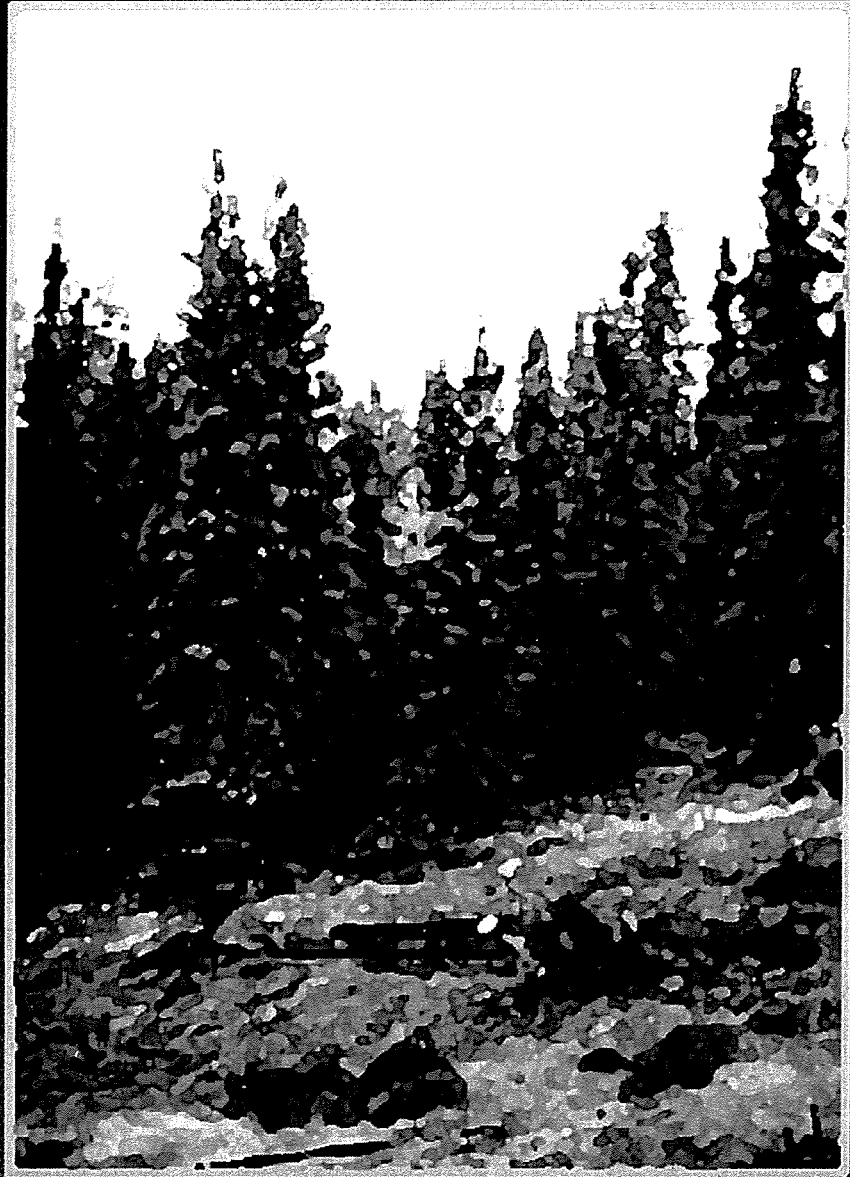


Pagosa Area Water and Sanitation District Water and Wastewater Rate Study



**Final Report
May 2003**



**INTEGRATED
UTILITIES
GROUP, INC.**



May 5, 2003

D137.031.RS

Carrie Campbell, District Manager
Pagosa Area Water and Sanitation District
100 Lyn Avenue
Pagosa Springs, CO 81157

Subject: Water and Wastewater Rate Study Final Report

Dear Carrie:

Integrated Utilities Group, Inc. (IUG) is pleased to present you with the final report of the water and wastewater rate study completed for the Pagosa Area Water and Sanitation District (the District). The final report details the revenue requirements and rate structure analysis performed and outlines the observations and recommendations in the study.

The District's water and wastewater rate study included the following tasks.

- Development of user charge revenue requirements
- Evaluation of rate structure alternatives
- Calculation of user charges

District staff assisted IUG in determining the user charge revenue requirements, narrowing down the rate structure alternatives, and analyzing customer water usage patterns. As a result, user charges for two water rate structures and one wastewater rate structure are calculated and recommended to the Board for consideration.

Several policy decisions were also made by the Board during the study which greatly contributed to the results.

1. 30 percent of water revenue requirements will be recovered through the monthly service charge for water service customers.
2. Water block thresholds are based on the District's customer use data.
3. Residential customers will have their water use estimated for the non-meter read period from the previous year's meter reading in April. Any overages or credits will be applied in the subsequent months.

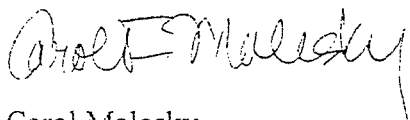
Throughout the study, IUG and staff conducted numerous iterations of water use block thresholds and user charges to arrive at an appropriate rate schedule. Our goal in the study was to achieve a high level of equity among customers.

During the course of this study, IUG identified further areas of study for the District's consideration. IUG recommends that:

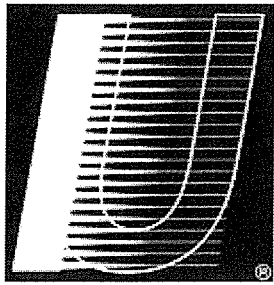
1. Wastewater rate structure and rates remain unchanged for 2003. Review and verify costs and revenues in the wastewater revenue requirements model to determine the user charges necessary in 2004.
2. The District adopts water rate structure Alternative A with no minimum usage allowed in the monthly service charge. This provides the strongest water conservation signal and is gaining popularity in the industry.
3. The equivalent unit schedule is revised to reflect meter sizes rather than square footage. Also recommended is a review of the multi-family/other ERUs per account to determine if the correct values are assigned given actual water use characteristics.
4. The District reviews its revenues, expenses, and customer use annually to ensure user charges are on track. If differences are apparent, the water and wastewater revenue requirements models should be updated and new user charges calculated.

We enjoyed working with you and your staff on this important rate study. Please call me at 303-267-0200 if you have any further questions.

Sincerely,
INTEGRATED UTILITIES GROUP, INC.



Carol Malesky
Project Manager



INTEGRATED
UTILITIES
GROUP, INC.

*Pagosa Area Water and Sanitation District
Water and Wastewater Rate Study*

Final Report

May 2003

TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
STUDY OBJECTIVES	1
METHODOLOGY	1
FINDINGS-WASTEWATER	2
FINDINGS-WATER	2
CONCLUSIONS AND RECOMMENDATIONS	3
SECTION 1: INTRODUCTION	4
BASIC APPROACH TO THE REVENUE REQUIREMENTS STUDY	4
SECTION 2: USER CHARGE REVENUE REQUIREMENTS.....	5
BASIC APPROACH.....	5
WATER CUSTOMER CHARACTERISTICS	6
WASTEWATER CUSTOMER CHARACTERISTICS	7
EQUIVALENT UNIT SCHEDULES.....	7
SECTION 3: RATE STRUCTURE ALTERNATIVES AND RESULTS	8
ALTERNATIVE RATE STRUCTURES	8
<i>Water Rate Structures.....</i>	<i>8</i>
<i>Fixed Monthly Charges</i>	<i>9</i>
<i>Bill Frequency Analysis.....</i>	<i>9</i>
<i>Wastewater Rate Structures.....</i>	<i>12</i>
SECTION 4: CONCLUSIONS AND RECOMMENDATIONS.....	14
SUMMARY OF STUDY	14
RECOMMENDATIONS	14
APPENDICES.....	16
<i>Appendix A Water Revenue Requirements Model Tables</i>	
<i>Appendix B Wastewater Revenue Requirements Model Tablesy</i>	
<i>Appendix C Technical Memorandum: User Charge Revenue Requirements and Rate Structure Development for Pagosa Area Water and Sanitation Districty</i>	
<i>Appendix D Memorandum: Status Report on Rate Study and List of Policy Items for Board of Directors</i>	

Executive Summary

Integrated Utilities Group (IUG) was engaged by Pagosa Area Water and Sanitation District (the District) in early 2003 to conduct a water and wastewater rate study. The District is a growing district with specific policy goals relating to user charges, such as a desire to generate user charges that are more standard in the industry, supported by the District's own data, and reasonable for its customers. With input and feedback by Shellie Tressler, Gene Tautges, and Carrie Campbell, IUG developed revenue requirements models, rate structure alternatives, and user charge (rate) scenarios.

Study Objectives

The rate study was authorized in order to accomplish the following objectives:

- Generate justifiable, supportable, and more industry-standard user charges.
- Evaluate alternative rate structures that encourage water conservation.
- Assist the District in selecting the most appropriate rate structures.

Methodology

Due to current data limitations, a revenue requirements analysis rather than a full cost-of-service (COS) analysis was completed as the basis for generating user charges. A full COS analysis requires specific usage data by customer class and detailed cost allocations. The District should continue to improve its data collection in order to conduct a cost-of-service study in the future.

Once water and wastewater revenue requirements were calculated, rate structure alternatives were developed and evaluated by IUG and staff. These rate structures, when based on actual cost data, are becoming more the standard in the industry. The American Water Works Association (AWWA) in its Manual of Water Supply Practices, Principles of Water Rates, Fees, and Charges (Manual M1)¹, discusses various types of acceptable water rate structures. A structure that recovers its customer-related, billing, and meter-related costs in the monthly service charge is common in the industry. Minimum charges which allow a specified amount of water use, such as the District's current monthly service charge, are found in the industry but are not the most equitable and do not send as strong of a conservation signal.

Two water rate structure alternatives were selected for further analysis. As part of this analysis, bill frequency analyses were generated for single family residential, multi-family residential/other, and commercial customers. A rate calibration model was developed for the two alternative water rate structures using the bill frequency analyses.

¹ American Water Works Association, Manual of Water Supply Practices, Principles of Water Rates, Fees, and Charges, AWWA M1, Fifth Edition, 2000.

Both rate structure alternatives are based on increasing block rate structures—for higher levels of water use, the rate per thousand gallons increases. Such rate structures are proven to encourage water conservation. In Alternative A, no minimum water use is allowed in the monthly service charge. Customers are charged for all water they use, regardless of the amount. The monthly bills reflect their actual water use, which gives the customer ultimate control over how much water they use.

Alternative B allows a minimum of 3,000 gallons per ERU in the monthly service charge. Currently, 8,000 gallons per ERU are allowed, which penalizes those customers with lower water use. Alternative B represents a move towards a more equitable rate structure.

IUG and Staff considered numerous variations on the water usage thresholds at which customers would be charged a higher rate. We also considered establishing specific usage thresholds for the following customer types: single family residential, multi-family/other, and commercial. It was concluded that reasonable monthly water bills were most equitably calculated by establishing block thresholds based on residential water use characteristics. These block thresholds are then allowed to change based on the number of equivalent residential units (ERUs) each customer represents. This report presents the results of the last of these block threshold iterations.

Findings-Wastewater

Wastewater user charges calculated for 2003 are \$15.50 per ERU per month. We do not recommend a change in the rate structure for wastewater. For wastewater systems such as the District that are not subject to the United States Environmental Protection Agency user charge regulations, a monthly service charge is acceptable in the industry. Based on the calculated wastewater user charge revenue requirements and the total number of wastewater service ERUs, the current charge per month of \$15.50 is sufficient for 2003.

Findings-Water

Water user charges calculated for 2003 for the two alternative rate structures for the Board's review are summarized in the tables below:

A. No Minimum Water Allowance

Usage Blocks (gallons)	Rate per ERU, kgal
Monthly Service Charge	\$5.50

Multi-			
Residential	Family/Other	Commercial	
0-8,000	0-8,000*	0-8,000*	\$1.85
8,001-20,000	8,001-20,000*	8,001-20,000*	\$3.70
>20,000	>20,000*	>20,000*	\$4.50

B. Minimum Water Allowance

Usage Blocks (gallons)	Rate per ERU, kgal
Monthly Service Charge with 0-3,000 gallons per ERU	\$8.50

Multi-			
Residential	Family/Other	Commercial	
3,001-20,000	3,001*-20,000*	3,001*-120,000	\$2.85
>20,000	>20,000*	>120,000	\$4.50

*Multi-Family/Other & Commercial thresholds multiplied by number of ERU

Alternatives A and B allow the block thresholds for multi-family/other to be multiplied by the number of ERUs per account to calculate the allowed water use in each block. Alternative A also allows commercial thresholds to be calculated per ERU. To calculate the minimum water use allowed for commercial accounts in Alternative B, the minimum water allowance of 3,000 per month is multiplied by the number of ERUs per account.

Conclusions and Recommendations

IUG recommends that the District maintain its current rate structure and user charges for wastewater service. To encourage water conservation and send the clearest price signal to the District's water customers, IUG recommends implementing a water rate structure with no minimum water usage included in its monthly service charge (Alternative A). Water service customers will be charged for all water they use, which provides an incentive to conserve and moves the District towards the industry trends. Finally, we recommend that the District review its system annually to ensure costs and revenues are tracked and to anticipate any necessary changes in the user charges. Continued improvement in the data collected will lend itself to a full cost-of-service analysis if the District feels such a study is needed.

Section 1: Introduction

Basic Approach to the Revenue Requirements Study

The Pagosa Area Water and Sanitation District (the District) retained Integrated Utilities Group, Inc. (IUG) to conduct a rate study for its water and wastewater utilities. The user charge revenue requirements for water and wastewater service have been calculated for 2003 through 2007.

The central focus of the study included:

- Recovering the District's user charge revenue requirements through adequate user charges or rates
- Generating user charges that are justifiable, supportable, and more standard in the industry
- Using the District's customer-specific usage patterns to generate user charges

This report summarizes the steps followed in conducting the District's rate study. It assesses the District's current structures and user charges' capability to recover the system's annual user charge revenue requirements and compares them against alternative approaches for calculating user charges. The tasks completed in this water and wastewater rate study entailed:

- Calculating user charge revenue requirements for water and wastewater
- Analyzing customer characteristics
- Developing and evaluating alternative rate structures
- Calculating user charges

Each of these tasks is described in the subsequent sections. Appended to this report are copies of the water and wastewater revenue requirements model tables and two technical memoranda completed during the study.

Section 2: User Charge Revenue Requirements

Basic Approach

The first step in water and wastewater rate studies is to calculate an estimate of annual system revenue requirements. The American Water Works Association (AWWA) Manual M1² recommends the cash basis for determining the revenue requirements of a municipal water utility.

