Exhibit No.:
Issue(s): Weather Normalization
Witness: Dennis Patterson
Type of Exhibit: Direct
Sponsoring Party: MoPSC Staff
Case No.: WR-2000-281 &
SR-2000-282

ON BEHALF OF THE

MISSOURI PUBLIC SERVICE COMMISSION

UTILITY OPERATIONS DIVISION

DIRECT TESTIMONY

OF

DENNIS PATTERSON

MISSOURI-AMERICAN WATER COMPANY

CASE NO. WR-2000-281
CASE NO. SR-2000-282

Jefferson City, Missouri

April, 2000

DIRECT TESTIMONY

OF

DENNIS L. PATTERSON

MISSOURI-AMERICAN WATER COMPANY

CASE NO. WR-2000-281 & SR-2000-282

Q. Please state your name and business address.

A. My name is Dennis Patterson and my business address is Missouri Public Service Commission, P. O. Box 360, Jefferson City, MO 65102.

Q. What is your present position with the Missouri Public Service Commission (Commission)?

A. I am a Regulatory Economist in the Electric Department of the Utility Operations Division.

Q. Please review your educational background and work experience.

A. I was trained as an officer and aviator in the U.S. Army. I studied economics, math, sciences and languages, receiving a B.A. in Latin American Studies (University of Missouri, 1983) and an M.S. in Agricultural Economics (University of Missouri, 1989). I joined the Staff of the Commission in April, 1986. I established the Staff's centralized weather data base, and have continued to maintain and improve it by employing data and methods from reliable sources. I have been employed by the Commission, the Missouri Army National Guard, the University of Missouri, the U.S. Army Reserves, and the U.S. Army.

Q. What is the purpose of your direct testimony?

A. The first purpose of my direct testimony is to support my estimates of weather normalized gallons of water consumption per water meter per day (GMD), which are found at Schedule 1 attached to my direct testimony. The second purpose of my testimony is to present the data and calculations I employed to estimate my weather normalized GMD. This information is found at Schedules 2 through 7, also attached to my direct testimony.

Q. What were the customer classifications for which you calculated weather normalized GMD?

A. I have calculated these estimates for the Residential and Commercial customers in the Missouri service areas of the Missouri-American Water Company (Company or MAWC).

Q. What are the Company's Missouri service areas?

A. These service areas were Brunswick, Joplin, Mexico, Parkville (Platte County), St. Charles, St. Joseph, and Warrensburg.

Q. How are the Company's sales distributed among the service areas?

A. Nearly 85 percent of the Company's 1998 sales occurred in the Joplin, St. Charles and St. Joseph service areas. The smallest percentage occurred in Brunswick, with less than 0.3% of combined Residential and Commercial sales. The rest were shared more or less equally between Mexico, Parkville, and Warrensburg. The greatest Residential sales occurred in St. Charles, at almost 36 percent. The greatest Commercial sales occurred in Joplin and St. Joseph, at almost 36 percent each.

Q. How were your estimates used in this case?

A. I furnished these estimates to Staff witness Mark Griggs, for use in his calculations of normal water sales volumes.

I. WEATHER NORMALIZED GMD

Q. What were your estimates of weather normalized GMD for the Residential and Commercial rate classes, in each of the Company's Missouri service areas?

A. These estimates are presented at Schedule 1, attached to my direct testimony.

Q. What were the Company's weather normalized volumes, expressed as GMD?

A. I have presented my calculation of the Company's normal GMD by service area at Schedule 1 as well. The Company provided weather normalized volumes in M-gallons (units of 1 thousand gallons, or Mgal), by rate class and service area, with the corresponding projections of the number of meters at April of 2000. I calculated GMD by first converting those volumes to gallons, and then dividing the result by both the projected meters numbers and by 366 days, since Feb 29 was included in the 12 months ending April 30, 2000. These rate class and service area volumes and numbers of meters were derived from the working papers of Company witness John M. Watkins.

Q. By rate class and service area, what were the approximate impacts of the differences between your estimates and those of the Company?

A. Company's GMD calculation, the Staff's GMD calculation, my adjustments to Company's GMD and the impacts of these adjustments are also summarized in Schedule 1.

Q. How were these adjustments calculated?

A. The adjustments were calculated as the difference obtained by subtracting the Company's calculation of normal sales (expressed as GMD) from my calculation of weather normalized GMD.

Q. What would be the overall impact of your adjustments for the Residential and Commercial rate classes for the Company?

A. Relative to the Company's calculations of normal sales for April of 2000, the overall impact would be positive adjustments of approximately 188 million gallons (188,000 Mgal) for the Residential rate class, and approximately 50,000 Mgal for the Commercial rate class.

Q. What were the billing year length and number of meters used to estimate the impact of your adjustments?

A. The impacts were approximated by assuming a normal billing year length of 365 days, and by also assuming the Company's projected service area meter numbers for April of 2000.

Q. Why are your weather normalization coefficients more positive than those you calculated from the Company's normalized volumes?

A. This occurred for two reasons. First, my analysis is based on normal weather over the most recent thirty years, rather than average sales per customer per day over the last 10 years. Average GMD over the most recent 10 years is biased by the

inclusion of 1993, which was wet enough to cause the greatest flooding in many decades, and by the exclusion of dry years such as 1988. The most recent 30 years is less biased, because this period excludes neither cool, wet years like 1993 nor such hot, dry years as 1988.

Second, my analysis accounts for growth in non-weather-sensitive GMD. Over the two rate classes and seven service areas, the current non-weather-sensitive GMD is larger than the average of 10 years ago.

Q. Where is the trending information illustrated?

A. The graphs at Schedules 2-1 through 2-7 illustrate trends of weather normalized GMD by service are for the Residential rate class, while Schedules 3-1 through 3-7 illustrate the trends by service are for the Commercial rate class. The meters at Joplin, St. Charles and St. Joseph together account for almost 85% of the Company's Missouri Residential sales.

