

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

NORTH MARSHALL WATER DISTRICT)
APPLICATION FOR (1) CERTIFICATION)
OF PUBLIC CONVENIENCE AND NECESSITY)
(2) APPROVAL OF FINANCING THROUGH) CASE NO. 94-003
K.I.A. (3) GENERAL RATE INCREASE)
(4) REQUEST FOR APPROVAL OF)
VARIANCE ON FINANCIAL DATA)

O R D E R

On January 28, 1994, North Marshall Water District ("North Marshall") filed its application for Commission approval of proposed construction, financing, and a general rate increase. Commission Staff, having performed a limited financial review of North Marshall's operations and a cost of service study, has prepared the attached Staff Report containing Staff's findings and recommendations regarding North Marshall's application. All parties should review the report carefully and provide any written comments no later than 10 days from the date of this Order. The Commission should also be informed if any party intends to testify or present other evidence at the hearing scheduled May 3, 1994.

IT IS THEREFORE ORDERED that:

1. All parties shall have 10 days from the date of this Order to provide written comments regarding the attached Staff Report.

2. Any party, including the Applicant, who intends to participate in the hearing shall, no later than April 29, 1994, provide the Commission with:

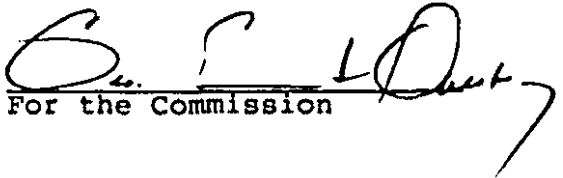
(a) A written list of witnesses and a brief summary of their anticipated testimony; and

(b) A list of exhibits that will be introduced.

3. The Applicant shall, no later than April 29, 1994, provide the Commission with a list of each witness who will be available for questioning on each item contained in the application or provided to Commission Staff during the course of their review.

Done at Frankfort, Kentucky, this 15th day of April, 1994.

PUBLIC SERVICE COMMISSION


For the Commission

ATTEST:


Executive Director

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STAFF REPORT

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STAFF REPORT

ON

NORTH MARSHALL WATER DISTRICT

CASE NO. 94-003

A. Preface

On January 3, 1994, North Marshall Water District ("North Marshall") submitted an application to the Kentucky Public Service Commission ("Commission") seeking approval of its proposed construction, financing and water rate increase. The application was considered filed on January 28, 1994, when all deficiencies were cured. The proposed rates would generate approximately \$799,648 in annual revenues. This represents an increase of \$254,230, or 46.6 percent, over reported test year revenues from water sales of \$545,418.

In order to evaluate the requested increase, the Commission Staff ("Staff") chose to perform a limited financial review of North Marshall's operations for the test period, the twelve month period ending December 31, 1992. Karen Harrod of the Commission's Division of Financial Analysis conducted the review on January 26, February 16, and March 3-4, 1994 at the office of North Marshall in Draffenville, Kentucky. Carryn Lee and Brent Kirtley of the Commission's Division of Rates and Research performed a review of North Marshall's reported revenues and proposed rate design at the offices of the Commission.

The findings of Staff's review have been reduced to writing in this report. Ms. Lee and Mr. Kirtley are responsible for the sections related to operating revenues and the cost of service study. The remaining sections of this report were prepared by Ms. Harrod. Based upon the findings of this report, Staff recommends that North Marshall

be allowed to increase its annual operating revenues by the requested amount of \$254,230.

Scope

The scope of the review was limited to obtaining information to determine whether test period operating revenues and expenses were representative of normal operations. Insignificant or immaterial discrepancies were not pursued and are not addressed herein.

During the course of the review, North Marshall was advised that all proposed adjustments to test year expenses must be supported by some form of documentation and that all such adjustments must be known and measurable. Accordingly, Staff's recommendations reflect the additional known and measurable expenses to be incurred as a result of the construction and financing proposed in this filing.

B. Analysis of Operating Revenues and Expenses

Operating Revenues

North Marshall reported revenue from water sales of \$545,418 in its 1992 Annual Report. The application included a billing analysis that produced revenue from water sales of \$537,778. This calculation reflects a difference of 1.4 percent or \$7,640 between the submitted billing analysis and the annual report. Further review revealed that the billing analysis did not include revenue from bulk sales. Staff also found that the billing analysis lacked an adjustment for the growth in customer base that North Marshall had experienced in 1993. Based on these findings, Staff conducted its own billing analysis, using 1992 customer records.

Staff's calculations resulted in metered water sales of \$548,427. An additional \$1,997 was collected from bulk water sales, resulting in total revenue of \$550,424 from annual water sales. The discrepancy between the revenue in the annual report and in Staff's billing analysis is less than one percent, and is therefore acceptable for public utility rate-making purposes.

According to information provided by North Marshall, 86 new residential customers were added to the system in 1993. An adjustment of \$10,062¹ has been added to annual water revenue to account for the growth in customer base. Accordingly, normalized water sales has been calculated as follows:

Staff Billing Analysis	\$548,427
Bulk Sales	1,997
Growth Adjustment	10,062
1992 Normalized Revenue from Water Sales	<u>\$560,486</u>

For the purposes of this Staff Report, total normalized revenue from water sales shall be considered to be \$560,486.

Operating Expenses

For the test year North Marshall reported operating expenses of \$551,389 which it proposed to increase by \$40,000. The pro forma adjustments to test period expenses are discussed in the following sections of this report.

¹ 86 new customers x 6 bills x \$19.50 (bill based on 4500 gallons per month) = \$10,062.

Salaries and Wages

For the test year North Marshall reported total salaries and wages expense of \$140,427. Included in this account are employee salaries of \$122,427 and commissioner salaries of \$18,000. Based on the current salary levels of North Marshall's employees, overtime wages, and on-call pay, Staff has calculated a pro forma salaries and wages expense of \$140,328, an increase of \$17,901 over the test-year level. This increase has been included in the calculation of North Marshall's revenue requirement and results in total pro forma salaries and wages expense of \$158,328.