Because government-owned utilities are required to maintain a municipal-like budget, revenues and expenses must balance. Therefore, the total revenues collected from all customers must equal budgeted expenses. This is the cash basis.

The cash basis revenue requirements of the District's water and wastewater utilities include:

- Operation and maintenance (O&M) expenses
- Debt service
- Capital improvements financed with user charges and capital investment fees

The portion of annual system revenue requirements to be recovered through user charges depends on a utility's financing policies and its other sources of income. To determine the amount of revenue that user charges must generate annually, the total revenue requirements must be reduced by non-rate or other system revenues. Other system revenues are defined as all revenues except revenues derived from water or wastewater user charges. The District's non-rate revenues include, but are not limited to:

- Irrigation and other water sales
- Waste hauler revenue
- Late charges and interest
- Customer hookups
- Operating mill levy transfers from the general fund
- Capital investment fees
- Availability charges

² ibid

➤ Inclusion fees

Capital projects fund balances may also provide revenue to offset costs of capital improvements. The District currently offsets a portion of the increased electricity charges in the water system due to the drought with a drought surcharge. A portion of these expenses should be recovered from user charges, however, because a base amount of the expenses are related to pumping during normal periods. The base calculation of user charge revenue requirements includes a portion of the drought surcharge revenue as non-rate revenue. IUG calculated the user charge revenue requirements for the District's water and wastewater systems for the years 2003 through 2007. The results are presented in Table 1 below.

Item	2003	2004	2005	2006	2007
Water System					
Operation & Maintenance Costs	\$1,763,201	\$1,816,097	\$1,870,580	\$1,926,697	\$1,984,498
Capital Costs	1,507,680	1,517,809	1,523,746	1,550,942	1,585,780
Less Non-Rate Revenues	(1,836,325)	(1,884,773)	(1,934,675)	(1,986,073)	(2,039,014)
User Charge Revenue Requirements	\$1,434,556	\$1,449,133	\$1,459,651	\$1,491,566	\$1,531,264
Wastewater System					
Operation & Maintenance Costs	\$681,629	\$702,078	\$723,140	\$744,834	\$767,179
Capital Costs	1,127,397	1,233,549	1,264,182	1,302,536	1,340,475
Less Non-Rate Revenues	(1,193,919)	(1,229,737)	(1,266,629)	(1,304,628)	(1,343,766)
User Charge Revenue Requirements	\$615,107	\$705,890	\$721,694	\$742,743	\$763,888

These user charge revenue requirements are the basis for generating monthly user charges.

Water Customer Characteristics

The next main task of the rate study is to summarize the District's customer characteristics. Customers of a water utility are often identified according to customer class. Each customer class has unique water demand and usage characteristics.

In a cost-of-service analysis, determining customer service characteristics varies with the cost allocation methodology used. For the purposes of this simplified study, the customer characteristics analyzed are the number of equivalent residential units (ERUs) by customer type, and annual water use.

The customer designation or characteristic represents the number of customers, or ERUs in a customer class or type. The District currently serves the following customer types:

- Single Family
- Multifamily
- Commercial
- Commercial Irrigation
- Government
- Time Share

The proportion of the customer service characteristics for each class is calculated to determine the demands placed on the water system by each class. Typically, the annual costs of the system are allocated to the customer classes proportionately. For this study, user charges are calculated to be the same regardless of customer type; therefore, the data on this characteristic are for information purposes only.

Wastewater Customer Characteristics

Wastewater customer usage characteristics commonly identified in rate studies are:

- Flow,
- Biochemical oxygen demand (BOD),
- Total suspended solids (TSS), and
- Customer or number of accounts or ERUs.

Due to the small difference in the customer classes' wastewater contributions, the analysis for the District's wastewater system consists of only the flow and customer characteristics. All customers are assumed to share in the wastewater system's costs equally.

Equivalent Unit Schedules

In Colorado, some municipalities base water and wastewater user charges on equivalency schedules determined by water meter size and some small special districts utilize an alternative schedule. The monthly service charges are assessed by the equivalent number of single family residents. A number of methods have been used to determine equivalency schedules:

- Water meter size
- Dwelling unit count
- Bedroom/Bathroom count
- Fixture unit count

Selecting the basis for equivalencies depends highly on available data. Many schedules also rely on older studies that estimated water use in gallons per day, such as the Uniform Building Code or Plumbers Code. These studies were completed years ago and have not since been updated. More recently, installations of water meters have resulted in more accurate data on the water usage for different customer types. Actual water usage can be associated with meter size. Equivalency schedules based on meter size, therefore, have become more the industry norm.

The District currently bases its monthly water and wastewater service charges on an equivalent residential unit basis. The equivalent units for the District's different customers have been calculated based on a schedule previously published by the AWWA. The schedule reports the usage in gallons per day for a measurement unit, such as square footage, for different types of establishments. IUG's conclusions and recommendations will suggest a review of adopting an equivalency schedule that is based on meter size as is more the norm.

Section 3: Rate Structure Alternatives and Results

Alternative Rate Structures

Once the user charge revenue requirements are determined, alternative rate structures are developed to calculate the user charges for recovering the costs from the District's customers. The District's goals for rate structure alternatives included:

- Generation of user charges that are more standard in the rate making industry, justifiable to the Board of Directors and community, and, along with the District's other revenue sources, adequate to recover its costs for water rate structures.
- For water rate structures, the promotion of water conservation.

IUG developed alternative water and wastewater rate structures by focusing on typical water rate structures that promote water conservation and wastewater rate structures that comply with industry norms. These rate structures are described below.

Water Rate Structures

IUG initially developed four alternative water rate structures which were evaluated by Staff during a meeting at the District's offices on March 19, 2003. Two alternatives were selected for further analysis: one based on a monthly service charge with no minimum water allowance and three increasing usage blocks, and one based on a monthly service charge that includes a specified water allowance with two increasing usage blocks.

The District's current rate structure is an increasing block rate structure, which is typically considered conservation-oriented. Increasing block rate structures charge a higher rate for higher usage. Each water customer represents a single ERU or a multiple of ERUs. For each ERU, water service customers are charged the following.

- \$13.50 per month for 8,000 gallons of water usage
- \$3.50 per thousand gallons (kgal) for water usage of 8,001 to 20,000 gallons
- \$4.50 per kgal for water usage over 20,000 gallons

The first rate structure analyzed (A) is based on a monthly service charge with no minimum water allowance and three increasing usage blocks. The monthly service charge is on an ERU basis. Therefore, the monthly service charge is multiplied by the number of ERUs each customer represents. In addition, the block thresholds are multiplied by the number of ERUs each customer represents for multi-family/other and commercial accounts. This methodology was determined to be most equitable to larger customers as well as smaller customers.

The second rate structure (B) is based on a monthly service charge that includes a specified water allowance with two increasing usage blocks. Again, the monthly service charge is on a per ERU basis. In addition, the minimum water allowance is also on an ERU basis which impacts multi-family/other and commercial customers in particular.

Calculating the user charges under these two alternatives required analysis of:

- Costs to be recovered through the fixed monthly charge, and
- Billed usage patterns of the District's customers to establish block thresholds.

Fixed Monthly Charges

A crucial assumption in developing water user charges for the District is the amount of revenue requirements to be recovered through the monthly service charge. A detailed cost-of-service analysis results in specific costs for this charge. For a simpler rate study such as the District's, the percentage of revenue requirements to include in the monthly service charge must be decided.

One approach is to only include billing and administration costs which would result in a small fee per ERU and higher usage rates. A more revenue stable option would be to recover more of the fixed costs of the system. Staff completed an analysis of the fixed and variable costs of the water system and concluded that a high percentage of costs are fixed—approximately 70 percent. The drawback of recovering all the fixed costs through the monthly service charge is a high fee per ERU with low usage rates, resulting in a poor price signal for encouraging water conservation.

The intermediate solution is to determine a percentage of revenue requirements to be recovered in the monthly service charge that is between the two approaches described above. IUG recommends and the Board supports that 30 percent of revenue requirements are recovered through this charge, or \$5.50 per ERU per month.

Bill Frequency Analysis

Using the monthly billed water usage data from March 2002 through February 2003, a bill frequency analysis was completed to review the thresholds for the various consumption blocks. In projecting user charges for the alternative rate scenarios, an adjustment to the billed usage was made because the data came from a drought year. The monthly billed water use was increased by a percentage based on the water conservation realized from 2001 to 2002.

A bill frequency analysis plots monthly water use by the percentage of cumulative billed use. The graphs can be used to determine the percentage of billed use for different levels of water use. For example, Figure 1 shows that approximately 65 percent of single family residential billed usage was for 8,000 gallons a month or less. Results are shown below for single family residential, multi-family/other, and commercial customers.

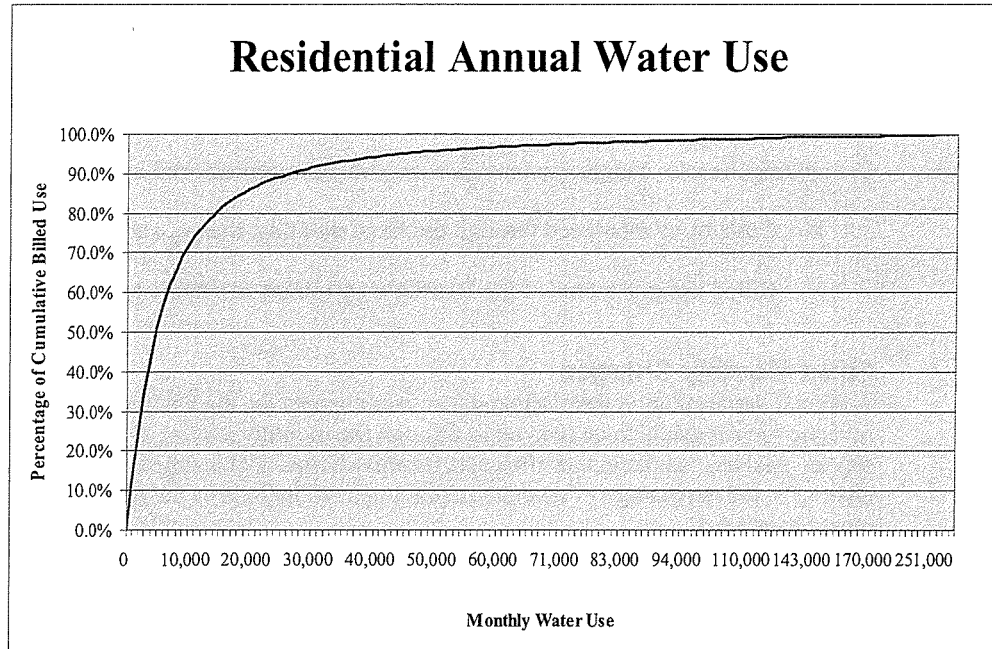


Figure 1- Residential Annual Water Use

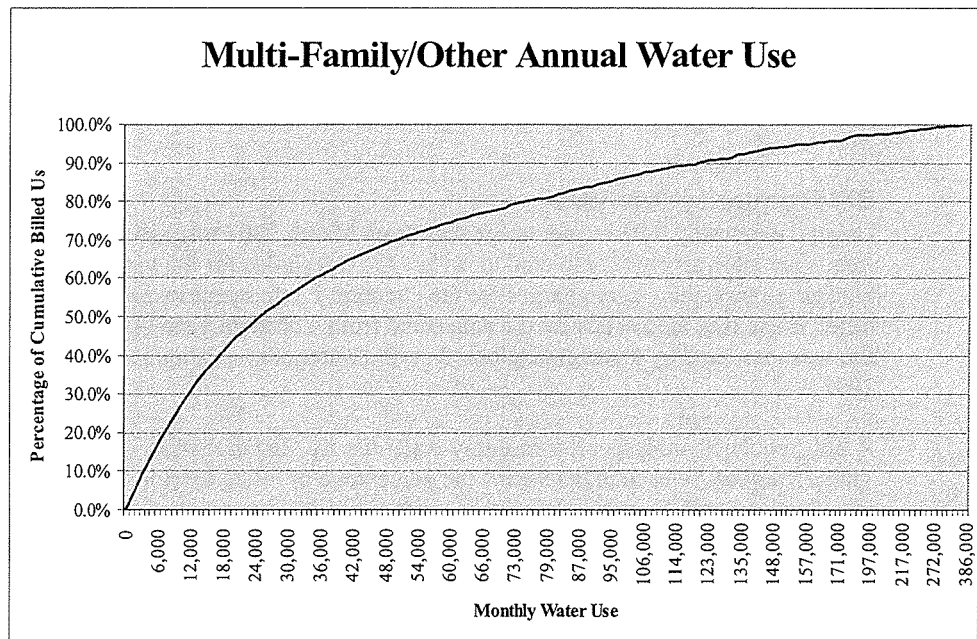


Figure 2- Multi-Family/Other Annual Water Use

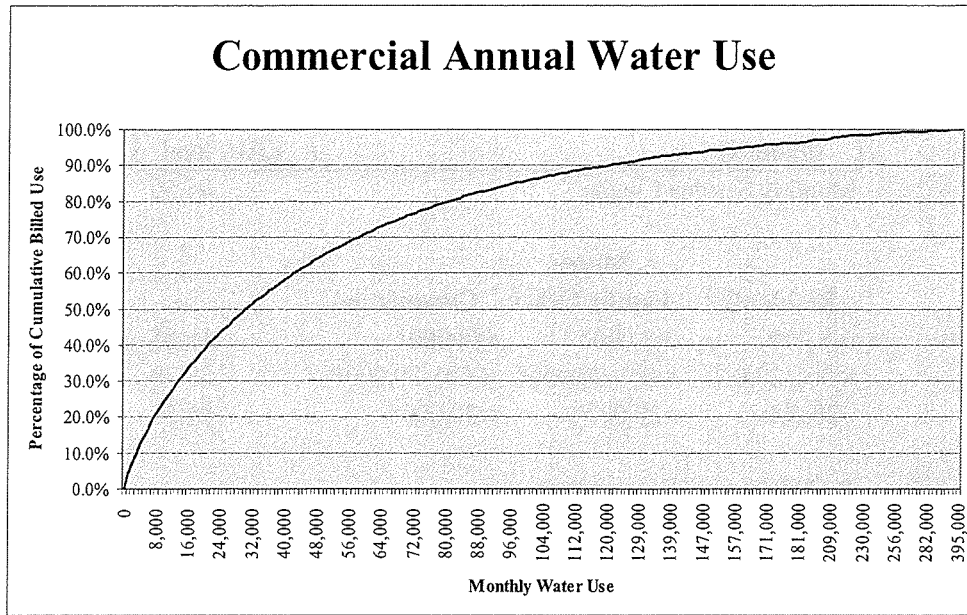


Figure 3- Commercial Annual Water Use

From the above graphs, notice that the District’s multi-family/other and commercial customers have different usage patterns than its residential customers. IUG and staff considered adjusting block thresholds accordingly. The associated rate scenarios, however, resulted in significant impacts on certain accounts. Therefore, to maintain reasonable user charges, the usage thresholds for multi-family/other and commercial accounts were determined to be the single family thresholds multiplied by each account’s ERUs.

