

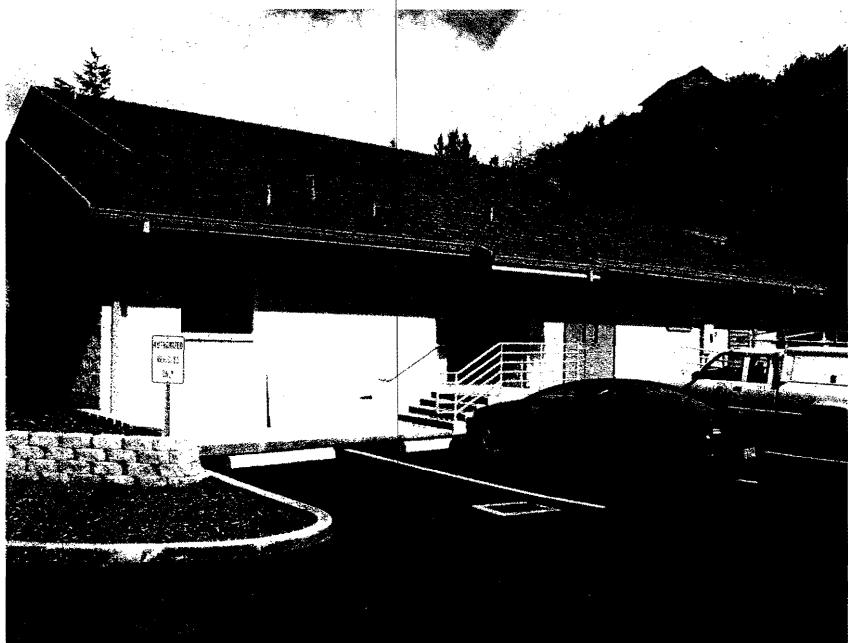


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HGE Project No. 03.33

## **WATER RATE STUDY**



For:

# CITY OF MANZANITA

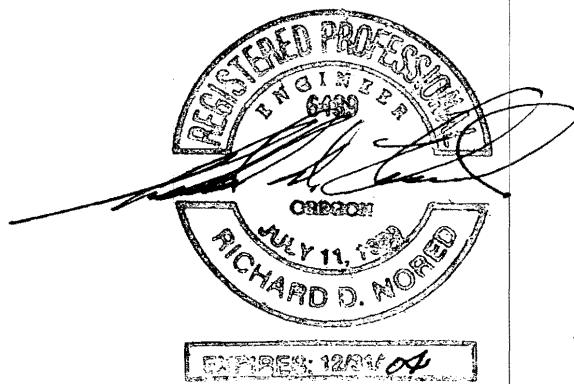
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May 2003

HGE Project No. 03.33

# WATER RATE STUDY

## CITY OF MANZANITA



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# CITY OF MANZANITA REVISED WATER RATE STUDY

## 1. BACKGROUND

Manzanita recently developed major improvements to the water system, including a new water filtration plant for treatment of water from Anderson Creek, development of wells adjacent to the Nehalem River, and transmission piping from the well field to the city's existing water system. The developed facilities are intended to provide service to the City of Wheeler, and capacity is provided for the Zaddack Creek Water Cooperative water system. A loan of approximately \$ 3.3 million is the City's share of the total project cost of approximately \$ 6 million dollars.(Remainder of total cost is provided by Federal grants from the Rural Utilities Service, a branch of the USDA.

The cities of Manzanita and Wheeler developed an intergovernmental agreement for construction of the new well system adjacent to the Nehalem River, and for transmission piping to serve each water system. The agreement provides that each entity will pay for their fair and proportionate share of operating the well system and transmission line, and for the City of Manzanita to repay the loan to Rural Utilities. Wheeler expenses for operation of the well and transmission system are outside the scope of this study and from the City of Manzanita's budgeted estimates for operation, maintenance and bond repayment for their obligations.