Q. What do the quantities on these graphs represent?

A. The "Residential GMD" are the historical data described above. "Predicted GMD" are the points taken from the regression line of my statistical analysis of the historical data with respect to the optimum specification of precipitation shortfall. The "Underlying Trend" is drawn through Predicted GMD data points that have had effects of each year's departure from normal shortfall and each year's estimated billing error removed. "Weather Adjusted GMD" are the Residential GMD that have had only that part of annual GMD removed that were due to that year's departure from normal weather. The "MAWC Normal" data points are the Company's April, 2000 normalized

sales in gallons, divided by the product of 366 days times the Company's number of meters at April, 2000.

Q. How should this trending information be interpreted?

A. The trending information shows that simple GMD averages over a period of years would be biased downward, not just for the Joplin and St. Charles service areas but for the Company overall. This is true because the current Underlying Trend values are about 15 GMD greater for Joplin and St. Charles than they were 7 to 10 years ago, and because these two service areas have so many meters. The overall effect of growth in GMD at Joplin and St. Charles dominates the lack of growth in other service areas.

Q. On the graph at Schedule 2-2, what caused the large differences between "Weather Adjusted GMD" and the "Underlying Trend" for the Residential rate class at Joplin in 1997 and 1998?

A. This difference occurred because the Joplin monthly sales data from the workpapers of Mr. Watkins include larger-than-usual water sales for the months of October, November and December of 1997, as well as for January of 1998. For example, the gallons sold in November of 1997 were about 50% larger than the average November since 1989, and more than twice as large as November, 1998. On the other hand, the sales for February and March of 1998 were significantly smaller than would be usual for these months. Since this occurred in months where summer weather was not a factor, I included indicators for 1997 and 1998 in the regression model to estimate the billing effects. The "Underlying Trend" does not include these billing effects, since their occurrence appears to be random.

Q. Are such differences for other service areas similarly explained?

A. Yes. They occur at random in other service areas. Another noticeable example would be the compensating positive and negative adjustments for St. Charles Residential GMD in 1995, 1996 and 1997 (Schedule 2-5). Such billing adjustments are required because errors occur in billing calculations and because meter readings are sometimes estimated or misread. They may also be required because customers are rerouted, because holidays cause the number of annual billing cycle days to vary from 365 days, and because meter reads occur later than the scheduled dates.

Such adjustments often compensate for each other. Compensating adjustments would be necessary in some instances because the traditional method for the correction of an overbilling (underbilling) has been to credit (debit) a succeeding bill by the amount that was in error. They would be necessary in other instances because delayed meter readings for a group of customers would cause a month's bills to be larger than the weather and scheduled number of billing days would indicate. In this case, the succeeding month's bills would be smaller by the same amount as well. These billing effects occur independently from precipitation shortfall and consumption trends, but the analysis must account for them in order to insure accuracy. Billing adjustment indicators are used for this purpose when calculating linear regressions.

II. ESTIMATION OF WEATHER NORMALIZED GMD

Q. How did you calculate your estimates of weather normalized GMD for each rate class and service area?

A. I first tabulated the available years of annual average number of meters and annual water sales in Mgal for the Residential and Commercial rate classes, in the Company's Missouri service areas. I then used these quantities to calculate GMD for each year as described previously. I then matched these annual GMD to annual precipitation shortfall (shortfall) that I had calculated from official weather observations, coding shortfall as departures from the appropriate 1969-1998 average. Finally, I calculated repeated linear regressions where the specifications of shortfall were refined after comparing the previous results. When the optimum specifications of shortfall were determined, the intercept or constant GMD terms from the corresponding linear regressions already corresponded to normal conditions, and could be used without modification to calculate the adjustments found in Schedule 1.

Q. What were the annual billing data that you used in your analysis?

A. I used data from the billing years ending in December of the years 1984 through 1998. These billing data are presented by service area at Schedules 4-1 through 4-7 for Residential and Commercial rate classes.

Q. What were the sources of the annual billing data?

A. The data for 1989 through 1998 were read from the working papers of Mr. Watkins. The billing data for the earlier years were read from the working papers of Company witnesses from past rate cases.

Q. What were the annual weather data used in your analysis?

A. These data are presented for Joplin, Mexico, Parkville, St. Charles and St. Joseph at Schedules 5-1 through 5-5. Weather did not enter the normalization for the Residential rate class at Brunswick or Warrensburg. Weather did not enter the

normalization for the Commercial rate class at Brunswick, Joplin, Mexico or Warrensburg.

Q. What weather quantity was used in the regression models?

A. The independent variable used in the regression models is the departure from normal precipitation shortfall (shortfall). The regression variable is labeled "DNSHORT," and is found at the far right-hand column of the schedule. The intermediate quantities used to calculate shortfall are found in the middle columns, while aggregations of the official meteorological data that these were based on are found toward the left. The GMD column contains GMD values for the Residential rate class, which were used in the iterations of regression models from which the water accounting coefficients were selected for the optimum specification of precipitation shortfall. Regressions for the Commercial Class used the optimum shortfall data that were estimated in the Residential analysis. The details of soil water accounting and the specification of precipitation shortfall are discussed in my working papers.

Q. How did you estimate normalized GMD for the rate class and service area groups where weather did not enter the analysis?

A. GMD for these groups was normalized with respect to trends and shifts in annual GMD.

Q. What were the statistical results of your analysis?

A. The statistical results are presented at Schedules 6-1 through 6-7 for the Residential rate class, and Schedules 7-1 through 7-7 for the Commercial rate class. The results are presented as columns of estimates based on coefficients from the

regression results. Input data columns and linear regression models appear below the estimates.

Q. What was the statistical confidence level of your results?

A. When other effects such as billing adjustments and trends are accounted for, the regression coefficients for precipitation shortfall were highly significant at the 1% confidence level in the cases where this variable was appropriate. The linear regressions themselves were highly significant in most cases as well.