For purposes of the cost of service study, the adjustment to salaries and wages expense has been allocated among the appropriate expense accounts based on the test year expense allocation, as follows:

	<u>Test Year Allocation Percentage</u>	<u>Recommended Increase</u>
Source of Supply & Pumping		
Operations Labor	4.27%	\$ 764
Maintenance Labor	9.02%	1,615
Water Treatment Expense		
Operations Labor	1.45%	259
Transmission & Distribution		
Maintenance		
Mains - Labor	1.25%	225
Meters - Labor	4.16%	745
Plant - Labor	6.21%	1,111
Customer Accounts		
Labor - Acct. & Coll.	17.69%	3,167
Administration & General		
Labor	<u>55.95%</u>	<u>10,015</u>
TOTAL	<u>100.00%</u>	<u>\$ 17,901</u>

Payroll Tax Expense

For the test year North Marshall reported payroll tax expense of \$9,828. Staff recommends an adjustment be made to increase payroll tax expense to allow for FICA and Medicare taxes associated with the recommended increase in salaries and wages expense. Accordingly, payroll tax expense has been increased by \$1,369,² to \$11,197.

Employee Pension Expense

North Marshall reported test year employee pension expense of \$5,145. Staff recommends an adjustment be made to increase this expense to allow for the 5 percent retirement contribution associated with the recommended increase in salaries and wages expense. Accordingly, payroll tax expense has been increased by \$895, to \$6,040.

Purchased Power Expense

In its test year operations North Marshall reported total purchased power expense of \$79,479. An adjustment was proposed to increase this expense by \$1,248 to account for power requirements resulting from the proposed construction and additional pumping required from increased customer growth. No supporting calculations were provided to support this increase. Therefore, Staff has disallowed this adjustment for rate-making purposes. However, Staff is of the opinion that an adjustment should be made to account for the additional purchased power expense resulting from the 86 new customers added in 1993. Staff has

²

Recommended Incr. to Salaries & Wages Exp.	\$ 17,901
Applicable FICA & Medicare Rate	.0765
Recommended Incr. to P/R Tax Expense	<u>\$ 1,369</u>

calculated this increase to be \$1,743.³ For purposes of the cost of service study, the adjustment to purchased power expense has been allocated among the appropriate expense accounts based on the test year expense allocation, as follows:

	<u>Test Year Allocation Percentage</u>	<u>Recommended Increase</u>
Source of Supply & Pumping		
Operations Power	80.95%	\$ 1,411
Maintenance Power	13.50%	235
Water Treatment Expense		
Operations Power	1.19%	21
Maintenance Power	.27%	5
Transmission & Distribution	<u>4.09%</u>	<u>71</u>
TOTAL	<u>100.00%</u>	<u>\$ 1,743</u>

Chemicals Expense

North Marshall included chemicals expense of \$6,605 in its test year operations. Although no adjustment was proposed by North Marshall, Staff is of the opinion that an adjustment should be made to account for increased chemical expense associated with the 86 new customers added in 1993. Accordingly, Staff has included an adjustment to increase chemicals expense by \$145.⁴

³ Test Year Purchased Power Expense	\$ 79,166
Test Year Customers	+ 3,905
Test Year Purchased Power Exp. per Customer	<u>\$ 20.27</u>
1993 New Customers	x 86
Recommended Increase	<u>\$ 1,743</u>

⁴ Test Year Chemicals Expense	\$ 6,605
Test Year Customers	+ 3,905
Test Year Chemical Expense per Customer	<u>\$ 1.69</u>
1993 New Customers	x 86
Recommended Increase	<u>\$ 145</u>

Depreciation

North Marshall reported test period depreciation expense of \$109,806. In its application an adjustment was proposed to increase this amount by \$30,000 to include pro forma depreciation expense associated with the proposed construction. Staff is of the opinion that it is necessary to include the costs related to the system addition in the determination of pro forma depreciation expense to ensure that the rates established allow North Marshall to recover the cost of the plant addition. Pursuant to the Commission's Order in Case No. 10481,⁵ dated August 22, 1989, North Marshall made adjustments to update its revenues and expenses to the level anticipated upon completion of the proposed construction. Since these adjustments reflect the impact that the proposed construction would have on its revenues and expenses, as required by the above referenced case, Staff recommends an increase in depreciation expense of \$28,290.⁶

Transmission and Distribution Expense

In its application North Marshall proposed to increase test year transmission and distribution expense by \$8,752. Included in this adjustment was \$500 for the annual inspections of the proposed tanks and \$1,000 for routine maintenance and hydrant flushing. Documentation was not provided to support these adjustments. Therefore, Staff has

⁵ Notice of Adjustment of the Rates of Kentucky-American Water Company Effective on February 2, 1989.

⁶

Estimated Total Project Cost	\$ 1,414,521
(Per Exhibit 7, Page 9 of Petition)	
Estimated Useful Service Life	+ 50
Recommended Increase	<u>\$ 28,290</u>

disallowed \$1,500 of the proposed increase to transmission and distribution expense.

The remaining \$7,252 of the increase resulted from North Marshall's decision to make its own service line reconnections along the proposed water line replacement and improvement project. These reconnects were originally to be bid as part of the project; however, North Marshall determined that it would be less expensive if its employees did the work. After consulting with the Commission's Division of Engineering it was determined that the expense was reasonable but that it would be more appropriate to amortize it over a period of five years for rate-making purposes. This results in an annual increase to transmission and distribution expense of \$1,450.