Rate increases in Manzanita will be necessary for annual loan repayment, the required reserve fund for rural utilities financing programs, and for increased operating and maintenance expenses. HGE Inc., Architects, Engineers, Surveyors & Planners was retained to:

1. Evaluate existing rates and rate structure
2. Provide the recommended rate schedule for loan repayment, operation and maintenance of Manzanita's share of the water system.

## 2. GENERAL

Ideally, pricing structure and rate schedules should produce the revenue needed to cover costs, discourage waste, and represent a reasonably equitable allocation of cost among customers.

Costs experienced by water utilities can generally be divided into three distinct categories:

1. Costs that apply to each connection equally, independent of usage. Billing is an example.
2. Costs that relate primarily to peak demand. All active water service accounts are charged whether or not any water passes through the meter. The reason is that the city incurs expenses to support each customer whether or not any water is sold. The concept for setting the availability charge is based on "peak demand capacity." Such costs are not related to the quantity of water used but rather to the periodic demand placed on the water system. Treatment plants and other facilities must be sized to meet the peak demand when all homes are occupied and businesses are operating at maximum capacity. The same is true for staffing levels.

For example, a part-time resident might only come to Manzanita on weekends. During the weekend, this customer requires the same amount of system capacity as a full-time resident. The city must set aside the same capacity for supply, treatment, distribution and storage even though average monthly usage for a part-time resident will be much lower than usage for a full-time resident. Therefore, the minimum bill should be set to insure that all customers pay for a "unit" of capacity that must be reserved for them, even though their average monthly consumption may be lower than other users.

3. Variable costs that are directly related to the amount of water used. Examples are chemicals and electricity for well operation and water treatment.

To the extent that these costs can be defined and properly allocated, the rate structure is essentially determined.

Two definitions are important for allocating costs and developing the rate structure:

**Availability Charge.** Charge that is assessed whether or not any water passes through the meter. The city must incur expenses to support the account whether or not water is sold. Examples are billing, meter reading, personnel, and oversizing of facilities to support the peak use of the customer.

**Commodity Charge.** Consumption charge for each gallon of water used. Oregon communities use varying approaches for a commodity charge, and Manzanita has accepted a flat rate per gallon for usage over the base rate for availability.

After extensive review in 1998, Manzanita determined that it was most equitable to charge a rate per 1000 gallons of usage over the allowance provided within the availability charge.

### 3. EXISTING WATER RATES

Existing rates in effect in May 2003 are listed in Table 1. Customers outside the city limits are billed at a rate 1.5 times higher than customers located within the city, for the commodity charge. This is common practice, and reflects the higher costs associated with service outside the city, particularly since city property taxes can not be collected outside the city limits. However, to provide equity amongst all users for availability, the City of Manzanita determined by study to raise the rates for outside users an identical amount as the raise for users inside the city. Commodity charges inside the city are billed at a rate of \$ 1.50 per 1000 gallons, and charges outside the city are billed at a rate of \$ 2.25 per 1000 gallons.

Commercial customers (inside city) pay an availability charge of \$30.00, and a uniform commodity charge of \$1.50 per 1,000 gallons (starting at 0 gallons). There is not a specific quantity of water included with the base rate. Commercial customers (outside city) pay an availability charge based on meter capacity and a commodity charge of \$ 2.25 per 1000 gallons (starting at 0 gallons).

**Table 1 Existing Rate Schedule**

Customer Type	Location	Meter Size	Minimum Rate (per unit)	Minimum	Overage
Residential	Inside	Per Unit	\$30.00	6,000 gal	\$1.50 per 1,000 gal over 6,000 gal
	Outside	Per Unit	\$38.85	6,000 gal	\$2.25 per 1,000 gal over 6,000 gal
Commercial	Inside	3/4"	\$ 21.00	0 gal	\$1.50 per 1,000 gal over 0 gal
		1"	\$18.00	0 gal	\$1.50 per 1,000 gal over 0 gal
		2"	\$117.00	0 gal	\$1.50 per 1,000 gal over 0 gal
	Outside	3/4"	\$25.35	0 gal	\$2.25 per 1,000 gal over 0 gal
		1"	\$34.00	0 gal	\$2.25 per 1,000 gal over 0 gal
		2"	\$141.00	0 gal	\$2.25 per 1,000 gal over

#### 4. BUDGETED RESOURCES AND REQUIREMENTS FOR FISCAL YEAR ENDING JUNE 30, 2004

The water utility service has three separate enterprise funds:

**Water Operating Fund.** Established to account for the activities of the city's water utility service. Revenues are primarily user fees.