Table 2 below shows the usage block thresholds for each customer type for both rate structure alternatives.

Table 2 Alternative Block Thresholds

Alternative	Residential Usage Blocks (gallons)	Multi-Family/Other Usage Blocks (gallons)	Commercial Usage Blocks (gallons)
A. No Minimum Water Allowance	0-8,000	0-8,000*	0-8,000*
	8,001-20,000	8,001-20,000*	8,001-20,000*
	>20,000	>20,000*	>20,000*
B. Minimum Water Allowance	0-3,000	0-3,000*	0-3,000*
	Multi-Family/Other & Commercial thresholds multiplied by number of ERUs	3,001-20,000	3,001-120,000
	>20,000	>20,000*	>120,000

The resulting user charges under the two water user charge options are summarized in Table 3:

Table 3 Alternative User Charges

A. No Minimum Water Allowance

Usage Blocks (gallons)	Rate per ERU, kgal
Monthly Service Charge	\$5.50

Multi-			
Residential	Family/Other	Commercial	
0-8,000	0-8,000*	0-8,000*	\$1.85
8,001-20,000	8,001-20,000*	8,001-20,000*	\$3.70
>20,000	>20,000*	>20,000*	\$4.50

B. Minimum Water Allowance

Usage Blocks (gallons)	Rate per ERU, kgal
Monthly Service Charge with 0-3,000 gallons per ERU	\$8.50

Multi-			
Residential	Family/Other	Commercial	
3,001-20,000	3,001*-20,000*	3,001*-120,000	\$2.85
>20,000	>20,000*	>120,000	\$4.50

*Multi-Family/Other & Commercial thresholds multiplied by number of ERU

These user charges represent the most appropriate scenarios determined to collect from each customer type its fair share of the user charge revenue requirements.

Wastewater Rate Structures

IUG developed two alternative wastewater rate structures for the District's evaluation. The District's current rate structure is based on a monthly fee per ERU. Wastewater service customers are charged \$15.50 per month. This basis is simple and easy to administer.

The first alternative wastewater rate structure would be the status quo—no change. Alternatively, the user charges could comprise a monthly service charge per ERU to recover billing and administrative costs and a rate per volume of wastewater discharged. Estimating wastewater flows per account typically involves calculating an average winter water use value. Given the fact that the District cannot read a majority of its meters during the winter period, calculating average winter water use would be difficult. Therefore, IUG recommends maintaining the District's current rate structure. Given the annual user charge revenue requirements in 2003 and the total number of wastewater ERUs, the resulting monthly user charge per ERU is \$15.50.

The advantages of this type of rate structure include:

- Simple and easy to understand and administer
- Currently applied

Section 3: Rate Structure Alternatives and Results

- Results in stable revenue recovery
- Larger users with multiple ERUs are charged more

Section 4: Conclusions and Recommendations

Summary of Study

The District's water and wastewater rate study included the following tasks.

- Development of user charge revenue requirements
- Evaluation of rate structure alternatives
- Calculation of user charges

District staff assisted IUG in determining the user charge revenue requirements, narrowing down the rate structure alternatives, and analyzing customer water usage patterns. As a result, user charges for two water rate structures and one wastewater rate structure are calculated and recommended to the Board for consideration.

Several policy decisions were also made by the Board during the study which greatly contributed to the results.

1. 30 percent of water revenue requirements will be recovered through the monthly service charge for water service customers.
2. Water block thresholds are based on the District's customer usage data.
3. Residential customers will have their water usage estimated for the non-meter read period from the previous year's meter reading in April. Any overages or credits will be applied in the subsequent months.

Throughout the study, IUG and staff conducted numerous iterations of water use block thresholds and user charges to arrive at an appropriate rate schedule. Our goal in the study was to achieve a high level of equity among customers.

Recommendations

During the course of this study, IUG identified further areas of study for the District's consideration. IUG recommends that:

1. Wastewater rate structure and rates remain unchanged for 2003. Review and verify costs and revenues in the wastewater revenue requirements model to determine the user charges necessary in 2004.

Section 4: Conclusions and Recommendations

2. The District adopts water rate structure A with no minimum usage allowed in the monthly service charge. This provides the strongest water conservation signal and is gaining popularity in the industry.
3. The equivalent unit schedule is revised to reflect meter sizes rather than square footage. Also recommended is a review of the multi-family/other ERUs per account to determine if the correct values are assigned given actual water use characteristics.
4. The District reviews its revenues, expenses, and customer use annually to ensure user charges are on track. If differences are apparent, the water and wastewater revenue requirements models should be updated and new user charges calculated.

Appendices

- Appendix A** Water Revenue Requirements Model Tables
- Appendix B** Wastewater Revenue Requirements Model Tables
- Appendix C** Technical Memorandum: User Charge Revenue Requirements and Rate Structure Development for Pagosa Area Water and Sanitation District
- Appendix D** Memorandum: Status Report on Rate Study and List of Policy Items for Board of Directors



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PAGOSA AREA WATER & SANITATION DISTRICT
Appendix A - Water Revenue Requirement Tables

Water Revenue Requirements Study

Table 1
 Pagosa Area Water and Sanitation District
 Water Revenue Requirement Study
 Projected Number of Accounts by Customer Class

Customer Class	2003	2004	2005	2006	2007
Single Family	3,589	3,844	4,117	4,409	4,722
Multifamily	172	184	197	211	226
Commercial	303	325	348	372	399
Commercial Irrigation	30	32	34	37	39
Government	51	55	58	63	67
Time Share	75	80	86	92	99
Total	4,220	4,520	4,841	5,184	5,552

Water Revenue Requirements Study

Table 2
 Pagosa Area Water and Sanitation District
 Water Revenue Requirement Study
 Projected Number of ERUs by Customer Class

Customer Class	2003	2004	2005	2006	2007
Single Family	3,637	3,895	4,172	4,468	4,785
Multifamily	798	855	915	980	1,050
Commercial	872	934	1,000	1,071	1,147
Commercial Irrigation	64	69	73	79	84
Government	117	125	134	144	154
Time Share	308	330	353	378	405
Total	5,796	6,208	6,648	7,120	7,626

Water Revenue Requirements Study

Table 3
 Pagosa Area Water and Sanitation District
 Water Revenue Requirement Study
 Projected Percentage of Accounts by Year

Customer Class	2003	2004	2005	2006	2007
Single Family	85.0%	85.0%	85.0%	85.0%	85.0%
Multifamily	4.1%	4.1%	4.1%	4.1%	4.1%
Commercial	7.2%	7.2%	7.2%	7.2%	7.2%
Commercial Irrigation	0.7%	0.7%	0.7%	0.7%	0.7%
Government	1.2%	1.2%	1.2%	1.2%	1.2%
Time Share	1.8%	1.8%	1.8%	1.8%	1.8%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

Water Revenue Requirements Study

Table 4
 Pagosa Area Water and Sanitation District
 Water Revenue Requirement Study
 Projected Percentage of ERU by Year

Customer Class	2003	2004	2005	2006	2007
Single Family	62.8%	62.8%	62.8%	62.8%	62.8%
Multifamily	13.8%	13.8%	13.8%	13.8%	13.8%
Commercial	15.0%	15.0%	15.0%	15.0%	15.0%
Commercial Irrigation	1.1%	1.1%	1.1%	1.1%	1.1%
Government	2.0%	2.0%	2.0%	2.0%	2.0%
Time Share	5.3%	5.3%	5.3%	5.3%	5.3%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

Water Revenue Requirements Study

Table 5
 Pagosa Area Water and Sanitation District
 Water Revenue Requirement Study
 Water Usage in Gallons by Customer Class

Customer Class	2003	2004	2005	2006	2007
Single Family	255,321,151	273,448,953	292,863,828	313,657,160	335,926,819
Multifamily	40,558,469	43,438,121	46,522,227	49,825,305	53,362,902
Commercial	71,085,742	76,132,829	81,538,260	87,327,477	93,527,728
Commercial Irrigation	6,706,715	7,182,891	7,692,877	8,239,071	8,824,045
Government	9,522,666	10,198,776	10,922,889	11,698,414	12,529,001
Time Share	18,692,292	20,019,445	21,440,825	22,963,124	24,593,506
Total	401,887,035	430,421,015	460,980,907	493,710,551	528,764,000

Water Revenue Requirements Study

Table 6
 Pagosa Area Water and Sanitation District
 Water Revenue Requirement Study
 Percentage of Water Usage by Customer Class

Customer Class	2003	2004	2005	2006	2007
Single Family	63.5%	63.5%	63.5%	63.5%	63.5%
Multifamily	10.1%	10.1%	10.1%	10.1%	10.1%
Commercial	17.7%	17.7%	17.7%	17.7%	17.7%
Commercial Irrigation	1.7%	1.7%	1.7%	1.7%	1.7%
Government	2.4%	2.4%	2.4%	2.4%	2.4%
Time Share	4.7%	4.7%	4.7%	4.7%	4.7%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

Water Revenue Requirements Study

Table 7
Pagosa Area Water and Sanitation District
Water Revenue Requirement Study
Projected Annual Operation and Maintenance Costs

Item	Forecast Expenses for O&M						
	Escalation	2002	2003	2004	2005	2006	2007
Source of Supply							
Boats & Motors	3.00%	\$500	\$515	\$530	\$546	\$563	\$580
Ditches	3.00%	5,000	5,150	5,305	5,464	5,628	5,796
Reservoirs	3.00%	6,500	6,695	6,896	7,103	7,316	7,535
Raw Water Lin-Jackson Mt.	3.00%	20,000	20,600	21,218	21,855	22,510	23,185
Raw Water Lin-San Juan	3.00%	0	7,500	7,725	7,957	8,195	8,441
Power Trujillo Booster	3.00%	80,000	129,449	133,332	137,332	141,452	145,696
Power SJ River Booster	3.00%	73,895	83,072	85,564	88,131	90,775	93,498
Power Forest Lake	3.00%	10,721	5,000	5,150	5,305	5,464	5,628
Power Forest to Village	3.00%	0	5,000	5,150	5,305	5,464	5,628
Water Treatment							
Health Insurance	3.00%	\$19,200	\$25,800	\$26,574	\$27,371	\$28,192	\$29,038
Retirement	3.00%	4,250	5,015	5,165	5,320	5,480	5,644
Insurance-General	3.00%	5,780	3,200	3,296	3,395	3,497	3,602
Road Maintenance	3.00%	500	515	530	546	563	580
WTP Operator-DL	3.00%	50,231	52,461	54,035	55,656	57,326	59,045
WTP Operator-FR	3.00%	43,139	43,987	45,307	46,666	48,066	49,508
Training	3.00%	2,000	2,060	2,122	2,185	2,251	2,319
Maintenance General WTP Bldgs	3.00%	4,000	8,000	8,240	8,487	8,742	9,004
Operating Supplies Water Trmt	3.00%	1,500	1,545	1,591	1,639	1,688	1,739
Fuel & Power Hatcher WTP	3.00%	40,000	41,200	42,436	43,709	45,020	46,371
Chemicals-Hatcher Wtr Plant	3.00%	15,000	20,000	20,600	21,218	21,855	22,510
Maintenance Hatcher WTP	3.00%	7,000	7,210	7,426	7,649	7,879	8,115
Utilities Hatcher Storage	3.00%	3,500	3,605	3,713	3,825	3,939	4,057
Payroll Exp-FICA/Unemployment	3.00%	7,762	8,779	9,042	9,314	9,593	9,881
Fuel & Power Stevens WTP	3.00%	8,000	8,240	8,487	8,742	9,004	9,274
Chemicals-Stevens WTP	3.00%	1,500	2,500	2,575	2,652	2,732	2,814
1997 Chevy Pickup	3.00%	500	515	530	546	563	580
1999 GMC Pickup-DL	3.00%	500	1,015	1,045	1,077	1,109	1,142
Maintenance Stevens WTP	3.00%	1,000	1,030	1,061	1,093	1,126	1,159
Fuel & Power Snowball WTP	3.00%	20,520	21,135	21,769	22,422	23,095	23,788
Chemicals-Town WTP	3.00%	25,000	25,750	26,523	27,318	28,138	28,982
Maintenance Snowball WTP	3.00%	15,000	15,450	15,914	16,391	16,883	17,389
Fuel & Power San Juan WTP	3.00%	64,605	96,328	99,218	102,194	105,260	108,418
Fuel & Power Mission Booster	3.00%	5,359	0	0	0	0	0
Chemicals-San Juan WTP	3.00%	27,000	40,000	41,200	42,436	43,709	45,020
Maintenance San Juan WTP	3.00%	2,000	2,060	2,122	2,185	2,251	2,319
Water Distribution							
Health Insurance	3.00%	\$44,800	\$58,240	\$59,987	\$61,787	\$63,640	\$65,550
Uniforms	3.00%	8,500	9,027	9,298	9,577	9,864	10,160
Retirement	3.00%	7,250	9,647	9,936	10,235	10,542	10,858
Fuel & Power Forest Lake-WTP	3.00%	0	5,000	5,150	5,305	5,464	5,628
Fuel & Power Mission Booster	3.00%	0	5,000	5,150	5,305	5,464	5,628
Fuel & Power Pump Stations	3.00%	21,060	21,000	21,630	22,279	22,947	23,636
Town Fill Station-Fuel & P	3.00%	500	525	541	557	574	591
Town Fill Station-Maint	3.00%	1,100	1,155	1,190	1,225	1,262	1,300
Insurance-General	3.00%	10,200	6,000	6,180	6,365	6,556	6,753
Interest Expense on Leases	3.00%	2,115	370	381	393	404	416
Trails Fill Station -Fuel & P	3.00%	500	525	541	557	574	591
Trails Fill Station -Maint	3.00%	1,100	1,155	1,190	1,225	1,262	1,300
Water Tank Maintenance	3.00%	0	2,000	2,060	2,122	2,185	2,251
Water Line Maintenance	3.00%	80,000	82,400	84,872	87,418	90,041	92,742
Fire Hydrant Maintenance	3.00%	30,000	30,900	31,827	32,782	33,765	34,778
Distribution Tech-NN	3.00%	35,936	33,924	34,942	35,990	37,070	38,182
Distribution Tech-JM	3.00%	33,921	34,664	35,704	36,775	37,878	39,015
Temporary Help	3.00%	22,440	23,968	24,687	25,428	26,190	26,976
Distribution Tech-DP	3.00%	24,935	20,864	21,490	22,135	22,799	23,483
Distribution Tech-MB	3.00%	23,320	22,078	22,740	23,423	24,125	24,849
Superintendent-AH	3.00%	35,407	37,885	39,022	40,192	41,398	42,640
Distribution Tech-03	3.00%	0	14,280	14,708	15,150	15,604	16,072
Payroll Exp-FICA/Unemployment	3.00%	12,937	14,900	15,347	15,807	16,282	16,770
1998 Chevy Pickup-JM	3.00%	600	618	637	656	675	696
1993 Chevy Suburban	3.00%	600	618	637	656	675	696
1998 Chevy Pickup-NN	3.00%	800	824	849	874	900	927
1987 Chevy Pickup-DP	3.00%	500	1,015	1,045	1,077	1,109	1,142
1997 Chev Pickup-AH	3.00%	400	412	424	437	450	464
Training	3.00%	400	1,000	1,030	1,061	1,093	1,126
Lab Expense							
Health Insurance	3.00%	\$1,600	\$2,760	\$2,843	\$2,928	\$3,016	\$3,106
Retirement	3.00%	1,050	489	504	519	534	550
Insurance-General	3.00%	680	400	412	424	437	450
Lab Supplies	3.00%	7,000	7,210	7,426	7,649	7,879	8,115
1999 Chev Pickup-CG	3.00%	125	128	132	136	140	144
Lab Technician-CG	3.00%	13,125	9,495	9,780	10,073	10,375	10,687
Payroll Exp-FICA/Unemployment	3.00%	1,034	864	890	917	944	972
Maintenance							
Health Insurance	3.00%	\$6,400	\$8,320	\$8,570	\$8,827	\$9,091	\$9,364
Retirement	3.00%	1,700	1,561	1,608	1,656	1,706	1,757
Insurance-General	3.00%	1,700	1,081	1,113	1,147	1,181	1,217
Operating Supplies Water Trmt	3.00%	10,880	11,206	11,542	11,888	12,245	12,612
Maintenance Building	3.00%	1,360	1,700	1,751	1,804	1,858	1,913