Q. Were there exceptions?

A. Yes, there was one. The analysis for the Warrensburg, Missouri, Residential class was an exception, because the Residential class annual billing data contained errors that cause most years to be related to previous years. In this case, when one year exhibited far higher GMD than would be indicated by the weather, a following year would exhibit far fewer. The statistical term for this condition is negative autocorrelation.

Autocorrelation, whether positive or negative, causes statistical estimates to be unreliable but may usually be corrected by standard statistical means. In this case, the autocorrelation was so severe that it appeared to mask any weather effects for the Warrensburg Residential rate class. The standard error about an estimate of the annual average GMD was wide enough to include the Company's estimate. Therefore, the Company's method of estimating normal GMD for the Warrensburg Residential class appears to be about the best that can be done given the quality of the data.

Q. How were your results put to use in this case?

A. The regression models returned intercept or constant terms that were equal to the April, 2000 weather normalized GMD. With the exceptions just noted, the PSC Staff's "Normalized Gallons per Meter per Day" values in Schedule 1 are equal to these intercept terms. These values were passed on to Mr. Griggs.

Q. How did you specify your models so that the intercept term could be used in this way?

A. The precipitation shortfall variable (DNSHORT) was coded by subtracting the normal from each year's value, so that DNSHORT would be equal to zero in the normal year that would end in April, 2000. All other independent variables were specified so that they would be equal to zero in April, 2000, as well. Therefore, the intercept term was identically the GMD that would result under normal shortfall conditions, with base usage at the April, 2000 level, for a billing year with no billing adjustments. This constituted the desired weather-normalized GMD, and no further calculations were necessary.

Q. Does this conclude your direct testimony?

A. Yes, it does.

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the Matter of Missouri-American Water Company's Tariff Sheets Designed to Implement General Rate Increases for Water and Sewer Service provided to Customers in the Missouri Service Area of the Company.	)))))	CASE NO. WR-2000-281 et al

AFFIDAVIT OF DENNIS PATTERSON

STATE OF MISSOURI)
) ss
COUNTY OF COLE)

Dennis Patterson, of lawful age, on his oath states: that he has participated in the preparation of the foregoing written testimony in question and answer form, consisting of 11 pages of testimony to be presented in the above case, that the answers in the attached written testimony were given by him; that he has knowledge of the matters set forth in such answers; and that such matters are true to the best of his knowledge and belief.

Dennis Patterson

Subscribed and sworn to before me this 3rd day of April, 2000.

Notary Public

My commission expires _____

SHARON S WILES
NOTARY PUBLIC STATE OF MISSOURI
COLE COUNTY
MY COMMISSION EXP. AUG. 23,2002

Missouri American Water Company
Rate Case No. WR-2000-281
Residential Rate Class
Normalization of Gallons per Customer per Day

Normalizations at April, 2000

Billing District	MAWC* Projected Meters	MAWC* Normalized Gallons Per Meter per Day	MAWC* Normalized 365-day M-Gallons	PSC Staff** Projected Meters	PSC Staff** Normalized Gallons Per Meter per Day	PSC Staff** Normalized 365-day M-Gallons	Adjustment: PSC Staff less MAWC Projected Meters	Adjustment: PSC Staff less MAWC Normalized Gallons Per Meter per Day	Adjustment: PSC Staff less MAWC Normalized 365-day M-Gallons
Brunswick	407	124.8	18,545	393	124.8	17,907	(14)	0.0	(638)
Joplin	18,832	194.0	1,333,419	18,832	202.4	1,390,938	0	8.4	57,519
Mexico	4,404	162.9	261,910	4,404	159.7	256,674	0	(3.3)	(5,236)
Parkville	4,125	272.4	410,106	4,125	287.6	432,997	0	15.2	22,890
St. Charles	25,548	267.8	2,497,475	25,548	280.1	2,612,039	0	12.3	114,564
St. Joseph	27,351	184.7	1,843,821	27,351	184.6	1,843,131	0	(0.1)	(690)
Warrensburg	5,312	184.8	358,391	5,312	184.8	358,391	0	0.0	0
Service Area Total	85,979	214.3	**6,723,668**	85,965	220.3	**6,912,078**	(14)	6.0	**188,410**

Missouri American Water Company
Rate Case No. WR-2000-281
Commercial Rate Class
Normalization of Gallons per Customer per Day

Normalizations at April, 2000

Billing District	MAWC* Projected Meters	MAWC* Normalized Gallons Per Meter per Day	MAWC* Normalized 365-day M-Gallons	PSC Staff** Projected Meters	PSC Staff** Normalized Gallons Per Meter per Day	PSC Staff** Normalized 365-day M-Gallons	Adjustment: PSC Staff less MAWC Projected Meters	Adjustment: PSC Staff less MAWC Normalized Gallons Per Meter per Day	Adjustment: PSC Staff less MAWC Normalized 365-day M-Gallons
Brunswick	75	214.1	5,860	75	214.1	5,860	0	0.0	0
Joplin	3,180	868.8	1,008,439	3,180	833.7	967,657	0	(35.1)	(40,782)
Mexico	483	546.8	96,404	483	615.1	108,438	0	68.3	12,034
Parkville***	317	903.7	104,560	317	1089.6	126,074	0	185.9	21,515
St. Charles	824	1310.3	394,080	824	1338.8	402,660	0	28.5	8,580
St. Joseph	3,222	804.2	945,808	3,222	855.4	1,006,022	0	51.2	60,215
Warrensburg	597	873.3	190,296	597	819.3	178,532	0	(54.0)	(11,764)
Service Area Total	8,698	864.8	**2,745,446**	8,698	880.5	**2,795,242**	0	15.7	**49,796**

Crosscheck Parkville Commercial Class with and without Riverboat Casino									
Parkville:									
Without Casino	316	764.0	88,122	316	950.5	109,636	0	186.5	21,515
Casino	1	45158.9	16,438	1	45158.9	16,438	0	0.0	0
Total With Casino:	317	903.7	104,560	317	1089.6	126,074	0	185.9	21,515