For purposes of the cost of service study, this adjustment has been allocated among the appropriate expense accounts as follows:

	<u>Proposed Increase</u>	<u>Recommended Annual Exp.</u>
Transmission & Distribution Maintenance:		
Mains - Labor	\$ 2,000	\$ 400
Mains - Materials	2,500	500
Mains - Contractual Srvcs.	2,500	500
Meters - Contractual Srvcs.	<u>252</u>	<u>50</u>
TOTAL	<u>\$ 7,252</u>	<u>\$ 1,450</u>

C. Analysis of Other Income and Expense

Interest Income

North Marshall reported test year interest income of \$19,721. This interest includes earnings from both restricted and unrestricted investments totaling \$358,854 as of December 31, 1992. Of this amount, \$295,928, or 82%, is money set aside for customer deposits and retirement of long-term debt. It is Staff's opinion that the interest earned on these restricted investments should not be used to offset proposed revenue requirements. As a result, an adjustment has been included to decrease test year interest expense by \$16,171.⁷

Non-operating Income

During the test year North Marshall was able to retire 14 of its Series B bonds which resulted in a gain on early retirement of \$3,750. No bonds have been retired subsequent to the test year and it is Staff's opinion that a gain of this nature is non-recurring. Accordingly, Staff has decreased non-operating income by \$3,750 resulting in a pro forma level of \$ -0-.

Operations Summary

Based on the recommendations of Staff, North Marshall's operating statement would appear as set forth in Appendix B to this report.

⁷ Test Year Interest Income	\$ 19,721
Percentage Associated with Restricted Accounts	x .82
Recommended Decrease	<u>\$ 16,171</u>

D. Long Term Debt

North Marshall currently has one Series B bond issue outstanding which originated in 1966 at 5 percent interest. As of December 31, 1993, these bonds had an outstanding balance of \$1,065,000. Based on Staff's review it was determined that no set retirement schedule was established by prior management to accumulate the reserves necessary to retire this debt. In recent years some efforts have been made to buy back a portion of the bonds with limited success. Staff is of the opinion that some provision should be made to enable North Marshall to pay off these bonds when they mature in 2006.

After consulting with North Marshall's CPA, it was determined that a portion of its reserve accounts were available for bond retirement. The available reserve balances were valued at \$298,693 at December 31, 1993. Staff has decreased the outstanding bond balance by this amount resulting in a balance to be financed of \$766,307. Staff has calculated an annual payment of \$81,578 based on a 13-year life (the remaining life of the bonds) at 5 percent.

In its application North Marshall proposed to finance the proposed construction with a loan from the Kentucky Infra-structure Authority ("KIA"). The annual debt service was calculated to be \$147,500 based on an estimated project cost of \$1,625,000 amortized over 20 years at 6.5 percent. In the letter of conditions from KIA included as Exhibit 3 of the petition, the estimated annual debt service was calculated based on an interest rate of 7 percent. Accordingly, Staff has calculated the annual payment to be \$153,389 based on an interest rate of 7 percent.

In the event approval for any portion of the construction is not obtained, the recommendations contained herein related to financing and expenses for construction would change accordingly. Assuming the construction is approved, Staff recommends that the proposed debt be included in revenue requirements in order to fund the proposed construction.

Based on the aforementioned discussion, North Marshall's annual debt service for existing and proposed debt would be \$234,967.

E. Revenue Requirements Determination

North Marshall requested additional revenue of \$254,230. Based on the staff adjusted operating expenses and the debt service coverage normally allowed by the Commission,⁸ Staff believes North Marshall could justify additional revenue of \$305,383.⁹ However, since North Marshall's proposed increase will meet its actual debt service

⁸ The Commission generally allows a 1.2 debt service coverage.

⁹

Staff Recommended Operating Expenses	\$ 603,182
Average Annual Debt Service	234,967
20 Percent Debt Service Coverage	46,993
Other Expense	4,515
Total Revenue Requirement	<u>\$ 889,657</u>
Less: Normalized Operating Revenues	560,486
Other Operating Revenues	20,238
Non-operating Income	3,550
Required Increase	<u>\$ 305,383</u>

requirements and produce a positive cash flow of \$133,936¹⁰, Staff recommends that the proposed increase be accepted.

If North Marshall chooses to amend its application to reflect rates that will generate the additional revenue of \$305,383 which Staff believes could be justified, it should do so when filing comments to the Staff Report. In the event that North Marshall does request rates that differ from those previously noticed to its customers, it should be required to renotify its customers of the new proposed rates.

F. Cost of Service Study

Once revenue requirements have been determined, a rate analysis must be performed to develop a rate schedule that will produce the required operating revenue. A billing analysis using test year customers and usage is performed to verify reported test year operating income. A cost of service study is performed to insure that the rate schedules reflect the cost of providing water service. An analysis of the rates requires allocation of costs among the customers commensurate with their service requirements in order to recognize the differences in costs of furnishing service to different classes of customers.

North Marshall filed a rate study prepared by Florence and Hutcheson, Inc., which is contained in Exhibit 7 of its application. North Marshall filed a billing analysis as part of its rate study.

¹⁰ Adjusted Operations	\$ < 23,423 >
Add: Proposed Increase	254,230
Depreciation Expense	138,096
	<u>368,903</u>
Less: Annual Debt Service	234,967
Net Cash Flow	<u>\$ 133,936</u>

However, the billing analysis did not include bulk sales or a normalization adjustment for customers added in 1993. Because of the deficiencies in North Marshall's billing analysis, Staff performed a billing analysis which has been used to determine test year operating revenues from water sales in this report. Staff's billing analysis is attached as Appendix C.

Meter Replacement Program

North Marshall's rate study included a table showing various customers and their respective meter sizes. The study stated that the yearly consumption of the customers does not correspond to the meter sizes and consumption in North Marshall's meter selection guide. North Marshall proposed to implement a meter replacement program wherein it would replace certain existing meters with meters that would more adequately measure peak flows. In most cases the meters would be replaced by a larger size meter, thus increasing the customers' bi-monthly bill. While this adjustment was proposed in North Marshall's rate study, the proposed changes were not considered by North Marshall when designing its proposed rates. Several customers have expressed concern as to whether or not it is necessary to change their meter size. The study further stated that other customer's meters and yearly consumption correspond to the meter size selection guide and will not require a change in existing meter size.

After reviewing the meter selection guide filed in the rate study, and consulting with the Commission's Division of Engineering, Staff is of the opinion that the guide is inaccurate and should not be used as a

basis for changing the customers' meter size. Additionally, in its review of customer usage patterns, Staff determined that the usage of numerous other customers should be reviewed if a meter replacement program were to be implemented as proposed by North Marshall.