Water Revenue Requirements Study

Table 7
Pagosa Area Water and Sanitation District
Water Revenue Requirement Study
Projected Annual Operation and Maintenance Costs

Item	Forecast Expenses for O&M						
	Escalation	2002	2003	2004	2005	2006	2007
Mechanic-AL	3.00%	26,755	26,125	26,909	27,716	28,547	29,404
Payroll Exp-FICA/Unemploymnt	3.00%	2,069	2,378	2,449	2,523	2,599	2,676
Utilities-Maintenance Bldg	3.00%	2,570	2,647	2,726	2,808	2,892	2,979
1991 Dodge	3.00%	1,500	1,545	1,591	1,639	1,688	1,739
1994 Chevy S-10	3.00%	1,000	1,030	1,061	1,093	1,126	1,159
Backhoe Maintenance	3.00%	1,360	1,400	1,442	1,485	1,530	1,576
Service Trailer	3.00%	544	1,020	1,051	1,082	1,115	1,148
2001 Service Truck	3.00%	1,100	1,500	1,545	1,591	1,639	1,688
Air Compressor	3.00%	136	140	144	149	153	158
Farmall/Kabota Tractor Mower	3.00%	408	2,900	2,987	3,077	3,169	3,264
Utility Trailers	3.00%	500	515	530	546	563	580
Forklift/Trencher/Compactor	3.00%	340	1,020	1,051	1,082	1,115	1,148
1970 Dump Truck	3.00%	300	1,020	1,051	1,082	1,115	1,148
Road Grader/Dozer/Crane	3.00%	340	1,020	1,051	1,082	1,115	1,148
Snowcat	3.00%	300	500	515	530	546	563
1997 Case Excavator	3.00%	68	680	700	721	743	765
1983 Dump Truck	3.00%	816	1,360	1,401	1,443	1,486	1,531
Gasoline & Oil	3.00%	17,680	18,210	18,756	19,319	19,899	20,496
Training	3.00%	68	200	206	212	219	225
Tools and small Equipment	3.00%	5,168	10,823	11,148	11,482	11,827	12,181
Administration							
Audit	3.00%	\$1,500	\$1,545	\$1,591	\$1,639	\$1,688	\$1,739
Employee Miscellaneous	3.00%	3,876	3,993	4,113	4,236	4,363	4,494
Health Insurance	3.00%	12,800	12,240	12,607	12,985	13,375	13,776
Retirement	3.00%	3,300	3,869	3,985	4,105	4,228	4,355
Insurance-General	3.00%	36,380	40,282	41,490	42,735	44,017	45,338
Legal Services	3.00%	18,000	10,200	10,506	10,821	11,146	11,480
Office Supplies	3.00%	2,000	2,060	2,122	2,185	2,251	2,319
Copy Machine	3.00%	1,400	1,121	1,155	1,189	1,225	1,262
Fax Machine	3.00%	100	280	288	297	306	315
Outside Services	3.00%	5,440	13,600	14,008	14,428	14,861	15,307
Publications	3.00%	3,500	7,310	7,529	7,755	7,988	8,227
Recording Deeds & Easements	3.00%	153	157	162	167	172	177
Maintenance of Office Building	3.00%	4,080	4,203	4,329	4,459	4,593	4,731
Landscaping	3.00%	2,200	2,451	2,525	2,600	2,678	2,759
Manager Salary	3.00%	20,399	21,215	21,851	22,507	23,182	23,878
Assistant Manager	3.00%	19,287	20,637	21,256	21,894	22,551	23,227
Administrative Asst-MT	3.00%	11,737	13,319	13,719	14,130	14,554	14,991
Performance Bonus	3.00%	1,451	1,100	1,133	1,167	1,202	1,238
Payables Clerk	3.00%	13,500	11,793	12,147	12,511	12,887	13,273
Payroll Exp-FICA/Unemploymnt	3.00%	4,657	6,095	6,278	6,466	6,660	6,860
Telephone	3.00%	7,140	7,355	7,576	7,803	8,037	8,278
Travel	3.00%	1,000	1,360	1,401	1,443	1,486	1,531
Utilities	3.00%	2,500	1,361	1,402	1,444	1,487	1,532
Trash Removal	3.00%	1,496	945	973	1,003	1,033	1,064
2001 jeep-GT	3.00%	300	350	361	371	382	394
1994 jeep Cherokee	3.00%	136	141	145	150	154	159
Dues and Permits	3.00%	4,760	4,903	5,050	5,202	5,358	5,518
Training	3.00%	500	1,020	1,051	1,082	1,115	1,148
Contributions	3.00%	400	1,360	1,401	1,443	1,486	1,531
Inclusion Expense	3.00%	1,000	900	927	955	983	1,013
Billing and Personnel Expense							
Bad Debts	3.00%	\$1,500	\$1,545	\$1,591	\$1,639	\$1,688	\$1,739
Health Insurance	3.00%	12,800	25,493	26,258	27,046	27,857	28,693
Retirement	3.00%	2,050	2,947	3,035	3,126	3,220	3,317
Insurance-General	3.00%	20	20	21	21	22	23
Collection of Past Due Due Accts	3.00%	2,040	2,101	2,164	2,229	2,296	2,365
Data Processing	3.00%	25,160	29,314	30,193	31,099	32,032	32,993
Data Processing Technician	3.00%	0	13,260	13,658	14,068	14,490	14,924
Receptionist	3.00%	18,695	21,031	21,662	22,312	22,981	23,671
Customer Service Coordinator	3.00%	13,712	18,583	19,140	19,715	20,306	20,915
Payroll Exp-FICA/Unemploymnt	3.00%	3,105	4,813	4,957	5,106	5,259	5,417
Training	3.00%	800	1,700	1,751	1,804	1,858	1,913
Postage	3.00%	13,260	13,657	14,067	14,489	14,923	15,371
Connections	3.00%	165,000	169,950	175,049	180,300	185,709	191,280
Unused 2	3.00%	0	0	0	0	0	0
Unused 3	3.00%	0	0	0	0	0	0
Unused 4	3.00%	0	0	0	0	0	0
Unused 5	3.00%	0	0	0	0	0	0
Unused 6	3.00%	0	0	0	0	0	0
Unused 7	3.00%	0	0	0	0	0	0
Total O&M Costs		\$1,523,593	\$1,763,201	\$1,816,097	\$1,870,580	\$1,926,697	\$1,984,498

Water Revenue Requirements Study

Table 8
Pagosa Area Water and Sanitation District
Water Revenue Requirement Study
Manual Override of Annual Operation and Maintenance Costs

Item	Escalation Rate	Forecast Expenses for O&M				
		2003	2004	2005	2006	2007
Source of Supply						
Boats & Motors		\$515				
Ditches		5,150				
Reservoirs		6,695				
Raw Water Lin-Jackson Mt.		20,600				
Raw Water Lin-San Juan		7,500				
Power Trujillo Booster		129,449				
Power SJ River Booster		83,072				
Power Forest Lake		5,000				
Power Forest to Village		5,000				
Water Treatment						
Health Insurance		\$25,800				
Retirement		5,015				
Insurance-General		3,200				
Road Maintenance		515				
WTP Operator-DL		52,461				
WTP Operator-FR		43,987				
Training		2,060				
Maintenance General WTP Bldgs		8,000				
Operating Supplies Water Trmt		1,545				
Fuel & Power Hatcher WTP		41,200				
Chemicals-Hatcher Wtr Plant		20,000				
Maintenance Hatcher WTP		7,210				
Utilities Hatcher Storage		3,605				
Payroll Exp-FICA/Unemployment		8,779				
Fuel & Power Stevens WTP		8,240				
Chemicals-Stevens WTP		2,500				
1997 Chevy Pickup		515				
1999 GMC Pickup-DL		1,015				
Maintenance Stevens WTP		1,030				
Fuel & Power Snowball WTP		21,135				
Chemicals-Town WTP		25,750				
Maintenance Snowball WTP		15,450				
Fuel & Power San Juan WTP		96,328				
Fuel & Power Mission Booster		0				
Chemicals-San Juan WTP		40,000				
Maintenance San Juan WTP		2,060				
Water Distribution						
Health Insurance		\$58,240				
Uniforms		9,027				
Retirement		9,647				
Fuel & Power Forest Lake-WTP		5,000				
Fuel & Power Mission Booster		5,000				
Fuel & Power Pump Stations		21,000				
Town Fill Station-Fuel & P		525				
Town Fill Station-Maint		1,155				
Insurance-General		6,000				
Interest Expense on Leases		370				
Trails Fill Station -Fuel & P		525				
Trails Fill Station -Maint		1,155				
Water Tank Maintenance		2,000				
Water Line Maintenance		82,400				
Fire Hydrant Maintenance		30,900				
Distribution Tech-NN		33,924				
Distribution Tech-JM		34,664				
Temporary Help		23,968				
Distribution Tech-DP		20,864				
Distribution Tech-MB		22,078				
Superintendent-AH		37,885				
Distribution Tech-03		14,280				
Payroll Exp-FICA/Unemployment		14,900				
1998 Chevy Pickup-JM		618				
1993 Chevy Suburban		618				
1998 Chevvy Pickup-NN		824				
1987 Chevy Pickup-DP		1,015				
1997 Chev Pickup-AH		412				
Training		1,000				
Lab Expense						
Health Insurance		\$2,760				
Retirement		489				
Insurance-General		400				
Lab Supplies		7,210				
1999 Chev Pickup-CG		128				
Lab Technician-CG		9,495				
Payroll Exp-FICA/Unemployment		864				
Maintenance						
Health Insurance		\$8,320				
Retirement		1,561				
Insurance-General		1,081				
Operating Supplies Water Trmt		11,206				
Maintenance Building		1,700				

Water Revenue Requirements Study

Table 8
Pagosa Area Water and Sanitation District
Water Revenue Requirement Study
Manual Override of Annual Operation and Maintenance Costs

Item	Escalation Rate	Forecast Expenses for O&M				
		2003	2004	2005	2006	2007
Mechanic-AL		26,125				
Payroll Exp-FICA/Unemployment		2,378				
Utilities-Maintenance Bldg		2,647				
1991 Dodge		1,545				
1994 Chevy S-10		1,030				
Backhoe Maintenance		1,400				
Service Trailer		1,020				
2001 Service Truck		1,500				
Air Compressor		140				
Farmall/Kabota Tractor Mower		2,900				
Utility Trailers		515				
Forklift/Trencher/Compactor		1,020				
1970 Dump Truck		1,020				
Road Grader/Dozer/Crane		1,020				
Snowcat		500				
1997 Case Excavator		680				
1983 Dump Truck		1,360				
Gasoline & Oil		18,210				
Training		200				
Tools and small Equipment		10,823				
Administration						
Audit		\$1,545				
Employee Miscellaneous		3,993				
Health Insurance		12,240				
Retirement		3,869				
Insurance-General		40,282				
Legal Services		10,200				
Office Supplies		2,060				
Copy Machine		1,121				
Fax Machine		280				
Outside Services		13,600				
Publications		7,310				
Recording Deeds & Easements		157				
Maintenance of Office Building		4,203				
Landscaping		2,451				
Manager Salary		21,215				
Assistant Manager		20,637				
Administrative Asst-MT		13,319				
Performance Bonus		1,100				
Payables Clerk		11,793				
Payroll Exp-FICA/Unemployment		6,095				
Telephone		7,355				
Travel		1,360				
Utilities		1,361				
Trash Removal		945				
2001 jeep-GT		350				
1994 jeep Cherokee		141				
Dues and Permits		4,903				
Training		1,020				
Contributions		1,360				
Inclusion Expense		900				
Billing and Personnel Expense						
Bad Debts		\$1,545				
Health Insurance		25,493				
Retirement		2,947				
Insurance-General		20				
Collection of Past Due Accts		2,101				
Data Processing		29,314				
Data Processing Technician		13,260				
Receptionist		21,031				
Customer Service Coordinator		18,583				
Payroll Exp-FICA/Unemployment		4,813				
Training		1,700				
Postage		13,657				
Connections		169,950				
Unused 2		0				
Unused 3		0				
Unused 4		0				
Unused 5		0				
Unused 6		0				
Unused 7		0				
Total O&M Costs		\$1,763,201	\$0	\$0		

Water Revenue Requirements Study

Table 9
 Pagosa Area Water and Sanitation District
 Water Revenue Requirement Study
 Projected Annual Capital Costs