Notes and Sources of Data

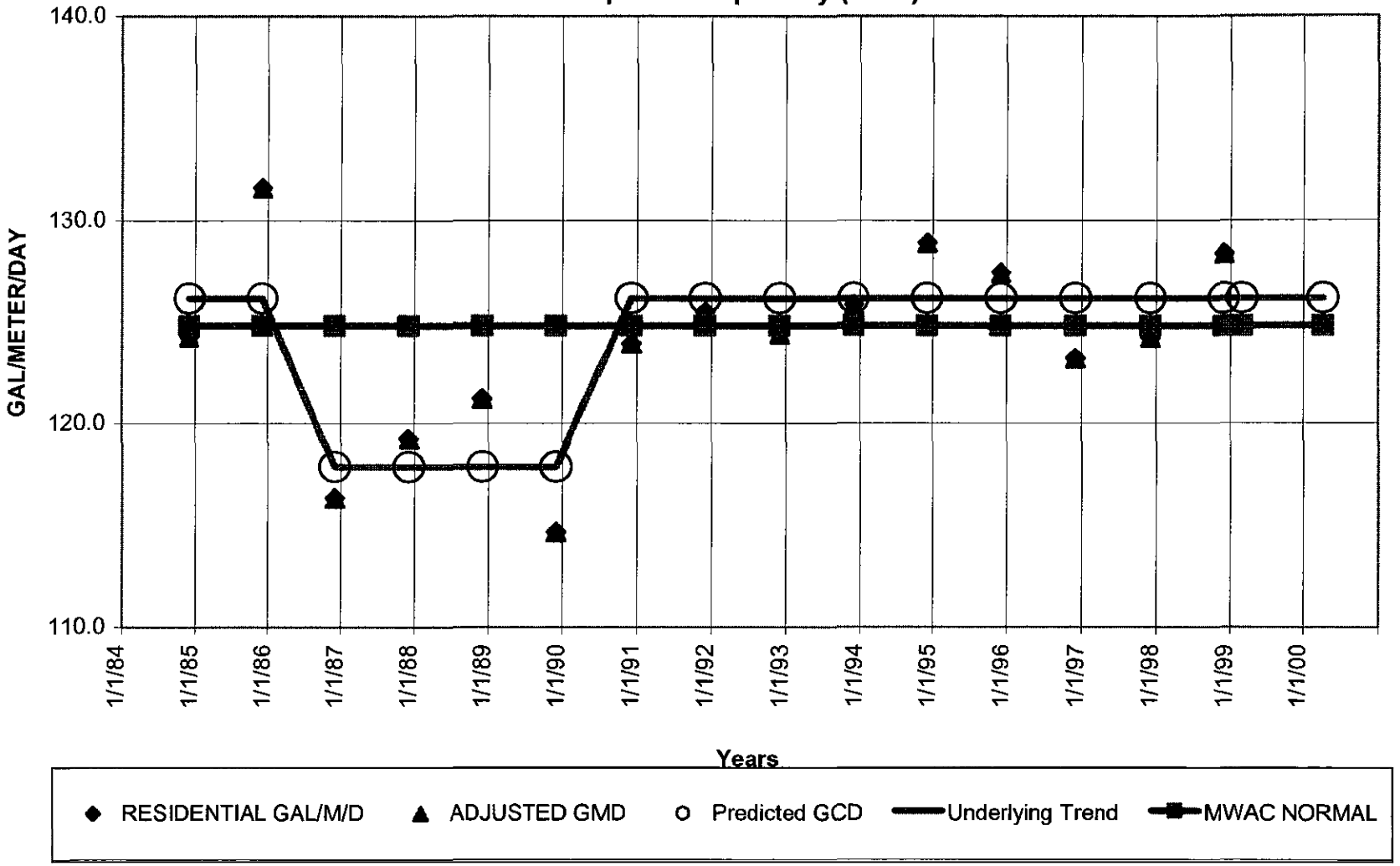
* MAWC volumes and meter counts at 4/2000 are based on the "Worksheet" page of the WATERADJ.XLS spreadsheet file in the workpapers of John M. Watkins. Adjustments were included in the Parkville Commercial class to compensate for the high-volume casino customer discussed below.

**The Staff's normalized volumes at 04/2000 are based the Staff's normal Gallons per Customer per Day multiplied by the MAWC meter counts just described. The historical data dating from 1989 through 1998 were based on the appropriate pages of WATERADJ.XLS from the workpapers of John M. Watkins in the present case. Historical data from 1984 through 1988 were based on MAWC workpapers from past rate cases. The Parkville Commercial billing data from 1994 through 1998 included volumes from the casino customer discussed below, so that normalized Gallons per Customer per Day and total M-Gallons include this customer. The Staff chose not to include data from the March, 1999 billing year, since it contained weather from the same summer months as the 1998 billing year.

*** Parkville Commercial meters include a casino as one meter from 1996 forward, with 12-month volumes tabulated from John M. Watkins workpapers. For 1994 and 1995, the casino was assigned a volume-based fraction of one meter. The MAWC and Staff normalized volumes include Total MGAL and Gallons per Meter per Day calculations that are based on this meter count.