North Marshall's Rate Proposal

North Marshall's current rate design consists of eight increments ranging from a 4,000 gallon minimum to an over 100,000 gallon rate increment. North Marshall proposed a customer charge and a flat rate per 1,000 gallons for all water purchased, which results in an increase ranging from 22 percent for a 5/8-inch connection to an increase of 241 percent for a 3-inch connection. North Marshall's proposed customer charge was determined by multiplying the percent of total water used by each customer classification by the proposed debt service payment, then dividing the determined debt coverage for each classification by the number of bills in each classification.

The remainder of the revenue requirement, which included operating and maintenance expense and depreciation, was then divided by the total water sold in order to obtain a proposed flat rate per 1,000 gallons.

The Commission recognizes The American Water Works Association's Manual M-1, Water Rates ("Manual M-1"), as setting forth the appropriate methodology for cost of service studies for water utilities. The Manual M-1 states that customer costs are not related to the quantity of water used since customer costs include meter reading, billing, collecting and customer accounting costs. However, contrary to this fundamental

principle, North Marshall included all of the above costs in the cost of water.

The Manual M-1 additionally recognizes that certain administrative costs are fixed and bear no relationship to the amount of water produced or purchased. However, North Marshall included all of its administrative and general costs in the proposed rate per 1,000 gallons.

Kentucky Dam Village State Resort Park ("Kentucky Dam"), intervened and requested that Staff perform a cost of service study in this case. Kentucky Dam has a contract to purchase water from North Marshall at a rate of \$1.00 per 1,000 gallons. Based on North Marshall's rate study, Kentucky Dam's average monthly bill would increase from \$2,000 per month to \$6,455 per month. Staff attempted to perform a cost of service study which would have set a separate rate for Kentucky Dam. However, after review, the information contained in the rate study was found to be inadequate and unreliable. Additional information provided by North Marshall's engineer proved to be of the same quality. For example, Staff requested that North Marshall's engineer furnish information as to the total gallons of water that flowed through the line serving Kentucky Dam. Information provided showed that the total was 30,000,000 gallons. However, the engineer's own rate study showed that Kentucky Dam's actual purchases for the test year were 45,372,624 gallons. Therefore, North Marshall's cost of service study is rejected by Staff.

Cost of Service Methodology

Staff has prepared its own cost of service study using the commodity-demand method for small utilities as set out in the Manual

M-1. A properly prepared cost of service study should reflect that a water system provides service to a number of different classes of customers who have different water use patterns and demands. The commodity-demand method for small utilities recognizes the different costs associated with serving both the residential and the large user. This method also recognizes that sufficiently detailed information may not be available from small utilities to prepare a more comprehensive study, which is precisely the reason Staff chose this methodology. Staff's cost of service study is attached as Appendix D.

Using the commodity-demand method, costs are identified as being related to either commodity, demand, customer costs, or direct fire service. Since fire service is not a significant function of North Marshall, that component was not used in this study. Costs allocated to the commodity cost component include those costs that tend to vary with the quantity of water produced such as the cost of chemicals and pumping power. Demand costs are costs associated with providing facilities to meet peak periods of use by system customers. Demand costs include transmission and distribution costs and source of supply. Customer costs include costs incurred to serve customers regardless of the amount or rate of water used, such as billing and collection expenses.

Summary of Appendix D

Staff has allocated North Marshall's revenue requirement to commodity, demand and customer components. Sheet D-1 shows the allocation of plant value. The percentages of total plant value

allocated to each component were applied to actual capital expenses shown on Sheet D-3.

Sheet D-2 shows how total operation and maintenance expenses were allocated to the various cost components. Administrative and general expenses were allocated based on the percentage of the total other operation and maintenance expenses that were previously allocated to each component. Pumping purchased power and chemical expenses were allocated to the commodity component.

Sheet D-3 shows the total revenue allocated to each cost component and includes debt service and depreciation which are allocated based on the plant value percentages determined on Sheet D-1.

Sheet D-4 shows the recommended customer charge for each size meter. Customer charges include meter reading, billing and collecting, and customer accounting costs, as well as capital related costs associated with the service line and meter. Customer costs for North Marshall have been segregated into operation and business components.

The operation costs related to service and meter operations and maintenance have been allocated based on size-weighted equivalents. Using equivalent ratios to compute customer charges provides a rational means to allocate capital costs, maintenance, and the testing expense of larger meters. The business costs such as meter reading and billing and collecting are allocated based on the number of bills issued, since these costs would not vary depending upon size of meter.

Sheet D-5 shows the allocation of the commodity and demand costs shown on Sheet D-3 allocated to the actual rate increments in order to

determine the actual price per thousand gallons. The percentage of actual water sales within each particular increment is applied to the total commodity expense to allocate that expense to each increment.

Weighted water sales is used in a similar manner to allocate demand expense between the rate increments. However, water in the first block is increased by a factor of 1.67 and water in the second block is weighted by a factor of 1.33. This assumes that water sales in the second and third blocks have a lower peaking factor than sales in the first block, indicating a more uniform usage of water as usage levels increase. Sheet D-6 shows the rates recommended by Staff, and verifies that the rates produce the required revenue.

Wholesale Customers

North Marshall has a contract to sell water to Calvert City and Reidland Water District. During the test year neither of these customers purchased water or paid a minimum rate to North Marshall even though North Marshall is responsible for maintaining the 4-inch meters installed to serve these customers. Since North Marshall incurs the cost of maintaining the meters and is contractually committed to providing water should the need arise, Calvert City and Reidland should pay the customer charge associated with a 4 inch connection. In determining the recommended rates, Staff included customer charge revenues from these two customers. All water purchased by these two wholesale customers should be priced at the recommended rates for water service.

Contract with Jonathan Creek Water District

On October 11, 1993, North Marshall filed a proposed contract between it and Jonathan Creek Water District ("Jonathan Creek") which provides that Jonathan Creek may purchase water from North Marshall.¹¹ While North Marshall has an adequate water supply, the contract also provides North Marshall the ability to purchase from Jonathan Creek in an emergency situation.