Item	2003	2004	2005	2006	2007
Fiscal Agent Fees	\$500	\$500	\$500	\$500	\$500
Interest-96 Bonds Norwest	2,200	1,100	0	0	0
Principal-96 Bonds Norwest	20,000	20,000	0	0	0
Principal-98 Revenue Bonds	280,000	295,000	305,000	315,000	335,000
Interest-98 Revenue Bonds	186,168	174,408	161,870	148,603	132,065
Lease Purchase Payment	14,381	14,381	14,381	14,381	14,381
Transfer to Capital Projects	1,004,431	1,012,420	1,041,995	1,072,458	1,103,834
Unused 1	0	0	0	0	0
Unused 2	0	0	0	0	0
Unused 3	0	0	0	0	0
Unused 4	0	0	0	0	0
Total	\$1,507,680	\$1,517,809	\$1,523,746	\$1,550,942	\$1,585,780

Water Revenue Requirements Study

Table 10
 Pagosa Area Water and Sanitation District
 Water Revenue Requirement Study
 O&M-Related Non-Rate Revenues

Item	2003	2004	2005	2006	2007
Drought Surcharge	\$194,817	\$194,817	\$194,817	\$194,817	\$194,817
Other Water Sales	15,450	15,914	16,391	16,883	17,389
Acct Rec- Irrigation Water	45,450	46,814	48,218	49,664	51,154
Application For Inclusion	1,000	1,030	1,061	1,093	1,126
Customer Hookups	216,300	222,789	229,473	236,357	243,448
Late Charges/Interest	48,350	49,801	51,295	52,833	54,418
Transfer from General Fund	250,000	257,500	265,225	273,182	281,377
Unused 2	0	0	0	0	0
Unused 3	0	0	0	0	0
Unused 4	0	0	0	0	0
Unused 5	0	0	0	0	0
Unused 6	0	0	0	0	0
Unused 7	0	0	0	0	0
Unused 8	0	0	0	0	0
Total Non-Rate Revenues	\$771,367	\$788,664	\$806,479	\$824,829	\$843,729

Water Revenue Requirements Study

Table 11
 Pagosa Area Water and Sanitation District
 Water Revenue Requirement Study
 Capital-Related Non-Rate Revenues

Item	2003	2004	2005	2006	2007
Capital Investment Fee/Fac Upgrade	\$630,784	\$649,708	\$669,199	\$689,275	\$709,953
Availability Charges	362,529	373,405	384,607	396,145	408,030
Inclusion Fee	45,075	46,427	47,820	49,255	50,732
Bond Proceeds Interest-1998 Issue	26,570	26,570	26,570	26,570	26,570
Unused 2	0	0	0	0	0
Unused 3	0	0	0	0	0
Unused 4	0	0	0	0	0
Unused 5	0	0	0	0	0
Unused 6	0	0	0	0	0
Unused 7	0	0	0	0	0
Total	\$1,064,958	\$1,096,110	\$1,128,196	\$1,161,245	\$1,195,285

Water Revenue Requirements Study

Table 12
 Pagosa Area Water and Sanitation District
 Water Revenue Requirement Study
 Cash Basis User Charge Revenue Requirements

Item	2003	2004	2005	2006	2007
Total Requirements:					
Operation & Maintenance	\$1,763,201	\$1,816,097	\$1,870,580	\$1,926,697	\$1,984,498
Capital	1,507,680	1,517,809	1,523,746	1,550,942	1,585,780
	-----	-----	-----	-----	-----
Total	\$3,270,881	\$3,333,906	\$3,394,326	\$3,477,639	\$3,570,278
User Charge Requirements:					
O&M Less Non-Rate Revenues	\$991,834	\$1,027,434	\$1,064,101	\$1,101,869	\$1,140,769
Capital Less Non-Rate Revenues	442,722	421,699	395,550	389,697	390,495
	-----	-----	-----	-----	-----
Total	\$1,434,556	\$1,449,132	\$1,459,651	\$1,491,565	\$1,531,264

Water Revenue Requirements Study

Table 13
 Pagosa Area Water and Sanitation District
 Water Revenue Requirement Study
 Allocation of User Charge Revenue Requirements

Description	2003	2004	2005	2006	2007
Billing and Administration Costs	\$331,629	\$341,578	\$351,825	\$362,380	\$373,251
Percentage of Revenue Requirements	10.14%	10.25%	10.37%	10.42%	10.45%
Billing and Admin Component of UCRR	\$145,447	\$148,472	\$151,294	\$155,425	\$160,085
Remaining UCRR	\$1,289,108	\$1,300,660	\$1,308,357	\$1,336,140	\$1,371,180

Water Revenue Requirements Study

Table 14
 Pagosa Area Water and Sanitation District
 Water Revenue Requirement Study
 Monthly Service Charge per ERU by Class

Customer Class	2003	2004	2005	2006	2007
Single Family	\$2.09	\$1.99	\$1.90	\$1.82	\$1.75
Multifamily	2.09	1.99	1.90	1.82	1.75
Commercial	2.09	1.99	1.90	1.82	1.75
Commercial Irrigation	2.09	1.99	1.90	1.82	1.75
Government	2.09	1.99	1.90	1.82	1.75
Time Share	2.09	1.99	1.90	1.82	1.75
Average Charge per Thousand Gallons	\$3.21	\$3.02	\$2.84	\$2.71	\$2.59

Water Revenue Requirements Study

Table 15
 Pagosa Area Water and Sanitation District
 Water Revenue Requirement Study
 Projected Revenues by Class

Customer Class	2003	2004	2005	2006	2007
Single Family	\$910,246	\$919,483	\$926,144	\$946,387	\$971,572
Multifamily	150,122	151,705	152,870	156,243	160,420
Commercial	249,900	252,398	254,184	259,720	266,619
Commercial Irrigation	23,119	23,345	23,505	24,014	24,650
Government	33,481	33,816	34,055	34,797	35,721
Time Share	67,687	68,385	68,893	70,405	72,282
Total User Charge Revenues	\$1,434,556	\$1,449,132	\$1,459,651	\$1,491,565	\$1,531,264

Water Revenue Requirements Study

Table 16
 Pagosa Area Water and Sanitation District
 Water Revenue Requirement Study
 Percentage of User Charge Revenue Requirements to be Recovered from User Charges

Description	2003	2004	2005	2006	2007
UCRR	\$1,434,556	\$1,449,132	\$1,459,651	\$1,491,565	\$1,531,264
Percent of UCCR Recovered	30%	30%	30%	30%	30%
Revenue From Monthly Service Charge	\$430,367	\$434,740	\$437,895	\$447,470	\$459,379
Revenue From Volume Charge	\$1,004,189	\$1,014,393	\$1,021,756	\$1,044,096	\$1,071,885

Water Revenue Requirements Study

Table 17
 Pagosa Area Water and Sanitation District
 Water Revenue Requirement Study
 Monthly Service Charge per ERU by Class

Customer Class	2003	2004	2005	2006	2007
Single Family	\$6.19	\$5.84	\$5.49	\$5.24	\$5.02
Multifamily	6.19	5.84	5.49	5.24	5.02
Commercial	6.19	5.84	5.49	5.24	5.02
Commercial Irrigation	6.19	5.84	5.49	5.24	5.02
Government	6.19	5.84	5.49	5.24	5.02
Time Share	6.19	5.84	5.49	5.24	5.02
Average Charge per Thousand Gallons	\$2.50	\$2.36	\$2.22	\$2.11	\$2.03

Water Revenue Requirements Study

Table 18
 Pagosa Area Water and Sanitation District
 Water Revenue Requirement Study
 Projected Revenues by Class

Customer Class	2003	2004	2005	2006	2007
Single Family	\$908,023	\$917,249	\$923,907	\$944,108	\$969,236
Multifamily	160,596	162,228	163,406	166,978	171,423
Commercial	242,369	244,832	246,609	252,001	258,708
Commercial Irrigation	21,510	21,729	21,886	22,365	22,960
Government	32,482	32,812	33,050	33,773	34,671
Time Share	69,576	70,283	70,793	72,341	74,266
Total User Charge Revenues	\$1,434,556	\$1,449,132	\$1,459,651	\$1,491,565	\$1,531,264

Water Revenue Requirements Study

Table 19
 Pagosa Area Water and Sanitation District
 Water Revenue Requirement Study
 Current Rates by Customer Class

Customer Class	Block Threshold (kgal)	Charge per ERU Kgal of Use
Single Family		
Block 1	0-8kgal	\$13.50
Block 2	>8-20,000kgal	\$3.50
Block 3	>20,000kgal	\$4.50
Multifamily		
Block 1	0-8kgal	\$13.50
Block 2	>8-20,000kgal	\$3.50
Block 3	>20,000kgal	\$4.50
Commercial		
Block 1	0-8kgal	\$13.50
Block 2	>8-20,000kgal	\$3.50
Block 3	>20,000kgal	\$4.50
Commercial Irrigation		
Block 1	0-8kgal	\$13.50
Block 2	>8-20,000kgal	\$3.50
Block 3	>20,000kgal	\$4.50
Government		
Block 1	0-8kgal	\$13.50
Block 2	>8-20,000kgal	\$3.50
Block 3	>20,000kgal	\$4.50
Time Share		
Block 1	0-8kgal	\$13.50
Block 2	>8-20,000kgal	\$3.50
Block 3	>20,000kgal	\$4.50



INTEGRATED
UTILITIES
GROUP, INC.

PAGOSA AREA WATER & SANITATION DISTRICT
Appendix B - Wastewater Revenue Requirement Tables

Wastewater Revenue Requirements Study

Table 1
 Pagosa Area Water and Sanitation District
 Wastewater Revenue Requirement Study
 Projected Number of Accounts by Customer Class

Customer Class	2003	2004	2005	2006	2007
Wastewater Service Customers	2,304	2,515	2,726	2,937	3,148
Unused 2	0	0	0	0	0
Unused 3	0	0	0	0	0
Unused 4	0	0	0	0	0
Unused 5	0	0	0	0	0
Unused 6	0	0	0	0	0
Total	2,304	2,515	2,726	2,937	3,148

Wastewater Revenue Requirements Study

Table 2
 Pagosa Area Water and Sanitation District
 Wastewater Revenue Requirement Study
 Projected Number of ERUs by Customer Class

Customer Class	2003	2004	2005	2006	2007
Wastewater Service Customers	3,356	3,567	3,778	3,989	4,200
Unused 2	0	0	0	0	0
Unused 3	0	0	0	0	0
Unused 4	0	0	0	0	0
Unused 5	0	0	0	0	0
Unused 6	0	0	0	0	0
Total	3,356	3,567	3,778	3,989	4,200

Wastewater Revenue Requirements Study

Table 3
 Pagosa Area Water and Sanitation District
 Wastewater Revenue Requirement Study
 Projected Percentage of Accounts by Year

Customer Class	2003	2004	2005	2006	2007
Wastewater Service Customers	100.0%	100.0%	100.0%	100.0%	100.0%
Unused 2	0.0%	0.0%	0.0%	0.0%	0.0%
Unused 3	0.0%	0.0%	0.0%	0.0%	0.0%
Unused 4	0.0%	0.0%	0.0%	0.0%	0.0%
Unused 5	0.0%	0.0%	0.0%	0.0%	0.0%
Unused 6	0.0%	0.0%	0.0%	0.0%	0.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

Wastewater Revenue Requirements Study

Table 4
 Pagosa Area Water and Sanitation District
 Wastewater Revenue Requirement Study
 Projected Percentage of ERU by Year

Customer Class	2003	2004	2005	2006	2007
Wastewater Service Customers	100.0%	100.0%	100.0%	100.0%	100.0%
Unused 2	0.0%	0.0%	0.0%	0.0%	0.0%
Unused 3	0.0%	0.0%	0.0%	0.0%	0.0%
Unused 4	0.0%	0.0%	0.0%	0.0%	0.0%
Unused 5	0.0%	0.0%	0.0%	0.0%	0.0%
Unused 6	0.0%	0.0%	0.0%	0.0%	0.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

Wastewater Revenue Requirements Study

Table 5
 Pagosa Area Water and Sanitation District
 Wastewater Revenue Requirement Study
 Average Annual Flow by Customer Class in Gallons

Customer Class	2003	2004	2005	2006	2007
Wastewater Service Customers	217,578,650	232,809,156	249,105,796	266,543,202	285,201,226
Unused 2	0	0	0	0	0
Unused 3	0	0	0	0	0
Unused 4	0	0	0	0	0
Unused 5	0	0	0	0	0
Unused 6	0	0	0	0	0
Total	217,578,650	232,809,156	249,105,796	266,543,202	285,201,226

Wastewater Revenue Requirements Study

Table 6
 Pagosa Area Water and Sanitation District
 Wastewater Revenue Requirement Study
 Percentage of Annual Flow by Customer Class

Customer Class	2003	2004	2005	2006	2007
Wastewater Service Customers	100.0%	100.0%	100.0%	100.0%	100.0%
Unused 2	0.0%	0.0%	0.0%	0.0%	0.0%
Unused 3	0.0%	0.0%	0.0%	0.0%	0.0%
Unused 4	0.0%	0.0%	0.0%	0.0%	0.0%
Unused 5	0.0%	0.0%	0.0%	0.0%	0.0%
Unused 6	0.0%	0.0%	0.0%	0.0%	0.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

Wastewater Revenue Requirements Study

Table 7
Pagosa Area Water and Sanitation District
Wastewater Revenue Requirement Study
Projected Annual Operation and Maintenance Costs