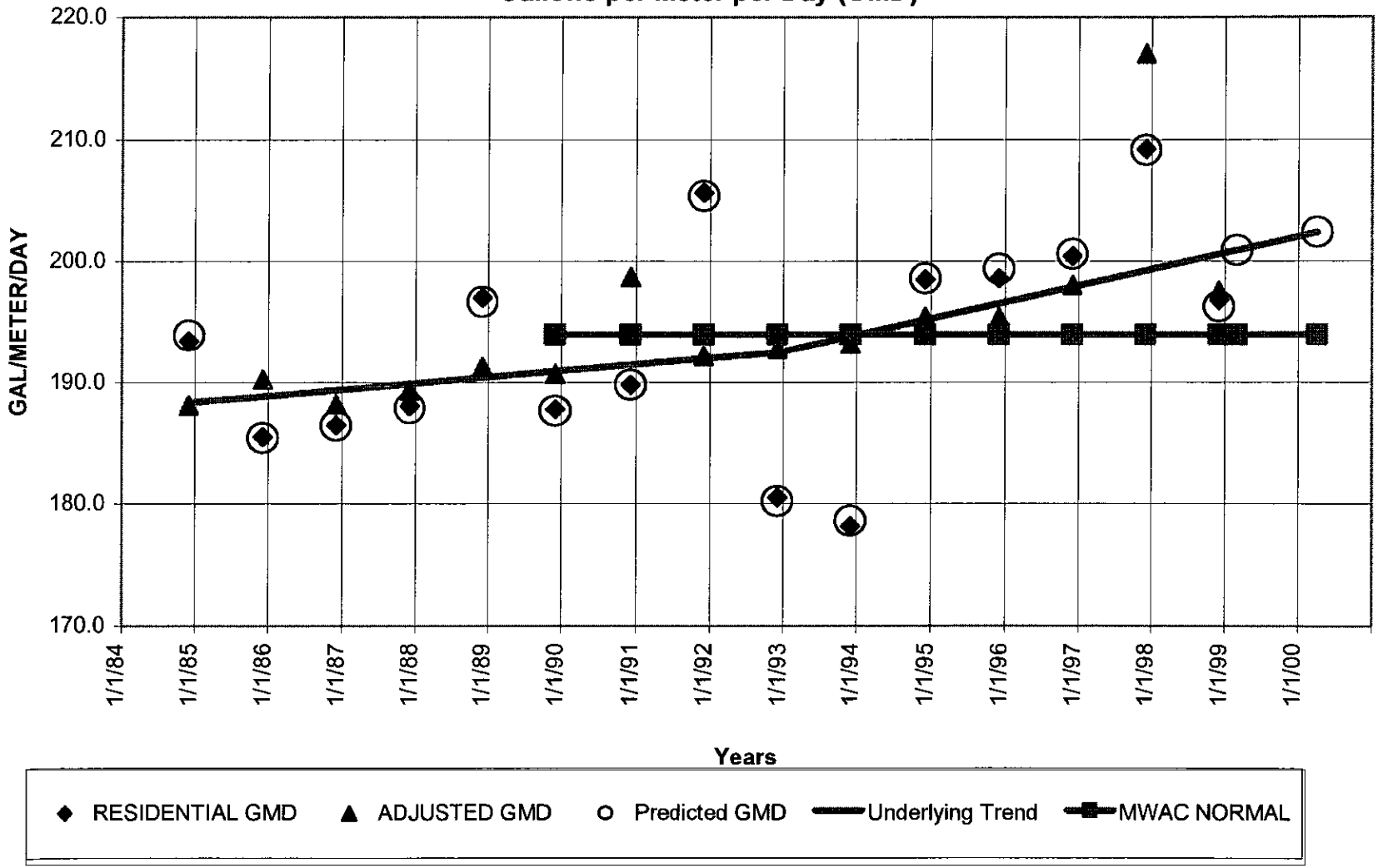
Schedule 1

Missouri American Water Company
WR-2000-281
Brunswick Residential Water Sales
Gallons per Meter per Day (GMD)