After reviewing the proposed contract, Staff recommends that it be approved. The contract states that Jonathan Creek will be responsible for maintaining the meter; therefore, Staff recommends that Jonathan Creek not be subject to the customer charge but that it pay the rates recommended for water service set out in this report. Staff's rate study did not include any revenue from water sales to Jonathan Creek since it has not purchased any water to date.

Bulk Sales

North Marshall sold 998,500 gallons through a coin operated loading station during the test year. The water was sold at a rate of \$2.00 per 1,000 gallons which resulted in revenue in the amount of \$1,997. No information was contained in the application as to the cost of operating and maintaining the loading station; therefore, no adjustment has been made to the bulk sales rate. Based on the cost of service study it appears that the current bulk sales rate is adequate.

¹¹ Case No. 93-410, The Special Contract Filing Between North Marshall Water District and Jonathan Creek Water District, Consolidated with Case No. 94-003 by Order dated April 8, 1994.

Staff Conclusions

It should be noted that concern has been raised by North Marshall that its other customers have been subsidizing Kentucky Dam. Kentucky Dam purchased 45,526,800 gallons during the test year at a rate of \$1.00 per 1,000 gallons. North Marshall sold 40,209,300 gallons to its other customers at a rate of 50 cents per 1,000 gallons. It is apparent that water sold at 50 cents per 1,000 would result in a greater subsidy than water sold at a rate of \$1.00 per 1,000 gallons.

The cost of service study resulted in a fairly uniform increase for all users with the exception of the 3-inch connections. Currently, all customers, with the exception of Kentucky Dam, that use in excess of 50,000 are charged a rate of 50 cents per 1,000 gallons. The recommended rate for all over 50,000 gallons is \$1.43 per 1,000. While this results in a significant increase for the 3-inch connections, it removes the subsidization that has been occurring because of North Marshall's current rate schedule.

The following table shows the percentage increase with North Marshall's proposed rates and Staff recommended rates.

Meter Size	Average Usage	Current Bill	North Marshall Bill	%	Staff Recommended Bill	%
5/8"	10,000	\$21.50	26.19	22	31.41	46
1.0"	30,000	60.50	71.97	19	73.86	22
1.5"	40,000	77.00	153.32	99	101.46	32
2.0"	100,000	148.00	306.71	107	198.38	34
3.0"	700,000	478.00	6,632.33	242	1,033.87	116
4.0"	4,000,000	4,000.00	12,910.00	223	5,525.26	38

Staff recommends that North Marshall's rates be revised from an eight step declining block schedule to a customer charge and a three

step design. Staff has not included any water usage in the customer charge due to the number of customers on the system that have exceptionally low water usage. The recommended rates will generate the required revenue from rates and therefore, Staff recommends the rates in Appendix A be approved for water service.

G. Signatures

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APPENDIX A
TO STAFF REPORT CASE NO. 94-003

The Staff recommends the following rates be prescribed for customers of North Marshall Water District.

Schedule of Rates

First 10,000 gallons	\$2.24 per 1,000 gallons
Next 40,000 gallons	1.83 per 1,000 gallons
Over 50,000 gallons	1.43 per 1,000 gallons

Bi-Monthly Customer Charge

5/8"	\$ 9.41 per 2 months
1.0"	14.86 per 2 months
1.5"	23.96 per 2 months
2.0"	34.88 per 2 months
3.0"	60.36 per 2 months
4.0"	96.76 per 2 months

APPENDIX B
TO STAFF REPORT CASE NO. 94-003

North Marshall Water District
Statement of Adjusted Operations
Test Year Ended 12/31/93

	<u>Test Year per Application Exhibit 7</u>	<u>Staff Recommended Adjustments</u>	<u>Staff Recommended Test Year</u>
Operating Revenues:			
Water Revenue - Metered Sales	\$ 545,418	\$ 15,068	\$ 560,486
Other Operating Revenues	<u>20,238</u>	<u> </u>	<u>20,238</u>
Total Operating Revenue	\$ 565,656	\$ 15,068	\$ 580,724
Operating Expenses:			
Source of Supply & Pumping:			
Operations Labor	5,998	764	6,762
Operations Purchased Power	64,338	1,411	65,749
Maintenance Labor	12,670	1,615	14,285
Maintenance Purchased Power	<u>10,730</u>	<u>235</u>	<u>10,965</u>
Total Source of Supply & Pumping	\$ 93,736	\$ 4,025	\$ 97,761
Water Treatment Expense:			
Operations Labor	2,031	259	2,290
Operations Purchased Power	948	21	969
Operations Chemicals	6,605	145	6,750
Operations Maint. & Supplies	4,971		4,971
Operations Miscellaneous	1,690		1,690
Maintenance Purchased Power	215	5	220
Maintenance Miscellaneous	<u>1,531</u>	<u> </u>	<u>1,531</u>
Total Water Treatment Expense	\$ 17,991	\$ 430	\$ 18,421
Transmission & Distribution:			
Operations Purchased Power	3,248	71	3,319
Maintenance:			
Reservoirs & Tanks - Materials	490		490
Reservoirs & Tanks - Cont. Serv.	464		464
Mains - Labor	1,762	625	2,387
Mains - Materials	23,379	500	23,879
Mains - Contractual Services	24,800	500	25,300
Meters - Labor	5,842	745	6,587
Meters - Materials	16,648		16,648
Meters - Contractual Services	4,866	50	4,916
Plant - Labor	8,716	1,111	9,827
Plant - Materials	1,527		1,527
Plant - Contractual Services	5,469		5,469