Item	Forecast Expenses for O&M						
	Escalation	2002	2003	2004	2005	2006	2007
Wastewater Collection							
Health Insurance	3.00%	\$16,000	\$22,281	\$22,949	\$23,638	\$24,347	\$25,077
Uniforms	3.00%	4,000	3,500	3,605	3,713	3,825	3,939
Retirement	3.00%	3,700	4,856	5,002	5,152	5,306	5,465
Fuel & Power Lift Stations	3.00%	18,360	18,910	19,477	20,062	20,663	21,283
Insurance-General	3.00%	5,100	3,000	3,090	3,183	3,278	3,377
Interest Expense on Leases	3.00%	995	989	1,019	1,049	1,081	1,113
Wastewater Line Maint/Repair	3.00%	75,000	49,000	50,470	51,984	53,544	55,150
TV Equipment	3.00%	250	257	265	273	281	289
Gen. & Pumps Lift Stations	3.00%	5,000	1,150	1,185	1,220	1,257	1,294
Electronics Tech-TS	3.00%	36,050	37,905	39,042	40,213	41,420	42,662
Wastewater Technician-SW	3.00%	23,816	26,729	27,531	28,357	29,207	30,084
Temporary Help	3.00%	10,560	11,637	11,986	12,346	12,716	13,098
Superintendent-AH	3.00%	16,662	17,828	18,363	18,914	19,481	20,066
Distribution Tech - 03	3.00%	0	6,720	6,922	7,129	7,343	7,563
Payroll Exp-FICA/Unemploymnt	3.00%	6,727	8,118	8,362	8,612	8,871	9,137
1987 Chevy Pickup 84 YU	3.00%	500	515	530	546	563	580
1992 GMC Pickup-SW	3.00%	800	1,300	1,339	1,379	1,421	1,463
1997 Chevy Pickup-TS	3.00%	800	824	849	874	900	927
1997 Chev Pickup-AH	3.00%	250	257	265	273	281	289
Training	3.00%	200	1,000	1,030	1,061	1,093	1,126
Wastewater Treatment							
Health Insurance	3.00%	\$9,600	\$12,800	\$13,184	\$13,580	\$13,987	\$14,407
Retirement	3.00%	1,806	1,500	1,545	1,591	1,639	1,688
Insurance-General	3.00%	1,700	900	927	955	983	1,013
Road Maintenance-WW	3.00%	250	257	265	273	281	289
Fuel & Power Vista WWTP	3.00%	81,000	82,000	84,460	86,994	89,604	92,292
Chemicals Vista WWTP	3.00%	1,800	1,854	1,910	1,967	2,026	2,087
Maintenance Vista WWTP	3.00%	20,000	15,000	15,450	15,914	16,391	16,883
Sludge Removal/Processing	3.00%	48,000	39,000	40,170	41,375	42,616	43,895
WWTP Operator-David P	3.00%	32,852	29,298	30,177	31,082	32,015	32,975
Payroll Exp-FICA/Unemploymnt	3.00%	2,587	2,667	2,747	2,829	2,914	3,002
Building Maintenance Vista	3.00%	24,000	4,000	4,120	4,244	4,371	4,502
Generator Vista	3.00%	500	1,000	1,030	1,061	1,093	1,126
Fuel & Power Highlands Lagoon	3.00%	7,560	7,786	8,020	8,260	8,508	8,763
Chemicals Highlands Lagoon	3.00%	225	231	238	245	252	260
1997 Chevy Pickup-David P	3.00%	1,000	1,500	1,545	1,591	1,639	1,688
Building Maintenance Highlands	3.00%	250	257	265	273	281	289
Maintenance Highlands Lagoon	3.00%	500	1,000	1,030	1,061	1,093	1,126
Training	3.00%	1,000	2,000	2,060	2,122	2,185	2,251
Lab Expense							
Health Insurance	3.00%	\$3,200	\$8,280	\$8,528	\$8,784	\$9,048	\$9,319
Retirement	3.00%	2,000	1,466	1,510	1,555	1,602	1,650
Insurance-General	3.00%	1,700	900	927	955	983	1,013
Lab Supplies	3.00%	3,000	3,090	3,183	3,278	3,377	3,478
Lab Technician-CG	3.00%	34,576	28,485	29,340	30,220	31,126	32,060
Payroll Exp-FICA/Unemploymnt	3.00%	2,587	2,593	2,671	2,751	2,833	2,918
1999 Chev Pickup-CG	3.00%	125	128	132	136	140	144
Maintenance							
Health Insurance	3.00%	\$3,200	\$4,160	\$4,285	\$4,413	\$4,546	\$4,682
Retirement	3.00%	1,100	734	756	779	802	826
Insurance-General	3.00%	680	400	412	424	437	450
Operating Supplies	3.00%	5,120	5,273	5,431	5,594	5,762	5,935
Maintenance BUilding	3.00%	640	800	824	849	874	900
Mechanic-AL	3.00%	13,384	12,294	12,663	13,043	13,434	13,837
Payroll Exp-FICA/Unemploymnt	3.00%	1,035	1,119	1,153	1,187	1,223	1,259
Utilities-Maintenance Bldg	3.00%	1,210	1,246	1,283	1,322	1,362	1,402
1991 Dodge	3.00%	1,000	1,030	1,061	1,093	1,126	1,159
1994 Chevy S-10	3.00%	150	154	159	163	168	173
Backhoe Maintenance	3.00%	640	659	679	699	720	742
Service Trailer	3.00%	256	480	494	509	525	540
2001 Service Truck	3.00%	550	566	583	600	618	637
Air Compressor	3.00%	64	65	67	69	71	73
Farmall/Kabota Tractor Mower	3.00%	192	2,700	2,781	2,864	2,950	3,039
Utility Trailers	3.00%	300	309	318	328	338	348
Forklift/Trencher/Compactor	3.00%	160	480	494	509	525	540
1970 Dump Truck	3.00%	150	480	494	509	525	540

Wastewater Revenue Requirements Study

Table 7
 Pagosa Area Water and Sanitation District
 Wastewater Revenue Requirement Study
 Projected Annual Operation and Maintenance Costs

Item	Forecast Expenses for O&M						
	Escalation	2002	2003	2004	2005	2006	2007
Road Grader/Dozer/Crane	3.00%	160	480	494	509	525	540
1997 Case Excavator	3.00%	32	320	330	339	350	360
1983 Dump Truck	3.00%	384	640	659	679	699	720
Gasoline & Oil	3.00%	8,320	8,569	8,826	9,091	9,364	9,644
Training	3.00%	32	100	103	106	109	113
Tools and Small Equipment	3.00%	2,432	5,900	6,077	6,259	6,447	6,641
Administration							
Audit	3.00%	\$640	\$659	\$679	\$699	\$720	\$742
Employee Miscellaneous	3.00%	1,824	1,878	1,934	1,992	2,052	2,114
Health Insurance	3.00%	4,800	5,760	5,933	6,111	6,294	6,483
Retirement	3.00%	1,700	1,871	1,927	1,985	2,044	2,106
Insurance-General	3.00%	17,000	18,295	18,844	19,409	19,991	20,591
Legal Services	3.00%	6,000	4,800	4,944	5,092	5,245	5,402
Office Supplies	3.00%	1,000	1,030	1,061	1,093	1,126	1,159
Copy Machine	3.00%	400	527	543	559	576	593
Fax Machine	3.00%	100	132	136	140	144	149
Outside Services	3.00%	2,560	6,400	6,592	6,790	6,993	7,203
Publications	3.00%	1,700	3,440	3,543	3,649	3,759	3,872
Recording Deeds & Easements	3.00%	72	74	76	79	81	83
Maintenance of Office Building	3.00%	1,920	1,977	2,036	2,097	2,160	2,225
Landscaping	3.00%	1,280	1,154	1,189	1,224	1,261	1,299
Manager Salary	3.00%	9,599	9,983	10,282	10,591	10,909	11,236
Assistant Manager	3.00%	9,074	9,711	10,002	10,302	10,611	10,930
Administrative Asst-MT	3.00%	6,052	6,268	6,456	6,650	6,849	7,055
Performance Bonus	3.00%	683	573	590	608	626	645
Payables Clerk	3.00%	6,750	6,433	6,626	6,825	7,030	7,240
Payroll Exp-FICA/Unemploymnt	3.00%	2,069	2,949	3,037	3,129	3,222	3,319
Telephone	3.00%	3,360	3,460	3,564	3,671	3,781	3,894
Travel	3.00%	1,120	640	659	679	699	720
Utilities	3.00%	1,000	641	660	680	700	721
Trash Removal	3.00%	704	445	458	472	486	501
2001 Jeep-GT	3.00%	150	165	170	175	180	186
1994 Jeep Cherokee	3.00%	64	65	67	69	71	73
Dues and Permits	3.00%	2,240	2,307	2,376	2,447	2,521	2,597
Training	3.00%	480	480	494	509	525	540
Contributions	3.00%	480	640	659	679	699	720
Inclusion Expense	3.00%	0	600	618	637	656	675
Billing and Personnel Expense							
Bad Debts	3.00%	\$100	\$103	\$106	\$109	\$113	\$116
Health Insurance	3.00%	6,400	11,520	11,866	12,222	12,588	12,966
Retirement	3.00%	1,200	1,386	1,428	1,470	1,515	1,560
Insurance-General	3.00%	20	20	21	21	22	23
Collection of Past Due Due Accts	3.00%	960	988	1,018	1,048	1,080	1,112
Data processing	3.00%	11,840	13,795	14,209	14,635	15,074	15,526
Data Processing Technician	3.00%	0	6,240	6,427	6,620	6,819	7,023
Receptionist	3.00%	8,797	9,897	10,194	10,500	10,815	11,139
Customer Service Coordinator	3.00%	6,453	8,745	9,007	9,278	9,556	9,843
Payroll Exp-FICA/Unemploymnt	3.00%	1,552	2,265	2,333	2,403	2,475	2,549
Training	3.00%	400	800	824	849	874	900
Postage	3.00%	6,240	6,427	6,620	6,818	7,023	7,234
Connections	3.00%	12,000	12,360	12,731	13,113	13,506	13,911
Unused 2	3.00%	0	0	0	0	0	0
Unused 3	3.00%	0	0	0	0	0	0
Unused 4	3.00%	0	0	0	0	0	0
Unused 5	3.00%	0	0	0	0	0	0
Unused 6	3.00%	0	0	0	0	0	0
Unused 7	3.00%	0	0	0	0	0	0
Total O&M Costs		\$688,562	\$681,629	\$702,078	\$723,140	\$744,834	\$767,179

Wastewater Revenue Requirements Study

Table 8
Pagosa Area Water and Sanitation District
Wastewater Revenue Requirement Study
Manual Override of Annual Operation and Maintenance Costs

Item	Escalation Rate	Forecast Expenses for O&M				
		2003	2004	2005	2006	2007
Wastewater Collection						
Health Insurance		\$22,281				
Uniforms		3,500				
Retirement		4,856				
Fuel & Power Lift Stations		18,910				
Insurance-General		3,000				
Interest Expense on Leases		989				
Wastewater Line Maint/Repair		49,000				
TV Equipment		257				
Gen. & Pumps Lift Stations		1,150				
Electronics Tech-TS		37,905				
Wastewater Technician-SW		26,729				
Temporary Help		11,637				
Superintendent-AH		17,828				
Distribution Tech - 03		6,720				
Payroll Exp-FICA/Unemploymnt		8,118				
1987 Chevy Pickup 84 YU		515				
1992 GMC Pickup-SW		1,300				
1997 Chevy Pickup-TS		824				
1997 Chev Pickup-AH		257				
Training		1,000				
Wastewater Treatment						
Health Insurance		\$12,800				
Retirement		1,500				
Insurance-General		900				
Road Maintenance-WW		257				
Fuel & Power Vista WWTP		82,000				
Chemicals Vista WWTP		1,854				
Maintenance Vista WWTP		15,000				
Sludge Removal/Processing		39,000				
WWTP Operator-David P		29,298				
Payroll Exp-FICA/Unemploymnt		2,667				
Building Maintenance Vista		4,000				
Generator Vista		1,000				
Fuel & Power Highlands Lagoon		7,786				
Chemicals Highlands Lagoon		231				
1997 Chevy Pickup-David P		1,500				
Building Maintenance Highlands		257				
Maintenance Highlands Lagoon		1,000				
Training		2,000				
Lab Expense						
Health Insurance		\$8,280				
Retirement		1,466				
Insurance-General		900				
Lab Supplies		3,090				
Lab Technician-CG		28,485				
Payroll Exp-FICA/Unemploymnt		2,593				
1999 Chev Pickup-CG		128				
Maintenance						
Health Insurance		\$4,160				
Retirement		734				
Insurance-General		400				
Operating Supplies		5,273				
Maintenance BUilding		800				
Mechanic-AL		12,294				
Payroll Exp-FICA/Unemploymnt		1,119				
Utilities-Maintenance Bldg		1,246				
1991 Dodge		1,030				
1994 Chevy S-10		154				
Backhoe Maintenance		659				
Service Trailer		480				
2001 Service Truck		566				
Air Compressor		65				
Farmall/Kabota Tractor Mower		2,700				
Utility Trailers		309				
Forklift/Trencher/Compactor		480				
1970 Dump Truck		480				

Wastewater Revenue Requirements Study

Table 8
 Pagosa Area Water and Sanitation District
 Wastewater Revenue Requirement Study
 Manual Override of Annual Operation and Maintenance Costs

Item	Escalation Rate	Forecast Expenses for O&M				
		2003	2004	2005	2006	2007
Road Grader/Dozer/Crane		480				
1997 Case Excavator		320				
1983 Dump Truck		640				
Gasoline & Oil		8,569				
Training		100				
Tools and Small Equipment		5,900				
Administration						
Audit		\$659				
Employee Miscellaneous		1,878				
Health Insurance		5,760				
Retirement		1,871				
Insurance-General		18,295				
Legal Services		4,800				
Office Supplies		1,030				
Copy Machine		527				
Fax Machine		132				
Outside Services		6,400				
Publications		3,440				
Recording Deeds & Easements		74				
Maintenance of Office Building		1,977				
Landscaping		1,154				
Manager Salary		9,983				
Assistant Manager		9,711				
Administrative Asst-MT		6,268				
Performance Bonus		573				
Payables Clerk		6,433				
Payroll Exp-FICA/Unemploymnt		2,949				
Telephone		3,460				
Travel		640				
Utilities		641				
Trash Removal		445				
2001 Jeep-GT		165				
1994 Jeep Cherokee		65				
Dues and Permits		2,307				
Training		480				
Contributions		640				
Inclusion Expense		600				
Billing and Personnel Expense						
Bad Debts		\$103				
Health Insurance		11,520				
Retirement		1,386				
Insurance-General		20				
Collection of Past Due Due Accts		988				
Data processing		13,795				
Data Processing Technician		6,240				
Receptionist		9,897				
Customer Service Coordinator		8,745				
Payroll Exp-FICA/Unemploymnt		2,265				
Training		800				
Postage		6,427				
Connections		12,360				
Unused 2		0				
Unused 3		0				
Unused 4		0				
Unused 5		0				
Unused 6		0				
Unused 7		0				
Total O&M Costs		\$681,629	\$0	\$0	\$0	

Wastewater Revenue Requirements Study

Table 9
 Pagosa Area Water and Sanitation District
 Wastewater Revenue Requirement Study
 Projected Annual Capital Costs

Item	2003	2004	2005	2006	2007
Fiscal Agent Fees	\$300	\$300	\$300	\$300	\$300
Lease Purchase Payment	10,862	10,862	10,862	10,862	10,862
Principal-00 Revenue Bonds	140,000	150,000	155,000	165,000	175,000
Interest-00 Revenue Bonds	66,623	63,333	59,695	55,869	51,693
Transfer to Capital Projects	909,612	1,009,054	1,039,325	1,070,505	1,102,620
Unused 1	0	0	0	0	0
Unused 2	0	0	0	0	0
Unused 3	0	0	0	0	0
Unused 4	0	0	0	0	0
Total	\$1,127,397	\$1,233,549	\$1,265,182	\$1,302,536	\$1,340,475

Wastewater Revenue Requirements Study

Table 10
 Pagosa Area Water and Sanitation District
 Wastewater Revenue Requirement Study
 O&M-Related Non-Rate Revenues