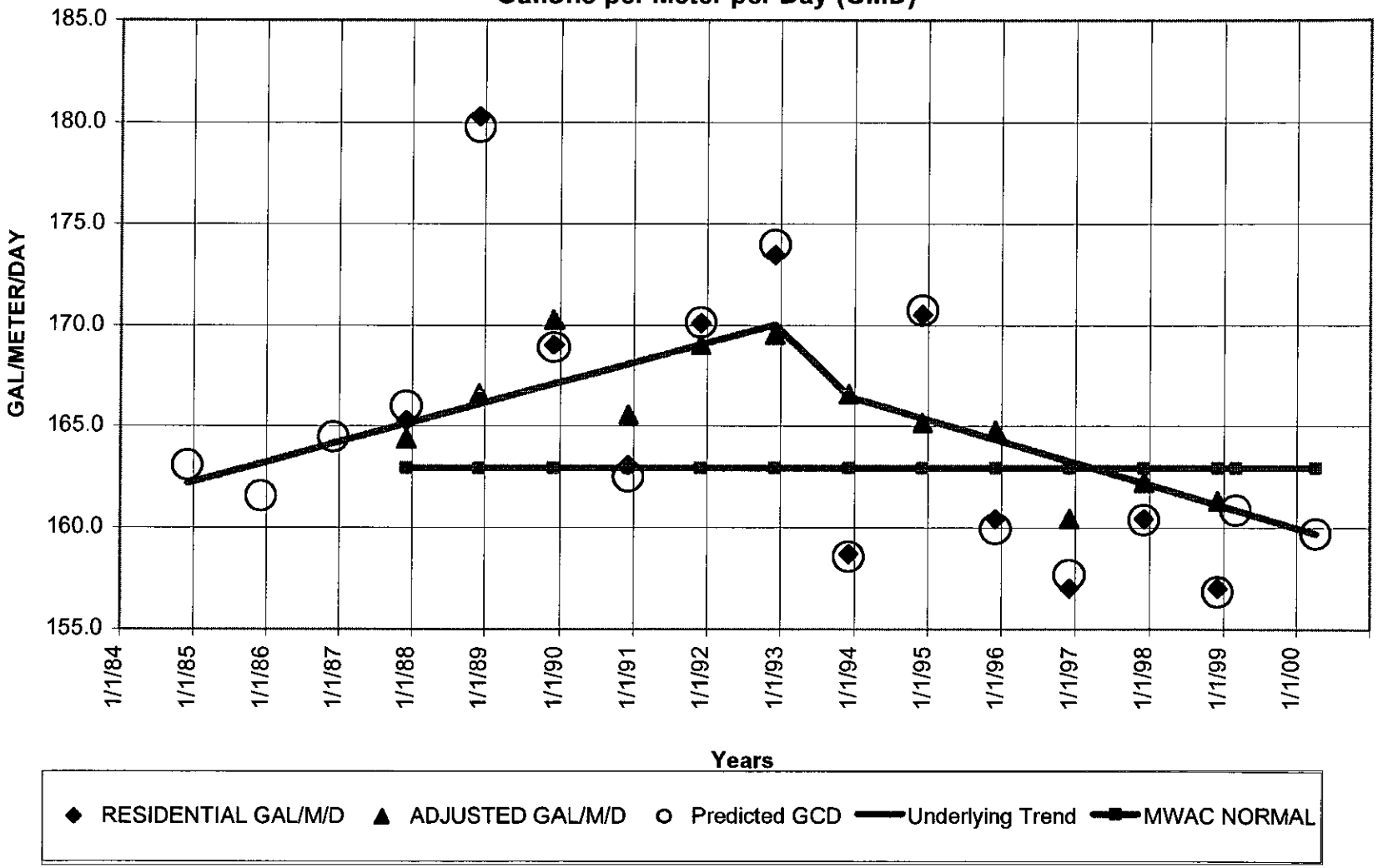
Schedule 2-1

Missouri American Water Company
WR-2000-281
Joplin Water Sales
Gallons per Meter per Day (GMD)



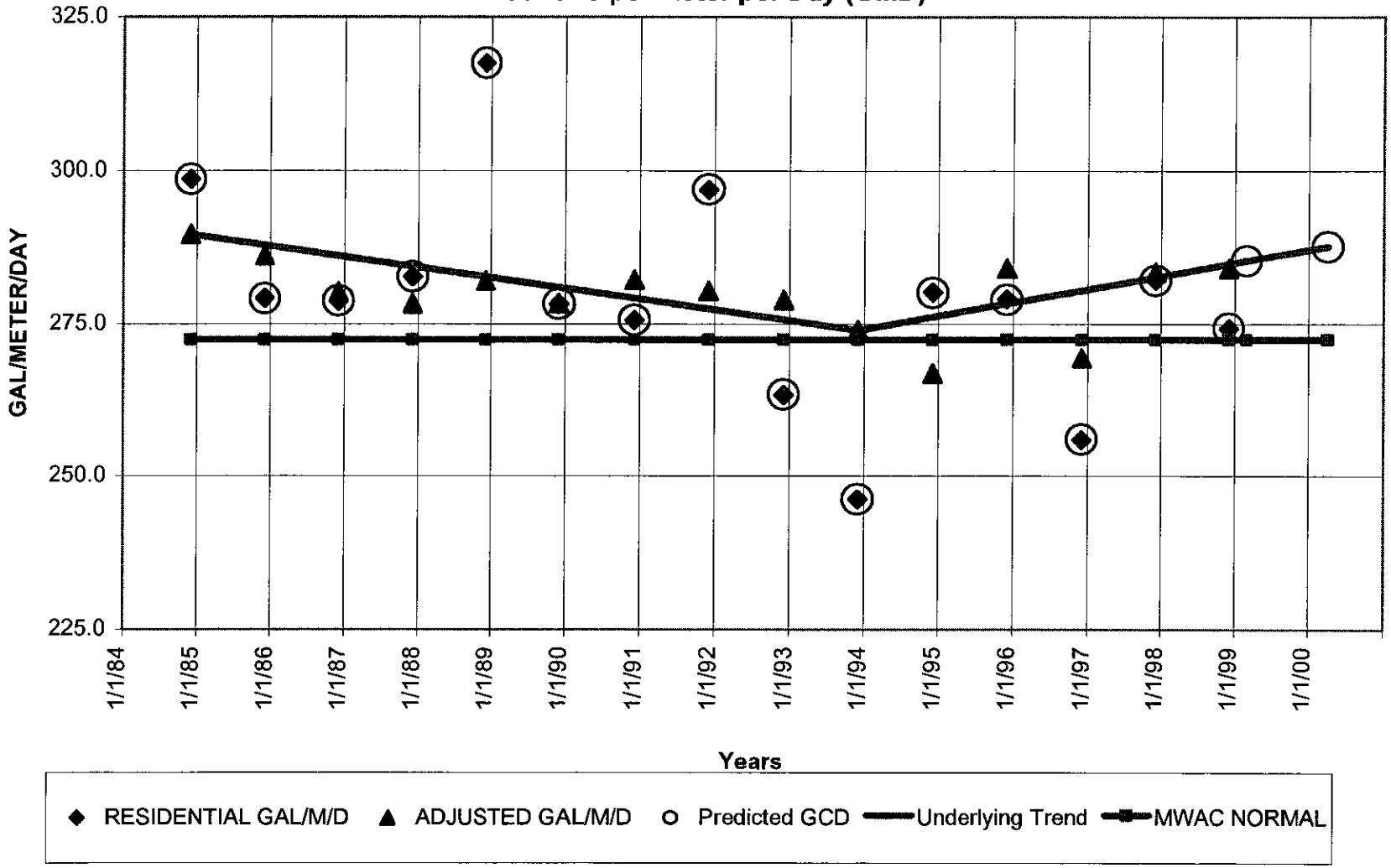
Schedule 2-2

Missouri American Water Company
WR-2000-281
Mexico Residential Water Sales
Gallons per Meter per Day (GMD)