Hydrants - Materials	3,611		3,611
Hydrants - Contractual Services	<u>3,494</u>		<u>3,494</u>
Total Transmission & Dist.	\$ 104,316	\$ 3,602	\$ 107,918
Customer Accounts:			
Labor - Accounting & Collecting	24,844	3,167	28,011
Materials & Supplies	5,087		5,087
Cont. Services - Meter Reading	14,521		14,521
Bad Debt Expense	<u>516</u>		<u>516</u>
Total Customer Accounts	\$ 44,968	\$ 3,167	\$ 48,135
Administration & General:			
Labor	78,564	10,015	88,579
Office Supplies & Expense	11,944		11,944
Outside Services	10,571		10,571
Insurance	13,389		13,389
Advertising	7,422		7,422
Regulatory Commission Expense	799		799
Transportation Expense	9,235		9,235
Miscellaneous General Expense	5,551		5,551
Payroll Taxes	9,828	1,369	11,197
Employee Benefits	26,476		26,476
Employee Pensions	5,145	895	6,040
Damages and Injuries	<u>1,648</u>		<u>1,648</u>
Total Administrative & General	\$ 180,572	\$ 12,279	\$ 192,851
Depreciation Expense	<u>109,806</u>	<u>28,290</u>	<u>138,096</u>
Total Operation & Maintenance Exp.	\$ 551,389	\$ 51,793	\$ 603,182
Operating Income	\$ 14,267	\$ (36,725)	\$ (22,458)
Other Income			
Interest Income	19,721	(16,171)	3,550
Nonutility Income	<u>3,750</u>	<u>(3,750)</u>	<u>-0-</u>
Total Other Income	\$ 23,471	\$ (19,921)	\$ 3,550
Other Expense			
Amort. of Debt Discount	<u>4,515</u>		<u>4,515</u>
Adjusted Operations	<u>\$ 33,223</u>	<u>\$ (56,646)</u>	<u>\$ (23,423)</u>

APPENDIX C

BILLING ANALYSIS

NORTH MARSHALL WATER DISTRICT
BILLING ANALYSIS
TEST YEAR: 1992

USAGE TABLE - 5/8 Inch Connections

INCREMENTS	BILLS	GALLONS	4,000	6,000	10,000	10,000	10,000	10,000	50,000	100,000
First 4,000 gallons	5,965	9,197,600	9,197,600							
Next 6,000 gallons	7,695	54,316,000	30,780,000	23,536,000						
Next 10,000 gallons	5,849	80,261,700	23,396,000	35,094,000	21,771,700					
Next 10,000 gallons	945	22,543,500	3,780,000	5,670,000	9,450,000	3,643,500				
Next 10,000 gallons	271	9,237,900	1,084,000	1,626,000	2,710,000	2,710,000	1,107,900			
Next 10,000 gallons	91	4,060,900	364,000	546,000	910,000	910,000	910,000	420,900		
Next 50,000 gallons	123	8,012,200	492,000	738,000	1,230,000	1,230,000	1,230,000	1,230,000	1,862,200	
Over 100,000 gallons	7	918,000	28,000	42,000	70,000	70,000	70,000	70,000	350,000	218,000
TOTALS	20,946	188,547,800	69,121,600	67,252,000	36,141,700	8,563,500	3,317,900	1,720,900	2,212,200	218,000

REVENUE TABLE - 5/8 INCH CONNECTIONS

INCREMENTS	BILLS	GALLONS	RATE	REVENUE
First 4,000 gallons	20,946	69,121,600	\$ 9.50	\$ 198,987.00
Next 6,000 gallons		67,252,000	2.00	134,504.00
Next 10,000 gallons		36,141,700	1.75	63,247.98
Next 10,000 gallons		8,563,500	1.50	12,845.25
Next 10,000 gallons		3,317,900	1.25	4,147.38
Next 10,000 gallons		1,720,900	1.10	1,892.99
Next 50,000 gallons		2,212,200	1.00	2,212.20
Over 100,000 gallons		218,000	.50	109.00
TOTALS		188,547,800		\$417,945.79

NORTH MARSHALL WATER DISTRICT
BILLING ANALYSIS
TEST YEAR: 1992

USAGE TABLE - 1 INCH CONNECTIONS

INCREMENTS	BILLS	GALLONS	4,000	6,000	10,000	10,000	10,000	10,000	50,000	100,000
First 4,000 gallons	412	588,600	588,600							
Next 6,000 gallons	305	2,162,600	1,220,000	942,600						
Next 10,000 gallons	284	4,072,300	1,136,000	1,704,000	1,232,300					
Next 10,000 gallons	109	2,613,600	436,000	654,000	1,090,000	433,600				
Next 10,000 gallons	51	1,767,600	204,000	306,000	510,000	510,000	237,600			
Next 10,000 gallons	28	1,240,800	112,000	166,000	280,000	280,000	280,000	120,800		
Next 50,000 gallons	55	3,752,400	220,000	330,000	550,000	550,000	550,000	550,000	1,002,400	
Over 100,000 gallons	52	9,427,600	208,000	312,000	520,000	520,000	520,000	520,000	2,600,000	4,227,600
TOTALS	1,296	25,625,500	4,124,600	4,416,600	4,182,300	2,293,600	1,587,600	1,190,800	3,602,400	4,227,600

REVENUE TABLE - 1 INCH CONNECTIONS

INCREMENTS	BILLS	GALLONS	RATE	REVENUE
First 4,000 gallons	412	588,600	\$ 16.00	\$ 20,736.00
Next 6,000 gallons	305	2,162,600	2.00	8,833.20
Next 10,000 gallons	284	4,072,300	1.75	7,319.03
Next 10,000 gallons	109	2,613,600	1.50	3,440.40
Next 10,000 gallons	51	1,767,600	1.25	1,984.50
Next 10,000 gallons	28	1,240,800	1.10	1,309.88
Next 50,000 gallons	55	3,752,400	1.00	3,602.40
Over 100,000 gallons	52	9,427,600	.50	2,113.80
TOTALS	1,296	25,625,500		\$ 49,339.21