**Water Construction Fund.** Established to accumulate resources to finance water system improvements. Revenues are primarily connection (system development) fees, service extension fees, and transfers from the water operating fund.

**Water Bond Interest and Sinking Fund.** Established to account for the payment of general obligation bonds issued for prior water system improvements. Revenues are primarily from property taxes.

The water operating fund will be the only fund evaluated for this rate study (since it is the only fund primarily supported by user fees).

Budgeted expenses for fiscal year 2003/2004, and actual cash transactions for the water operating fund during the previous 12 months ending March 26, 2003 are listed in Table 2.

**Table 2. Summary of Budgeted and Actual Cash Transactions  
for Water Operating Fund Planned from City of Manzanita users  
During Fiscal Year 2003-04**

<b>RECEIPTS</b>		
<b>Description</b>	<b>2003/2004 Budget</b>	<b>Last 12 Months, Actual</b>
User fees	\$580,000	\$555,718
<b>Total Receipts</b>	<b>\$580,000</b>	<b>\$555,718</b>
<b>EXPENDITURES</b>		
<b>Description</b>	<b>Budget</b>	
Budgeted Expenses for 2003-04 from Water Sales	\$580,000	
<b>Total Expenditures</b>	<b>\$580,000</b>	

## 5. NUMBER OF ACCOUNTS AND CAPACITY(EQUIVALENT DWELLING) UNITS

Multi-family customers with a single meter are charged the minimum rate for each dwelling unit. It is more difficult to determine equivalent dwelling units for commercial accounts. For billing purposes the unit capacity is based on meter size. The theoretical peaking demand of individual meters is directly proportional to the capacity of various meter sizes. For example, a 2-inch meter has eight (8) times the capacity of a 5/8 x 3/4-inch (standard residential size) meter. Practical experience indicates that small meters will exceed individual capacities during peak demand more often and by a greater percentage than larger meters. This constitutes a basis for some modification of the demand charges from a strict meter basis. Service capacity relationships and Manzanita's billing ratios, based on meter size, are summarized in Table 3.

**Table 3. Service Capacity Relationships Based on Meter Size, and Modified Capacity Ratios**

Service Size (in)	Safe Maximum Operating Capacity (gpm)	Equivalent Capacity Ratio, EDU's
5/8 x 3/4 (3/4")	20	1.00
1	50	2.5
2	160	8.0

The number of billing capacity units (EDUs) based on meter size is summarized in Table 4.

Table 4. Summary of Billing Capacity Units

Classification		Number Accounts	Capacity Ratio	Number Billing Units	Outside Factor	Weighted Units
Inside	Residential	1071		1,102	1	1,102
	Commercial - 3/4"	30	1	30	1	30
	Commercial - 1"	18	1.33	18	1	24
	Commercial - 2"	3	5.55	3	1	46.5
	Subtotal	1,122		1,153	1	1202.5
Classification		Number Accounts	Capacity Ratio	Number Billing Units	Outside Factor	Weighted Units
Outside	Residential	198		198	1.5	297
	Commercial - 3/4"	2	1	2	1.5	3
	Commercial - 1"	2	1.33	2.67	1.5	4
	Commercial - 2"	1	5.55	5.55	1.5	8
	Subtotal	203		208.22	1.5	312
Total		1,325		1,361		1514.5

Based on our analysis of billing information provided by the city, there were a total of approximately 1,325 accounts during fiscal year 2002-03, of which 15 percent were located outside the city limits. The number of billing units (the sum of residential dwelling units and computed commercial billing units based on meter size) was 1,361 during this time period, of which 15 percent were outside customers. When the number of billing units is weighted by the factor for outside customers, the total number of billing units increases to 1,514.5, with 20.6 percent located outside the city limits.