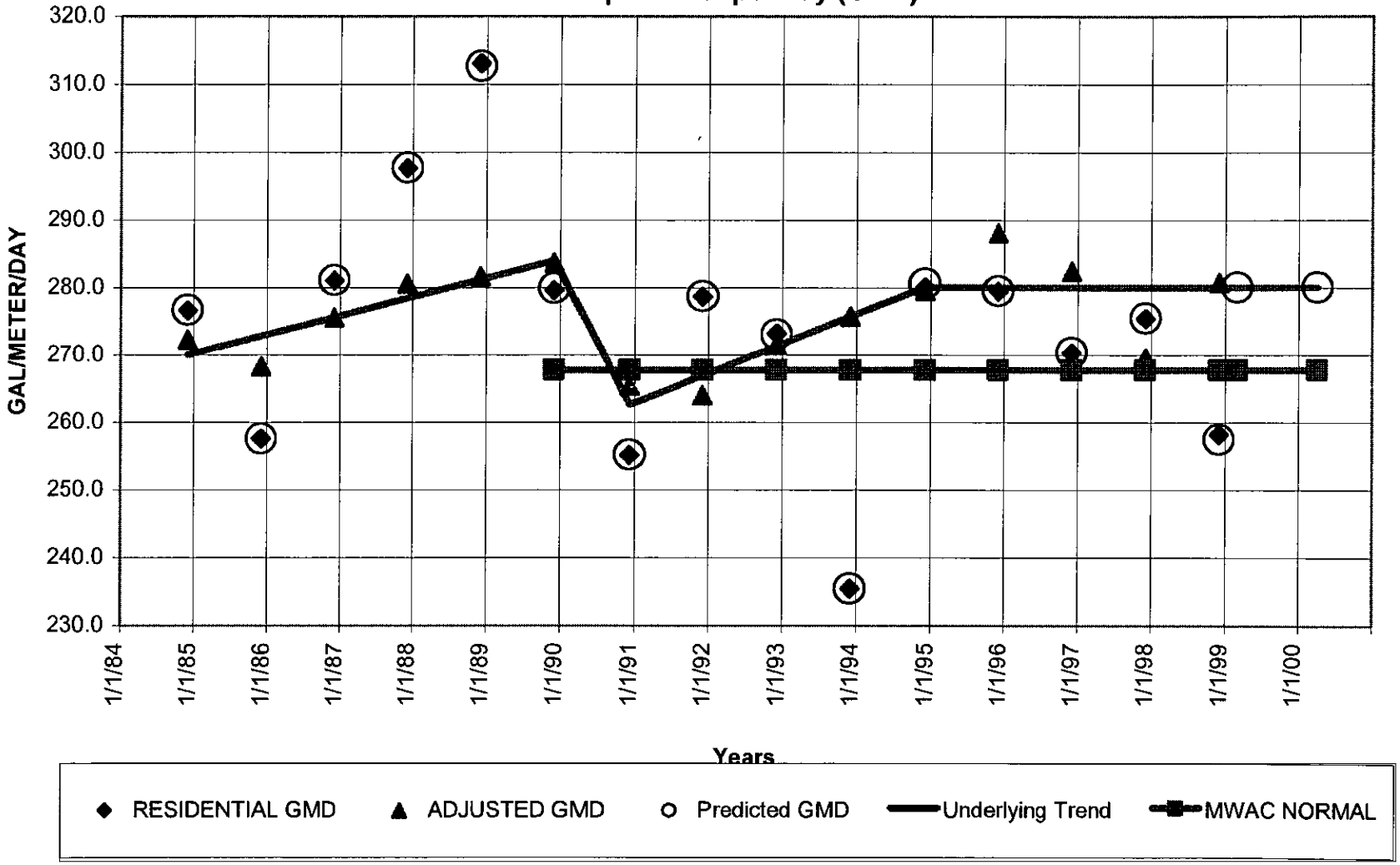
Schedule 2-3

Missouri American Water Company
WR-2000-281
Parkville Residential Water Sales
Gallons per Meter per Day (GMD)