Item	2003	2004	2005	2006	2007
Waste Hauler Revenue	\$9,146	\$9,420	\$9,703	\$9,994	\$10,294
Application For Inclusion	500	515	530	546	563
Customer Hookups	32,960	33,949	34,967	36,016	37,097
Late Charges/Interest	17,304	17,823	18,358	18,909	19,476
Other Revenue	2,575	2,652	2,732	2,814	2,898
Transfer from General Fund	120,000	123,600	127,308	131,127	135,061
Unused 1	0	0	0	0	0
Unused 2	0	0	0	0	0
Unused 3	0	0	0	0	0
Unused 4	0	0	0	0	0
Unused 5	0	0	0	0	0
Unused 6	0	0	0	0	0
Unused 7	0	0	0	0	0
Total Non-Rate Revenues	\$182,485	\$187,960	\$193,598	\$199,406	\$205,388

Wastewater Revenue Requirements Study

Table 11
 Pagosa Area Water and Sanitation District
 Wastewater Revenue Requirement Study
 Capital-Related Non-Rate Revenues

Item	2003	2004	2005	2006	2007
Capital Investment Fee/Fac Upgrade	\$750,400	\$772,912	\$796,099	\$819,982	\$844,582
Availability Charges	252,909	260,496	268,311	276,360	284,651
Inclusion Fee	8,125	8,369	8,620	8,878	9,145
Unused 1	0	0	0	0	0
Unused 2	0	0	0	0	0
Unused 3	0	0	0	0	0
Unused 4	0	0	0	0	0
Unused 5	0	0	0	0	0
Unused 6	0	0	0	0	0
Unused 7	0	0	0	0	0
Total	\$1,011,434	\$1,041,777	\$1,073,030	\$1,105,221	\$1,138,378

Wastewater Revenue Requirements Study

Table 12
 Pagosa Area Water and Sanitation District
 Wastewater Revenue Requirement Study
 Cash Basis User Charge Revenue Requirements

Item	2003	2004	2005	2006	2007
Total Requirements:					
Operation & Maintenance	\$681,629	\$702,078	\$723,140	\$744,834	\$767,179
Capital	1,127,397	1,233,549	1,265,182	1,302,536	1,340,475
	-----	-----	-----	-----	-----
Total	\$1,809,026	\$1,935,626	\$1,988,322	\$2,047,370	\$2,107,654
User Charge Requirements:					
O&M Less Non-Rate Revenues	\$499,144	\$514,118	\$529,542	\$545,428	\$561,791
Capital Less Non-Rate Revenues	115,963	191,771	192,152	197,315	202,097
	-----	-----	-----	-----	-----
Total	\$615,107	\$705,890	\$721,694	\$742,743	\$763,888

Wastewater Revenue Requirements Study

Table 13
 Pagosa Area Water and Sanitation District
 Wastewater Revenue Requirement Study
 Monthly Service Charge per ERU by Class

Customer Class	2003	2004	2005	2006	2007
Wastewater Service Customers	\$15.27	\$16.49	\$15.92	\$15.52	\$15.16
Unused 2	0.00	0.00	0.00	0.00	0.00
Unused 3	0.00	0.00	0.00	0.00	0.00
Unused 4	0.00	0.00	0.00	0.00	0.00
Unused 5	0.00	0.00	0.00	0.00	0.00
Unused 6	0.00	0.00	0.00	0.00	0.00

Wastewater Revenue Requirements Study

Table 14
 Pagosa Area Water and Sanitation District
 Wastewater Revenue Requirement Study
 Projected Revenues by Class

Customer Class	2003	2004	2005	2006	2007
Wastewater Service Customers	\$615,107	\$705,890	\$721,694	\$742,743	\$763,888
Unused 2	0	0	0	0	0
Unused 3	0	0	0	0	0
Unused 4	0	0	0	0	0
Unused 5	0	0	0	0	0
Unused 6	0	0	0	0	0
Total User Charge Revenues	\$615,107	\$705,890	\$721,694	\$742,743	\$763,888

Wastewater Revenue Requirements Study

Table 15
 Pagosa Area Water and Sanitation District
 Wastewater Revenue Requirement Study
 Allocation of User Charge Revenue Requirements

Description	2003	2004	2005	2006	2007
Billing and Administration Costs	\$155,543	\$160,209	\$165,016	\$169,966	\$175,065
Percentage of Revenue Requirements	8.60%	8.28%	8.30%	8.30%	8.31%
Billing and Admin Component of UCRR	\$52,888	\$58,426	\$59,895	\$61,660	\$63,450
Remaining UCRR	\$562,219	\$647,464	\$661,798	\$681,083	\$700,438

Wastewater Revenue Requirements Study

Table 16
 Pagosa Area Water and Sanitation District
 Wastewater Revenue Requirement Study
 Monthly Service Charge per ERU by Class

Customer Class	2003	2004	2005	2006	2007
Wastewater Service Customers	\$1.31	\$1.36	\$1.32	\$1.29	\$1.26
Unused 2	0.00	0.00	0.00	0.00	0.00
Unused 3	0.00	0.00	0.00	0.00	0.00
Unused 4	0.00	0.00	0.00	0.00	0.00
Unused 5	0.00	0.00	0.00	0.00	0.00
Unused 6	0.00	0.00	0.00	0.00	0.00

Wastewater Revenue Requirements Study

Table 17
 Pagosa Area Water and Sanitation District
 Wastewater Revenue Requirement Study
 Usage Charge per Volume of Flow (\$/kgal)

Customer Class	2003	2004	2005	2006	2007
Wastewater Service Customers	\$2.58	\$2.78	\$2.66	\$2.56	\$2.46
Unused 2	0.00	0.00	0.00	0.00	0.00
Unused 3	0.00	0.00	0.00	0.00	0.00
Unused 4	0.00	0.00	0.00	0.00	0.00
Unused 5	0.00	0.00	0.00	0.00	0.00
Unused 6	0.00	0.00	0.00	0.00	0.00

Wastewater Revenue Requirements Study

Table 18
 Pagosa Area Water and Sanitation District
 Wastewater Revenue Requirement Study
 Projected Revenues by Class

Customer Class	2003	2004	2005	2006	2007
Wastewater Service Customers	\$615,107	\$705,890	\$721,694	\$742,743	\$763,888
Unused 2	0	0	0	0	0
Unused 3	0	0	0	0	0
Unused 4	0	0	0	0	0
Unused 5	0	0	0	0	0
Unused 6	0	0	0	0	0
Total User Charge Revenues	\$615,107	\$705,890	\$721,694	\$742,743	\$763,888

Wastewater Revenue Requirements Study

Table 19
 Pagosa Area Water and Sanitation District
 Wastewater Revenue Requirement Study
 Percentage of User Charge Revenue Requirement Recovered from Monthly Service Charge

Description	2003	2004	2005	2006	2007
UCRR	\$615,107	\$705,890	\$721,694	\$742,743	\$763,888
Percent of UCCR Recovered	30%	30%	30%	30%	30%
Revenue From Monthly Service Charge	\$184,532	\$211,767	\$216,508	\$222,823	\$229,166
Revenue From Volume Charge	\$430,575	\$494,123	\$505,185	\$519,920	\$534,721

Wastewater Revenue Requirements Study

Table 20
 Pagosa Area Water and Sanitation District
 Wastewater Revenue Requirement Study
 Monthly Service Charge per ERU by Class

Customer Class	2003	2004	2005	2006	2007
Wastewater Service Customers	\$4.58	\$4.95	\$4.78	\$4.65	\$4.55
Unused 2	0.00	0.00	0.00	0.00	0.00
Unused 3	0.00	0.00	0.00	0.00	0.00
Unused 4	0.00	0.00	0.00	0.00	0.00
Unused 5	0.00	0.00	0.00	0.00	0.00
Unused 6	0.00	0.00	0.00	0.00	0.00

Wastewater Revenue Requirements Study

Table 21
 Pagosa Area Water and Sanitation District
 Wastewater Revenue Requirement Study
 Usage Charge per Volume of Flow (\$/kgal)

Customer Class	2003	2004	2005	2006	2007
Wastewater Service Customers	\$1.98	\$2.12	\$2.03	\$1.95	\$1.87
Unused 2	0.00	0.00	0.00	0.00	0.00
Unused 3	0.00	0.00	0.00	0.00	0.00
Unused 4	0.00	0.00	0.00	0.00	0.00
Unused 5	0.00	0.00	0.00	0.00	0.00
Unused 6	0.00	0.00	0.00	0.00	0.00

Wastewater Revenue Requirements Study

Table 22
 Pagosa Area Water and Sanitation District
 Wastewater Revenue Requirement Study
 Projected Revenues by Class

Customer Class	2003	2004	2005	2006	2007
Wastewater Service Customers	\$615,107	\$705,890	\$721,694	\$742,743	\$763,888
Unused 2	0	0	0	0	0
Unused 3	0	0	0	0	0
Unused 4	0	0	0	0	0
Unused 5	0	0	0	0	0
Unused 6	0	0	0	0	0
Total User Charge Revenues	\$615,107	\$705,890	\$721,694	\$742,743	\$763,888

Wastewater Revenue Requirements Study

Table 23
 Pagosa Area Water and Sanitation District
 Wastewater Revenue Requirement Study
 Current User Charges by Customer Class

Customer Class	Monthly Service Charge per
Wastewater Service Customers	All Usage \$15.50
Unused 2	NA
Unused 3	NA
Unused 4	NA
Unused 5	NA
Unused 6	NA



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PAGOSA AREA WATER & SANITATION DISTRICT
Appendix C - User Charge Revenue Requirements and
Rate Structure Development



TO: Gene Tautges

FROM: Carol Malesky

COPIES: Carrie Campbell
Shellie Tressler

DATE: March 12, 2003 (Revised May 5, 2003)

SUBJECT: User Charge Revenue Requirements and Rate Structure Development for Pagosa Area Water and Sanitation District

PROJECT: D137.031.RS

Introduction

Integrated Utilities Group, Inc. (IUG) was authorized by the Pagosa Area Water and Sanitation District (the District) to begin a water and wastewater rate study on January 30, 2003. This technical memorandum documents IUG's methodologies on three of the nine tasks of the study:

1. Analysis of annual user charge revenue requirements.
2. Evaluation of equivalent unit schedules.
3. Development of alternative water and wastewater rate structures.

Each of these tasks is discussed below. The results of the study will be documented in the rate study report.

Annual Revenue Requirements

The first step in water and wastewater rate studies is to calculate an estimate of annual system revenue requirements. The AWWA Manual M1 has established two methods of determining the revenue requirements of a water utility. These are:

1. Cash Basis
2. Utility Basis

TECHNICAL MEMORANDUM

Page 2

March 12, 2003 (Revised May 5, 2003)

D137.031.RS

Because government-owned utilities are required to maintain a municipal-like budget, revenues and expenses must balance. Unlike investor-owned utilities, government-owned utilities generally do not have access to sources of capital other than retained earnings and formally issued debt. Therefore, the total revenues collected from all customers must equal budgeted revenues. This is the cash basis. On the other hand, the utility basis allows the utility to earn a rate of return on the assets it provides to customers. This return compensates the utility for its past investments and provides cash flow for operating the utility. In addition to a return on investment, a utility also collects revenues to recover O&M costs, depreciation on the fixed assets in service, as well as taxes and/or miscellaneous expenses.

The cash basis revenue requirements of the District's water and wastewater utilities include:

- Operation and maintenance (O&M) expenses
- Debt service
- Capital improvements financed with user charges and capital investment fees

User Charge Revenue Requirements

The portion of annual system revenue requirements to be recovered through rates depends on a utility's financing policy and its other sources of income. To determine the amount of revenue that rates must generate annually, the total revenue requirements must be reduced by non-rate or other system revenues. Other system revenues are defined as all revenues except revenues derived from water or wastewater user charges. The District's non-rate revenues include, but are not limited to:

- Irrigation and other water sales
- Waste hauler revenue
- Late charges and interest
- Customer hookups
- Operating mill levy transfers from the general fund
- Capital investment fees
- Availability charges
- Inclusion fees

Capital projects fund balances may also provide revenue to offset costs of capital improvements. The District currently offsets a portion of the increased pumping charges due to drought with a drought surcharge. The base calculation of user charge revenue requirements includes the drought surcharge revenue as non-rate revenue. In another scenario, user charge revenue requirements are calculated without the drought surcharge to estimate the impact on rates of absorbing these additional costs.

IUG calculated the user charge revenue requirements for the District's water and wastewater systems for the years 2003 through 2007. The results for water and wastewater are presented in the table below.

TECHNICAL MEMORANDUM

Page 3

March 12, 2003 (Revised May 5, 2003)

D137.031.RS

Item	2003	2004	2005	2006	2007
Water System					
Operation & Maintenance Costs	\$1,763,201	\$1,816,097	\$1,870,580	\$1,926,697	\$1,984,498
Capital Costs	1,507,680	1,517,809	1,523,746	1,550,942	1,585,780
Less Non-Rate Revenues	(1,836,325)	(1,884,773)	(1,934,675)	(1,986,073)	(2,039,014)
User Charge Revenue Requirements	\$1,434,556	\$1,449,133	\$1,459,651	\$1,491,566	\$1,531,264
Wastewater System					
Operation & Maintenance Costs	\$681,629	\$702,078	\$723,140	\$744,834	\$767,179
Capital Costs	1,127,397	1,233,549	1,264,182	1,302,536	1,340,475
Less Non-Rate Revenues	(1,193,919)	(1,229,737)	(1,266,629)	(1,304,628)	(1,343,766)
User Charge Revenue Requirements	\$615,107	\$705,890	\$721,694	\$742,743	\$763,888

Equivalent Unit Schedules

In Colorado, some small special districts base water and wastewater user charges on an equivalency schedule. The monthly service charges are assessed by the equivalent number of single family residents. A number of methods have been used to determine equivalency schedules:

- Water meter size
- Dwelling unit count
- Bedroom/Bathroom count
- Fixture unit count

Selecting the basis for equivalencies depends highly on available data. Many schedules also rely on older studies that estimated water use in gallons per day, such as the Uniform Building Code or Plumbers Code. These studies were completed years ago and have not since been updated. More recently, installations of water meters have resulted in more accurate data on the water usage for different customer types. Actual water usage can be associated with meter size. Equivalency schedules based on meter size, therefore, have become more the industry norm.

Current Equivalent Unit Schedule

The District currently bases its monthly water and wastewater service charges on an equivalent residential unit (ERU) basis. The equivalent units for the District's different customers have been calculated based on a schedule previously published by the AWWA. The schedule reports the usage in gallons per day for a measurement unit, such as square footage, for different types of establishments.