## 6. EVALUATION OF EXISTING RATE SCHEDULE

Metered billing information for each customer during fiscal year 2002-03 was stored through a computer analysis by city administrative works staff and provided to HGE for further analysis. A summary of revenue information is included in Table 5. Some of the information that can be computed from Table 5 includes:

- a. 80% of water revenue is generated by customers inside the city limits.
- b. For residential customers, 98% of the revenue is generated from the base rate.
- c. For commercial customers, 53% of the revenue is generated from the base rate.
- d. For all customers combined, 95% of the revenue is generated from the base rate.
- e. Residential customers account for 93% of the total revenue.
- f. The average usage per EDU is 3,726 gallons per month. This is low.
- g. The average residential usage for full-time residents is estimated to be 6,000

gallons per month (expected value based on other similar communities). Part-time residents lower average usage considerably.

- h. The average residential bill (inside city) is \$30.50 per month.
- i. The average bill per billing units is \$30.04 per month for inside customers.

Overall costs for operating the Manzanita water system is dependent on usage, which effects treatment, pumping and chemical costs for water production. The existing rate structure was adopted by the City on an interim basis during construction of the new water treatment plant, wells, and transmission system. Plans were made in 1998 that rates would be tiered, with a second increase when construction of the system was complete. The current commodity rate structure is not based on the cost for water production, but rather is designed for conservation and to limit the City's cost for treatment and pumping.

Table 5

## Existing Rates

Classification (1) (number of accounts/units)	Current Monthly Rates	Breakdown			Availability Average Gallons (0-6,000 Gal) in Base Rate	Commodity Charge for Overage (Cost per 1000 Gals)	Revenues			Average monthly Bill (2)
		Avail. Charges	Loan Payment	Minimum Purchase			Base Rate	Overage	Total	
<b>In City</b>					6,000					
Residential (1071/1102)	\$ 30.00	8.65	12.35	9.00		\$ 1.50	\$ 396,720	\$ 6,570	\$ 403,290	\$ 30.50
Commercial:					0					
3/4" meter (30/30)	\$ 21.00	8.65	12.35			\$ 1.50	\$ 7,560	\$ 4,506	\$ 12,066	\$ 30.97
1/2" meter (18/45)	\$ 28.00	12.00	16.00			\$ 1.50	\$ 6,048	\$ 5,101	\$ 11,149	\$ 20.65
2" meter (3/24)	\$ 117.00	48.00	69.00			\$ 1.50	\$ 4,212	\$ 2,219	\$ 6,431	\$ 22.33
						Total Commercial	\$ 17,820	\$ 11,826	\$ 29,646	
						In City Subtotal	\$ 414,540	\$ 18,396	\$ 432,936	
<b>Outside City Limits</b>					6,000					
Residential (198/198)	\$ 38.85	13.00	12.35	13.50		\$ 2.25	\$ 92,308	\$ 3,026	\$ 95,334	\$ 40.12
Commercial:					0					
3/4" meter (2/2)	\$ 25.35	13.00	12.35			\$ 2.25	\$ 608	\$ 207	\$ 815	\$ 33.96
1" meter (2/5)	\$ 34.00	17.30	16.70			\$ 2.25	\$ 816	\$ 283	\$ 1,099	\$ 18.32
2" meter (1/8)	\$ 141.00	72.00	69.00			\$ 2.25	\$ 1,692	\$ 6,541	\$ 8,233	\$ 85.76
						Total Commercial	\$ 3,116	\$ 7,031	\$ 10,147	
						Outside City Subtotal	\$ 95,424	\$ 10,057	\$ 105,481	
Total No. of Accounts:	1,325									
Total No. of Billing Units:	1,356						\$ 489,028	\$ 9,596	\$ 498,624	
Total No. of EDU's:	1,414						\$ 20,936	\$ 18,857	\$ 39,793	
							\$ 509,964	\$ 28,453		
									\$ 538,417	\$ 33.09

**Notes:** 1. Non -residential units computed based on billing units (meter size)  
 2. Average bill per billing unit

## 7. RATE COMPUTATIONS

Rural Utilities established minimum monthly rates of \$ 34.50 per residential EDU in their letter of conditions for grant and loan approval, dated October 26, 2000. In addition, they established a consumptive allowance of 2,416 gallons per residential EDU. Commercial EDU's are established by meter size in Manzanita, and generally reflect the potential usage from the meters rather than actual usage for commercial usage.

