CLAIM

CUSTOMER TYPE	1991	1991	1992	1992
	WITH CLAIM	WITHOUT CLAIM	WITH CLAIM	WITHOUT CLAIM
HOMER (per 1,000 gal.)				
Domestic	\$5.68	\$5.68	\$8.21	\$7.13
Restaurants and Bakeries	6.94	6.94	9.51	8.44
Non-Domestic	5.41	5.41	7.93	6.85
KACHEMAK CITY (Monthly, including pumping)	\$35.30	\$35.30	\$35.56	\$35.56
SEPTAGE CUSTOMERS (per 1,000 gal.)	\$149.65	\$149.65	\$225.02	\$192.72

COMPARISON OF AVERAGE MONTHLY BILLS BASED ON 6,284 GALLONS
WITH AND WITHOUT \$1,954,650 CONSTRUCTION DELAY CLAIM

CUSTOMER TYPE	1991	1991	1992	1992
	WITH CLAIM	WITHOUT CLAIM	WITH CLAIM	WITHOUT CLAIM
HOMER DOMESTIC	\$35.69	\$35.69	\$51.59	\$44.80
KACHEMAK CITY	\$35.30	\$35.30	\$35.56	\$35.56

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Kenai

The rate structure for Kenai is somewhat similar to Seward's in that domestic service rates are fixed. Commercial and industrial users have individual structures based on the nature of commercial activities. The base charges for residential customers are \$8.50 per month for water service and \$23.50 per month for sewer service. Kenai's rates for metered customers are based on the size of the intake line and range from \$8.00 for water and \$24.00 for commercial sewer for a one inch line, up to \$75 for water and \$207 for sewer for a line larger than three inches. The commodity charges for these customers are \$0.85 per thousand gallons for water and \$2.35 per thousand gallons for sewer services, with a minimum monthly charge based on 15,000 gallons.

Soldotna

In Soldotna, the residential service rates are \$10.00 for water and \$16.78 for sewer. As in Kenai and Seward, the commercial and industrial rates are based on the activity performed. There is also a water commodity charge of \$0.75 per thousand gallons.

Table VI-9 shows a comparison of water and sewer bills for Homer, Seward, Kenai and Soldotna. Current bills are compared to Homer's 1992 bills to show the full impact of cost increases from the new plant.

VI. Rate Structures and Implementation Recommendations

TABLE VI-9

**COMPARISON OF RECOMMENDED 1992 MONTHLY HOMER WATER
AND SEWER BILLS WITH CITIES OF KENAI, SEWARD AND
SOLDOTNA, BASED ON 5,411 GALLONS AND 5/8 METER**

<u>City</u>	<u>Water</u>	<u>Sewer</u>
1992 Homer	38.40	44.42
Current Kenai	8.50	23.50
Current Seward	20.00	24.00
Current Soldotna	14.06	16.78

MAINTAINING RATES IN THE FUTURE

The City of Homer is growing quickly and recently underwent a number of major changes in its utility services. Therefore, while the assumptions documented in this report represent the best information to date, many attributes of the system may change over time. To help ensure that adequate revenues are collected in an equitable fashion in future years, an evaluation of costs and rates should be performed as part of the budget process each year.

As part of this project we have developed a rate model which will be delivered to the City. This model will assist City staff in performing this review. We recommend that the following approach be implemented:

- Update the budgeted costs for operations and maintenance, debt service and capital replacement reserves in the model during each annual budget cycle;
- Review the customer class and meter size customer and consumption data to make any changes necessary. The model will then generate new projections of customers and consumption by class and meter size using trend analysis;
- Consider any changes in City policy towards rate payors with regard to capital replacement cost recovery and issues of equity; and

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- Review the resulting rate structure from the model for revenue adequacy and reasonableness.

As with any rate changes, attention must be paid to the issues of equity, revenue adequacy, simplicity and efficiency. However, continued focus on the cost of the services provided to the utility customers and careful analysis of allocation will help ensure that the City continues to recover its utility costs in an appropriate manner.