TECHNICAL MEMORANDUM

Page 7

March 12, 2003 (Revised May 5, 2003)

D137.031.RS

- Promotes conservation
- May benefit lower water users
- Similar to existing rate structure; easy to understand
- Billing system accommodates such a rate structure

There are a few disadvantages, however:

- Establishing block thresholds may be subjective
- Introduces slight revenue instability with fewer revenues collected in monthly service charge
- Determining block rates without a detailed cost-of-service analysis may be difficult

Alternative 2: Seasonal Rates

A second water rate structure that encourages conservation is a seasonal rate structure. Seasonal rates are based on the principle of charging a higher rate for usage during peak periods, such as the summer irrigation and tourist season, to reflect the higher capacity cost of providing water during the peak season compared with the off-peak season. Figure 2 below shows a typical seasonal rate structure.

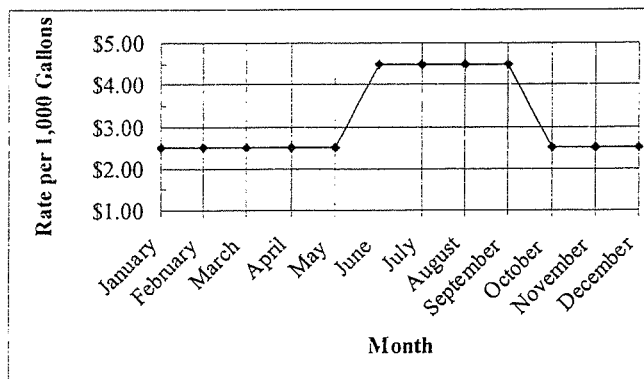


Figure 2. Seasonal Rates

For the District, a seasonal rate structure can incorporate the higher electrical costs recovered through the drought surcharge. The off-peak or non-summer season rates will recover the typical user charge revenue requirements of the District. The peak season or summer rates will include the additional electrical costs in the revenue requirements. This rate structure internalizes the drought surcharge through higher rates in the summer months.

As in the first rate structure alternative, a monthly service charge per ERU will be charged to recover basic customer billing and administrative costs. The off-peak and peak volume charges will be calculated as described above.

TECHNICAL MEMORANDUM

Page 8

March 12, 2003 (Revised May 5, 2003)

D137.031.RS

Advantages of this second rate structure include:

- Promotes water conservation during the peak season
- Incorporates the increased costs due to the drought
- Easy to administer and understand

Disadvantages include:

- Represents a change from current rate structure
- All usage in peak season is charged a higher rate; low water users may be impacted
- Introduces slight revenue instability if peak season rate is significantly higher than off-peak rate

Alternative 3: Excess-Use Rates

A third rate structure developed for the District is based on assessing a higher rate for usage that is above a customer's average winter water consumption, called an excess-use surcharge. Average winter water consumption (AWC) represents indoor water use; it typically excludes irrigation, car washing, and other outdoor uses. AWC may be calculated using three to six months of winter water use data. An average of the months is calculated to determine customers' AWC. Using AWC as a basis for a rate structure encourages conservation in the peak-use periods.

Problems with obtaining AWC occur if water meters cannot be read during the winter months, as is the case with the District. AWC can be estimated using the methodology described below in the wastewater rate structure Alternative 2.

Each ERU is charged a monthly service charge to recover typical administrative costs that do not vary with water use. For volume of water used, a rate per thousand gallons is charged for all usage up to a customer's estimated AWC. A surcharge (or higher rate) applies to water use that is higher than AWC by a specified percentage. For example, Figure 3 shows that water usage up to a customer's AWC is charged \$3.50 per thousand gallons. Any water used over a customer's AWC is charged at a higher rate of \$4.50. Again, these are not the actual results from the District's rate study.

TECHNICAL MEMORANDUM

Page 9

March 12, 2003 (Revised May 5, 2003)

D137.031.RS

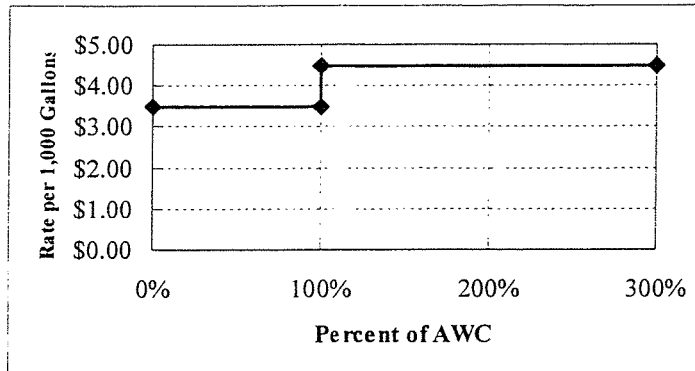


Figure 3. Excess-Use Rates

Advantages of an excess-use rate structure are:

- Promotes water conservation during the peak season
- Protects low water users
- Blocks are established on a defined AWC per ERU basis

Disadvantages are:

- Can be complex to bill
- Requires a change in billing approach
- AWC must be estimated in the District's case

Wastewater Rate Structures

IUG proposes two alternative wastewater rate structures for the District's evaluation. The District's current rate structure is based on a monthly fee per ERU. Wastewater service customers are charged \$15.50 per month. This basis is simple and easy to administer.

Alternative 1: Maintain Current Rate Structure

IUG proposes to maintain the District's current rate structure as the first alternative. Given the annual user charge revenue requirements and the total number of wastewater ERUs, the resulting monthly user charge per ERU can be calculated.

The advantages of this type of rate structure include:

- Simple; easy to understand and administer
- Currently applied
- Results in stable revenue recovery

TECHNICAL MEMORANDUM

Page 10

March 12, 2003 (Revised May 5, 2003)

D137.031.RS

- Larger users with multiple ERUs are charged more

One disadvantage of this rate structure does exist. If the District has received state or federal funding for any of its wastewater facilities, its rates may be subject to EPA user charge regulations. These regulations require wastewater systems to recover operations, maintenance, and replacement costs on a basis proportional to each customer's usage of the system. If the system is primarily flow-based, then user charges may be established on a volume basis. IUG has not found evidence of any ramifications for non-compliance in the industry. However, as the District grows the possibility exists that new customers may impact its wastewater system more than typical residential customers. At that point, the District may wish to implement a rate structure that differentiates among customers with different wastewater flows and loadings characteristics.

Alternative 2: Minimum Monthly Service Charge with Volume Component

A second rate structure IUG proposes comprises a minimum monthly service charge to recover costs of billing and administration costs, and a usage rate that is based on volume of estimated flow. This modern rate structure has gained much acceptance among wastewater utilities in the United States.

A number of methods exists for the District to estimate the flows per customer. One common method calculates the average winter water consumption (AWC) by customer or by class of customer. Assuming monthly wastewater discharge equals the AWC for each month for the year, customers' wastewater bills will not vary each month and the District's revenue stream would be constant.

In the absence of winter month water meter reads, as is the case in the District, winter month wastewater use can be estimated a different way. For modeling purposes, IUG and staff have estimated wastewater flows in the following manner:

- Average monthly water use per ERU is estimated to be 8,000 gallons.
- Assume that some water use less than that average applies to the winter month period. One value in the industry finds that approximately 80 percent of all water use returns to the sewer.
- Assume the AWC per ERU equals 80 percent of 8,000 gallons, or 6,400 gallons.

Each wastewater ERU, therefore, pays each month a minimum service charge and a usage charge based on 6,400 gallons.

Advantages of this rate structure include:

- Fairly straightforward and parallel with typical approaches to billing for water service
- More typical in the industry



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PAGOSA AREA WATER & SANITATION DISTRICT
Appendix D -Status Report on Rate Study and List of
Policy Items for Board of Directors



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UTILITIES
GROUP, INC.**

DRAFT MEMORANDUM

TO: Carrie Campbell

FROM: Carol Malesky

COPIES: Shellie Tressler
Gene Tautges

DATE: April 8, 2003

SUBJECT: Status Report on Rate Study and List of Policy Items for Board of Directors

PROJECT: D137.031.RS

Integrated Utilities Group, Inc. (IUG) has completed the bulk of the water and wastewater rate study authorized by the Pagosa Area Water and Sanitation District (PAWSD) in January 2003. This memorandum serves as a status report and identifies policy items for the Board to consider prior to completion of the study.

Preliminary Results

1. The user charge revenue requirements for water and wastewater service have been calculated for 2003 through 2007.
2. Two alternative wastewater rate structures have been developed. IUG recommends that the District maintain its current wastewater rate structure of a monthly service charge per equivalent residential unit (ERU).
3. The recommended monthly service charge for wastewater service in 2003 is \$15.50 per ERU.
4. Four alternative water rate structures were developed by IUG and evaluated by Staff during a meeting at the District's offices on March 19, 2003.
5. Two alternatives were selected for further analysis: one based on a monthly service charge with no minimum water allowance and three increasing usage blocks, and one based on a monthly service charge that includes a specified water allowance with two increasing usage blocks.

DRAFT MEMORANDUM

Page 2

April 8, 2003

D137.031.RS

6. The preliminary rates under the two rate options are summarized in the following table:

No Minimum Water Allowance

Usage Blocks (gallons)	Rate per Kgal
Monthly Service Charge	\$5.50
0-8,000	\$0.70
8,001-16,000	\$2.30
>16,000	\$4.50

Minimum Water Allowance

Usage Blocks (gallons)	Rate per Kgal
Monthly Service Charge with 0-3,000 gallons	\$7.00
3,001-16,000	\$1.30
>16,000	\$4.50

7. IUG and Staff would like the Board to review several assumptions used in the rate study in addition to consider some policy items.

Assumptions and Policy Items

1. The rate study assumes a portion of the capital expenditures of the District will be financed from user charges and a portion from fees and charges from new customers. Capital expenditures include revenue bond debt service payments, inspection items, work in progress, and capital investment projects.
2. At this point in the rate study, we assume that the drought surcharge will remain in place for 2003 pending a change in drought conditions and Board direction. This surcharge is designed to recover the additional costs related to increased pumping during drought periods. If during the year the Board feels comfortable with the drought status, a portion of this surcharge can be removed and the operating costs recalculated.
3. A crucial assumption in developing water user charges for the District is the amount of revenue requirements to be recovered through the monthly service charge. A detailed cost-of-service analysis provides specific costs for this charge. For a simpler

DRAFT MEMORANDUM

Page 3

April 8, 2003

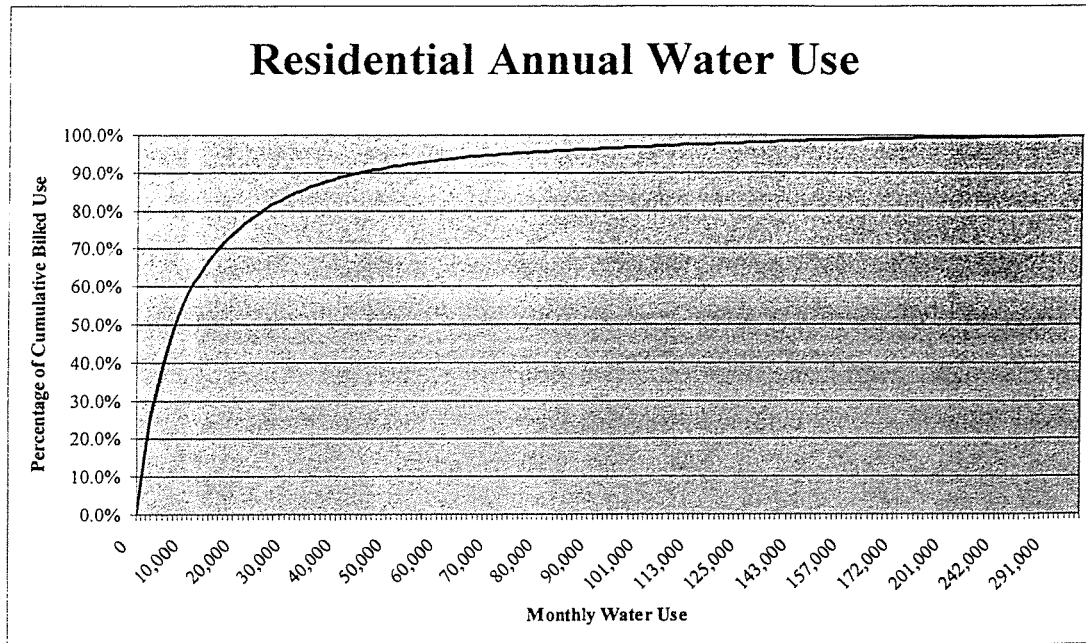
D137.031.RS

rate study such as the District's, the percentage of revenue requirements to include in the monthly service charge must be decided.

One approach would be to only include billing and administration costs which would result in a small fee per ERU and higher usage rates. A more revenue stable option would be to recover more of the fixed costs of the system. Staff completed an analysis of the fixed and variable costs of the water system, concluding that a high percentage of costs are fixed—approximately 70 percent. The drawback of recovering all the fixed costs through the monthly service charge is a high fee per ERU with low usage rates, resulting in a poor price signal for encouraging water conservation.

The intermediate solution is to determine a percentage of revenue requirements to be recovered in the monthly service charge that is between the two approaches described above. IUG recommends that 30 percent of revenue requirements are recovered through this charge, or \$5.50 per ERU per month.

4. For estimating water use in 2003, IUG averaged three years of historical data (2000, 2001, and 2002). For determining the water rates, data from 2002 were used. This drought year produced water use data that is likely to be understated for a typical year. Therefore, IUG applied an allowance percentage for the conservation response in 2002. This percentage was applied only to residential customers' use. Should an allowance for the drought year be applied to commercial water use estimates as well?
5. A bill frequency analysis was completed to review the thresholds for the various consumption blocks. Such an analysis plots monthly water use by the percentage of cumulative billed use. The graphs can be used to determine the percentage of billed use for different levels of water use. For example, the following graph shows that approximately 50 percent of residential billed usage was for 8,000 gallons a month or less.



6. Using the bill frequency graphs, IUG and Staff recommend that the water use blocks be:

Alternative	Usage Blocks (gallons)
No Minimum Water Allowance	0-8,000
	8,001-16,000
	>16,000
Minimum Water Allowance	0-3,000
	3,001-16,000
	>16,000

7. The minimum water allowance is currently 8,000 gallons per ERU per month. This study varied that allowance which results in different monthly rates. If the Board's intention is to include a minimum usage with the monthly service charge, we recommend that 3,000 gallons is allowed.
8. For billing purposes, IUG recommends that an estimated bill be calculated for accounts whose meters are not read during the winter months. The estimated bills during November through April of the current year can be calculated using the average monthly water use from the prior year. The April billing can include any adjustments for under or over-collection during the winter months.