To compute rates, the requirements need to initially be established. Cost projections have been made for budgeting purposes to operate, maintain the Manzanita water system, and to provide adequate monies for bond repayment and the reserve required by Rural Utilities to guarantee repayment of the City's loan for treatment, well, and transmission construction. Budgeted requirements for the Manzanita water operating fund to be collected from usage fees are projected at \$ 580,000 for fiscal year 2003/2004, and water usage revenue must be generated to collect this level of funding during the fiscal year.

Manzanita adopted the existing water rate schedule after extensive consideration, and the residential availability rate provided for an allowance of up to 6,000 gallons of water within the base rate. This allowance has functioned well, and residents have continued to conserve water, as evidenced by the limited usage of 3,726 gallons per EDU. Limited water usage is primarily due to the seasonal usage of housing, but water records show evidence that residents are extremely conservative with usage from the water system. Conservation is encouraged by the commodity rate of \$ 1.50 per 1,000 gallons of water inside the City, and by a rate of \$ 2.25 per 1,000 gallons of water used outside the City. The existing rate structure was developed with charges for availability to cover operational and maintenance expense and loan payments to allow repayment of outstanding indebtedness, and including usage charges for water consumption. Consumption charges are utilized to provide for operation and maintenance costs beyond allowances provided.

Two potential rate structures were considered, with both utilizing a residential availability rate of \$ 34.50 per month for City residents, and \$ 45.58 for users outside the City limits. The commodity rate for residential users was varied for residential users, with consideration of both availability allowances of 4,500 gallons of water per month and 6,000 gallons of water per month. It was determined that the allowance of 2,416 gallons/EDU recommended by Rural Utilities is not workable with residents of Manzanita. Commercial usage rates were established to charge a minimum base rate for meter sizing, with established availability charges, and with commodity charges for all water utilized through the meter. The commodity rates for commercial usage are identical to those for residential usage, with charges for all usage through water meters provided at each establishment.

Revenue analysis for proposed availability and commodity rates are provided as Tables 6 and 7, with the variable being whether 4,500 or 6,000 gallons of water are provided within the availability charge. In comparison of the two rate plans, either will provide sufficient revenues to meet budgetary requirements, with at least a 6.7% safety factor. The existing rate structure and usage allowances has been in place for several years, and revenues are consistent.