NORTH MARSHALL WATER DISTRICT
BILLING ANALYSIS
TEST YEAR: 1992

USAGE TABLE - 1-1/2 INCH CONNECTIONS

INCREMENTS	BILLS	GALLONS	4,000	6,000	10,000	10,000	10,000	10,000	50,000	100,000
First 4,000 gallons	11	5,100	5,100							
Next 6,000 gallons	8	56,500	32,000	24,500						
Next 10,000 gallons	9	148,600	36,000	54,000	58,600					
Next 10,000 gallons	4	100,400	16,000	24,000	40,000	20,400				
Next 10,000 gallons	3	107,000	12,000	18,000	30,000	30,000	17,000			
Next 10,000 gallons	2	84,800	8,000	12,000	20,000	20,000	20,000	4,800		
Next 50,000 gallons	16	1,310,900	64,000	96,000	160,000	160,000	160,000	160,000	510,900	
Over 100,000 gallons	31	7,605,600	124,000	186,000	310,000	310,000	310,000	310,000	1,550,000	4,505,600
TOTALS	84	9,418,900	297,100	414,500	618,600	540,400	507,000	474,800	2,060,900	4,505,600

REVENUE TABLE - 1-1/2 INCH CONNECTIONS

INCREMENTS	BILLS	GALLONS	RATE	REVENUE
First 4,000 gallons	84	297,100	\$ 20.00	\$ 1,680.00
Next 6,000 gallons		414,500	2.00	829.00
Next 10,000 gallons		618,600	1.75	1,082.55
Next 10,000 gallons		540,400	1.50	810.60
Next 10,000 gallons		507,000	1.25	633.75
Next 10,000 gallons		474,800	1.10	522.28
Next 50,000 gallons		2,060,900	1.00	2,060.90
Over 100,000 gallons		4,505,600	.50	2,252.80
TOTALS		9,418,900		\$ 9,871.88

NORTH MARSHALL WATER DISTRICT
BILLING ANALYSIS
TEST YEAR: 1992

USAGE TABLE - 2 INCH CONNECTIONS

INCREMENTS	BILLS	GALLONS	4,000	6,000	10,000	10,000	10,000	10,000	50,000	100,000
First 4,000 gallons	24	0	0							
Next 6,000 gallons	4	30,500	16,000	14,500						
Next 10,000 gallons	17	241,800	68,000	102,000	71,800					
Next 10,000 gallons	7	171,400	28,000	42,000	70,000	31,400				
Next 10,000 gallons	4	143,400	16,000	24,000	40,000	40,000	23,400			
Next 10,000 gallons	9	402,100	36,000	54,000	90,000	90,000	90,000	42,100		
Next 50,000 gallons	18	1,282,900	72,000	108,000	180,000	180,000	180,000	180,000	382,900	
Over 100,000 gallons	49	16,082,600	196,000	294,000	490,000	490,000	490,000	490,000	2,450,000	11,182,600
TOTALS	132	18,354,700	432,000	638,500	941,800	831,400	783,400	712,100	2,832,900	11,182,600

REVENUE TABLE - 2 INCH CONNECTIONS

INCREMENTS	BILLS	GALLONS	RATE	REVENUE
First 4,000 gallons	132	432,000	\$ 30.00	\$ 3,960.00
Next 6,000 gallons		638,500	2.00	1,277.00
Next 10,000 gallons		941,800	1.75	1,648.15
Next 10,000 gallons		831,400	1.50	1,247.10
Next 10,000 gallons		783,400	1.25	979.25
Next 10,000 gallons		712,100	1.10	783.31
Next 50,000 gallons		2,832,900	1.00	2,832.90
Over 100,000 gallons		11,192,600	.50	5,591.30
TOTALS		18,354,700		\$ 18,319.01

NORTH MARSHALL WATER DISTRICT
BILLING ANALYSIS
TEST YEAR: 1992

USAGE TABLE - 3 Inch Connections

INCREMENTS	BILLS	GALLONS	4,000	6,000	10,000	10,000	10,000	10,000	50,000	100,000
First 4,000 gallons	3	0	0							
Next 6,000 gallons	1	6,500	4,000	2,500						
Next 10,000 gallons	0	0	0	0						
Next 10,000 gallons	0	0	0	0	0	0				
Next 10,000 gallons	0	0	0	0	0	0	0			
Next 10,000 gallons	0	0	0	0	0	0	0	0		
Next 50,000 gallons	0	0	0	0	0	0	0	0	0	
Over 100,000 gallons	14	10,773,700	56,000	84,000	140,000	140,000	140,000	140,000	700,000	9,373,700
TOTALS	18	10,780,200	60,000	86,500	140,000	140,000	140,000	140,000	700,000	9,373,700

REVENUE TABLE - 3 INCH CONNECTIONS

INCREMENTS	BILLS	GALLONS	RATE	REVENUE
First 4,000 gallons	18	60,000	\$ 60.00	\$ 1,080.00
Next 6,000 gallons		86,500	2.00	173.00
Next 10,000 gallons		140,000	1.75	245.00
Next 10,000 gallons		140,000	1.50	210.00
Next 10,000 gallons		140,000	1.25	175.00
Next 10,000 gallons		140,000	1.10	154.00
Next 50,000 gallons		700,000	1.00	700.00
Over 100,000 gallons		9,373,700	.50	4,686.85
TOTALS		10,780,200		\$ 7,423.85

BILLING ANALYSIS SUMMARY

	<u>Gallons</u>	<u>Revenue</u>
5/8 Inch Meters	188,547,800	\$ 417,945.79
1.0 Inch Meters	25,625,500	49,339.21
1.5 Inch Meters	9,418,900	9,871.88
2.0 Inch Meters	18,354,700	18,319.01
3.0 Inch Meters	10,780,200	7,423.85
Ky. Dam Village ¹	<u>45,526,800</u>	<u>\$ 45,526.80</u>
Sub-total	298,253,900	\$ 548,426.54
Bulk Sales ²	<u>998,500</u>	<u>\$ 1,997.00</u>
Sub-total	299,252,400	\$ 550,423.54
Growth Adjustment ³	<u>4,644,000</u>	<u>\$ 10,062.00</u>
GRAND TOTAL	<u>303,896,400</u>	<u>\$ 560,485.54</u>

¹Kentucky Dam Village rate is \$1.00 per 1,000 gallons.

²Bulk Sale rate is \$2.00 per 1,000 gallons.

³Growth Adjustment based on 86 customers using 9,000 gallons per billing period.

APPENDIX D

COST OF SERVICE STUDY

ALLOCATION OF PLANT VALUE

	<u>Total</u>	<u>Commodity</u>	<u>Demand</u>	<u>Customer</u>
Source of Supply & Pumping Plant	\$ 858,446	0	\$ 858,446	\$ 0
Treatment Plant	41,829	0	41,829	0
Transmission, Distribution Mains & Storage	2,763,055	0	2,763,055	0
Services	1,162	0	0	1,162
Meters	424,927	0	0	424,927
Hydrants	82,377	0	0	82,377
General Plant ¹	<u>257,818</u>	<u>0</u>	<u>226,390</u>	<u>31,428</u>
TOTAL	\$4,429,614	0	\$3,889,720	\$539,894

¹Allocated based on overall weighted allocation of all other plant value.

SOURCE: 1992 Annual Report

ALLOCATION OF OPERATION & MAINTENANCE EXPENSE

	<u>Total</u>	<u>Commodity</u>	<u>Demand</u>	<u>Customer</u>
Source of Supply:				
Operation	\$ 13,074	\$ 0	\$ 13,074	\$ 0
Purchased Power	10,035	0	10,035	0
Pumping Station:				
Operation	6,189	0	6,189	0
Purchased Power	60,173	60,173	0	0
Treatment System:				
Operation	15,257	6,178	9,079	0
Maintenance	1,602	0	1,602	0
Transmission & Distribution:				
Purchased Power	3,038	0	3,038	0
Mains	47,193	0	47,193	0
Storage Facilities	873	0	873	0
Plant	15,397	0	0	15,397
Meters	25,763	0	0	25,763
Hydrants	6,503	0	0	6,503
Customer Billing and Collecting	44,053	0	0	44,053
Administration and General	176,496 ¹	0	87,942	88,554
TOTAL OPERATION & MAINTENANCE EXPENSE	\$425,646	\$66,351	\$179,025	\$180,270

¹Allocated based on overall weighted allocation of all other expenses, excluding purchased pumping power and chemicals.

ALLOCATION OF COST OF SERVICE

	<u>Total</u> \$	<u>Commodity</u> \$	<u>Demand</u> \$	<u>Customer</u> \$
Allocated Plant Value	4,429,614	0	3,889,720	539,894
Percentages	100.00%	0.00%	87.81%	12.19%
 Operation and Maintenance Expense	 425,646	 66,351	 179,025	 180,270
Capital-Related Expense ¹	412,860	0	362,540	50,320
 General Water Service Cost	 838,506	 66,351	 541,565	 230,590
Less Other Revenue	23,788	0	23,788	0
Less Bulk Sales	<u>1,997</u>	<u>0</u>	<u>1,997</u>	<u>0</u>
 Required Revenue From Rates	 \$ 812,721	 \$66,351	 \$515,780	 \$230,590

¹Capital Related Expense = Debt Service + Depreciation.
Allocation based on Allocated Plant Value.

CALCULATION OF CUSTOMER CHARGE

<u>Meter Size</u>	<u>Number of Meters</u>	<u>Equivalent Ratio</u>	<u>Equivalent 5/8" Meter</u>	<u>Weighted</u>	<u>Fixed⁽¹⁾</u>	<u>Customer Charge</u>
5/8"	3,577	1.0	3,577.0	\$ 3.64	\$5.76	\$9.41
1.0"	216	2.5	540.0	9.10	5.76	14.86
1.5"	14	5.0	70.0	18.20	5.76	23.96
2.0"	22	8.0	176.0	29.12	5.76	34.88
3.0"	3	15.0	45.0	54.60	5.76	60.36
4.0"	3	25.0	<u>75.0</u>	91.00	5.76	96.76
			4,483.0			

(1) Administrative and General and Customer Billing and Collecting Expenses are allocated based on number of bills. (\$132,607 + 23,010 bills = \$5.76 bimonthly)

All other costs based on size-weighted equivalents

**ALLOCATION OF COSTS OF SERVICE TO RATE BLOCKS
AND CALCULATION OF WATER RATES**

	<u>Total</u>	<u>First 10,000 Gallons</u>	<u>Next 40,000 Gallons</u>	<u>Over 50,000 Gallons</u>
Actual Water Sales:				
Thousand Gallons	302,897.900	151,648.300	65,513.500	85,736.100
Percent	100.00	50.07	21.63	28.31
Weighted Sales for Demand:				
Thousand Gallons	426,121.716	253,252.661	87,132.955	85,736.100
Percent	100.00	59.43	20.45	20.12
Allocation for Volumetric Costs:				
Commodity	\$ 66,351	\$ 33,219	\$ 14,351	\$ 18,781
Demand	<u>515,780</u>	<u>306,538</u>	<u>105,466</u>	<u>103,775</u>
TOTAL	\$582,131	\$339,757	\$119,817	\$122,556
 Rate Per 1,000 Gallons		 \$2.24	 \$1.83	 \$1.43

VERIFICATION OF RECOMMENDED RATES

CUSTOMER CHARGES

<u>Meter Size</u>	<u>Meters</u>	<u>Bi-Monthly Rate</u>	<u>Revenue</u>
5/8"	3,577	\$ 9.41	\$33,660
1.0"	216	14.86	3,210
1.5"	14	23.96	335
2.0"	22	34.88	767
3.0"	3	60.36	181
4.0"	3	96.76	<u>290</u>
			\$38,443

\$38,443 x 6 Billings = \$230,658

WATER CHARGES

<u>Increments</u>	<u>Gallons</u>	<u>Rate</u>	<u>Revenue</u>
First 10,000 gallons	151,648.300	\$2.24	\$339,692
Next 40,000 gallons	65,513.500	1.83	119,890
Over 50,000 gallons	85,736.100	1.43	<u>122,603</u>
			\$582,185

Customer Charges	\$230,658
Water Charges	582,185
Bulk Sales	1,997
Other	<u>23,788</u>
Total Revenue	\$838,628