Table 6

### Revenue from Proposed Rates with 6,000 Gallon Minimum

**Notes:** 1. Non-residential units computed based on billing units (meter size)  
2. Average bill per billing unit

Table 7

## Revenue from Proposed Rates with 4,500 Gallon Minimum

Classification (1) (number of accounts/units)	Proposed Monthly Rates (Total)	Breakdown			Availability Allowance Gallons	Commodity Charge for Overage (Cost per 1000 Gals)	Revenues			Average monthly Bill (2)
		Avail. Charges	Loan Payment	Minimum Purchases			Base Rate	Overage	Total	
<b>In City</b>										
Residential (1071/1102)	\$ 34.50	13.15	12.35	9.00	4500	\$ 1.50	\$ 456,228.00	\$ 11,732.00	\$ 467,960.00	\$ 35.39
Commercial:										
3/4" meter (30/30)	\$ 25.50	13.15	12.35		0	\$ 1.50	\$ 9,180.00	\$ 4,506.00	\$ 13,686.00	\$ 38.02
1" meter (18/45)	\$ 33.92	17.49	16.43		0	\$ 1.50	\$ 7,326.72	\$ 5,101.00	\$ 12,427.72	\$ 23.01
2" meter (3/24)	\$ 141.52	72.98	66.54		0	\$ 1.50	\$ 5,094.72	\$ 2,219.00	\$ 7,313.72	\$ 25.39
						Total Commercial	\$ 21,601.44	\$ 11,826.00	\$ 33,427.44	
						In City Subtotal	\$ 477,829.44	\$ 23,558.00	\$ 501,422.00	
<b>Outside City Limits</b>										
Residential (198/198)	\$ 45.58	19.73	12.35	13.50	4500	\$ 2.25	\$ 108,298.08	\$ 4,290.00	\$ 112,588.08	\$ 47.39
Commercial:										
3/4" meter (2/2)	\$ 32.08	19.73	12.35		0	\$ 2.25	\$ 769.92	\$ 207.00	\$ 976.92	\$ 40.70
1" meter (2/5)	\$ 42.67	26.24	16.43		0	\$ 2.25	\$ 1,024.08	\$ 283.00	\$ 1,307.08	\$ 21.78
2" meter (1/8)	\$ 178.04	109.50	68.54		0	\$ 2.25	\$ 2,136.48	\$ 6,541.00	\$ 8,677.48	\$ 90.39
						Total Commercial	\$ 3,930.48	\$ 7,031.00	\$ 10,961.48	
						Outside City Subtotal	\$ 112,228.56	\$ 11,321.00	\$ 123,549.56	
Total No. of Accounts:	1,325						\$ 564,526.08	\$ 16,022.00	\$ 580,548.08	
Total No. of Billing Units:	1,356						\$ 25,531.92	\$ 18,857.00	\$ 44,388.92	
Total No. of EDU's:	1,414						\$ 590,058.00	\$ 34,879.00		
									\$ 624,937.00	\$ 36.83

**Notes:** 1. Non -residential units computed based on billing units (meter size)  
 2. Average bill per billing unit

## 8. RATE RECOMMENDATIONS

### Rate Structure

Extensive citizen involvement was a factor in establishing the current rate structure for both availability and commodity charges. Residents are now comfortable and familiar with the rate structure and are aware that an increase is required in the availability charge to \$ 34.50 per month for residential users inside the City.

The recommended option is to keep the commodity charge at \$1.50 per 1,000 gallons as developed on both Tables 6 and 7, and to maintain the availability allowance at 6,000 gallons for residential customers. Minimum usage should remain at 0 gallons for commercial customers. The City should continue to assess an extra 50 percent charge for outside city water users in accordance with existing policy.

The rate structure shown in Table 6 is recommended for the following reasons:

1. Commodity rate of \$1.50 per 1,000 gallons for inside customers. This is the same as the current rate, and was initially computed as the cost of production (for variable costs) after the new facilities were constructed.
2. Maintain the minimum amount of water within the base rate at 6,000 gallons. It is estimated that the average full-time resident uses approximately 6,000 gallons of water each month. Reducing the minimum to 4,500 gallons would raise an estimated additional \$ 5232.00 per year, but conservation would likely reduce the revenue from projections. In addition, unless the availability rate was modified further for usage, commercial users would see no increase for commodity rates on average. This would not be equitable. The impact of the increased revenue would be almost entirely an expense to full-time residents of Manzanita, who are the voters, and are known to be elderly. Since revenues are available to meet budgetary needs with the higher availability allowance of 6,000 gallons per month, it is recommended that the current policy be maintained with simply an increase in the base water usage rate for availability.
3. Continue to charge outside City customers 1.5 times the rate for inside City customers for operation and maintenance of the system. Assessing a higher rate for outside customers is common practice for most communities in Oregon.
4. Both inside and outside customers would continue to pay the same amount per EDU for annual loan and reserve payment (there is not a factor of 1.5 for outside customers for annual loan and reserve payments).
5. It is known that the Zadduck Creek Water Cooperative is making plans to obtain water from the City of Manzanita. The Cooperative will be developing a new distribution system, and plans anticipate that operation and maintenance of their system will not be provided by the City of Manzanita. It is recommended that this Cooperative be considered as a commercial outside City limits customer, and that rates be assessed in accordance with the rate structure provided in Table 6.