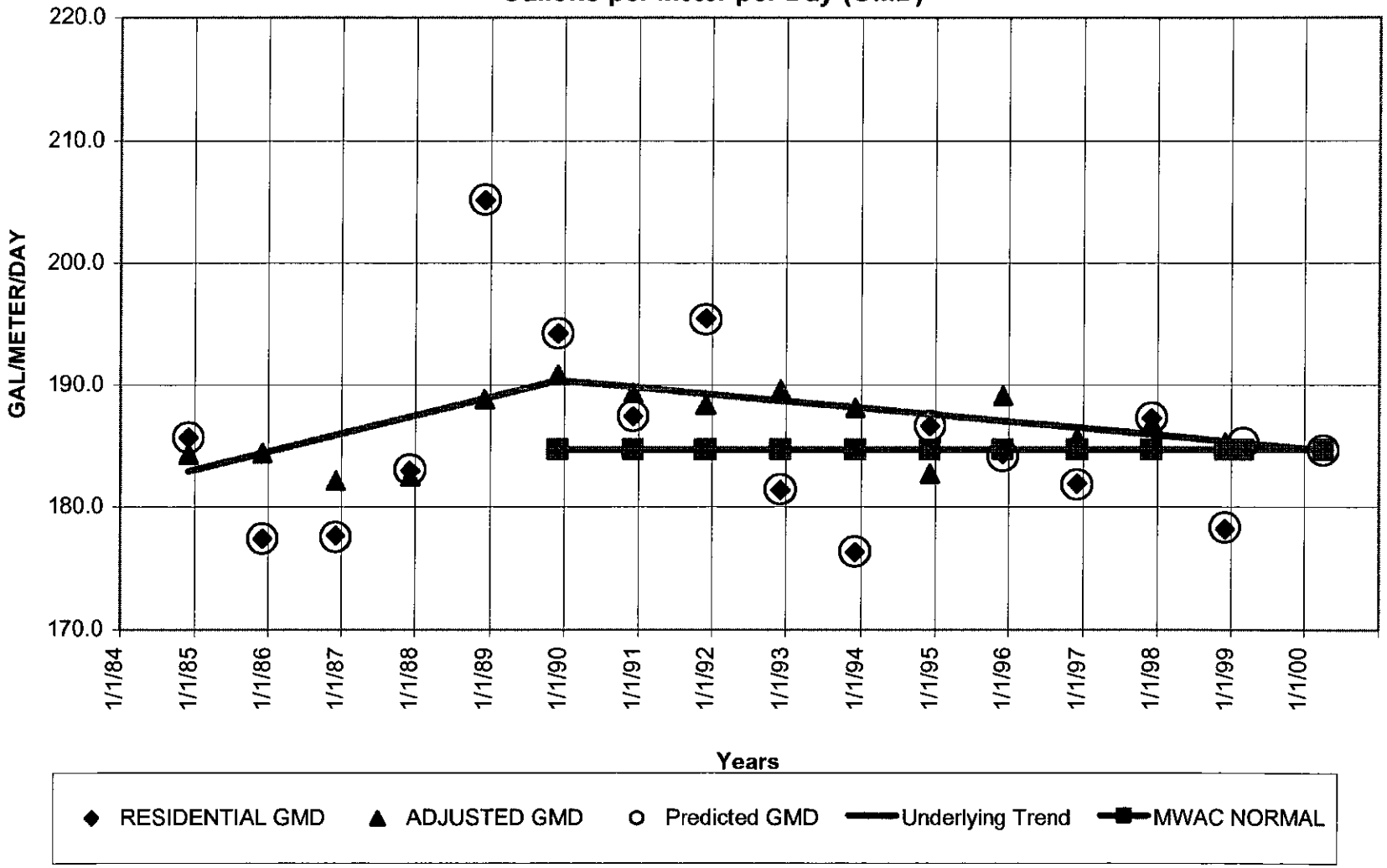
Schedule 2-4

Missouri American Water Company
WR-2000-281
St. Charles Residential Water Sales
Gallons per Meter per Day (GMD)



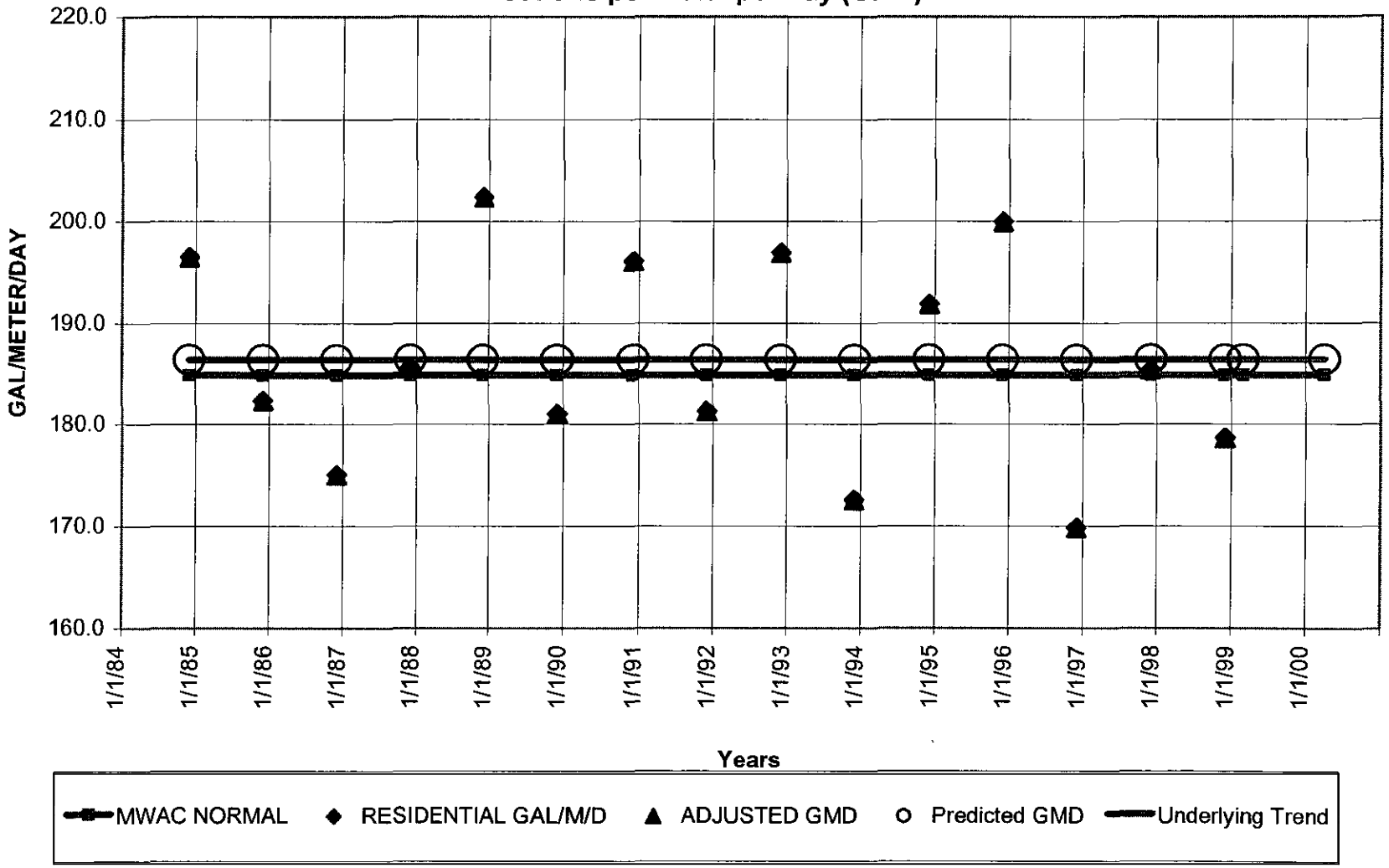
Schedule 2-5

Missouri American Water Company
WR-2000-281
St. JosephResidential Water Sales
Gallons per Meter per Day (GMD)



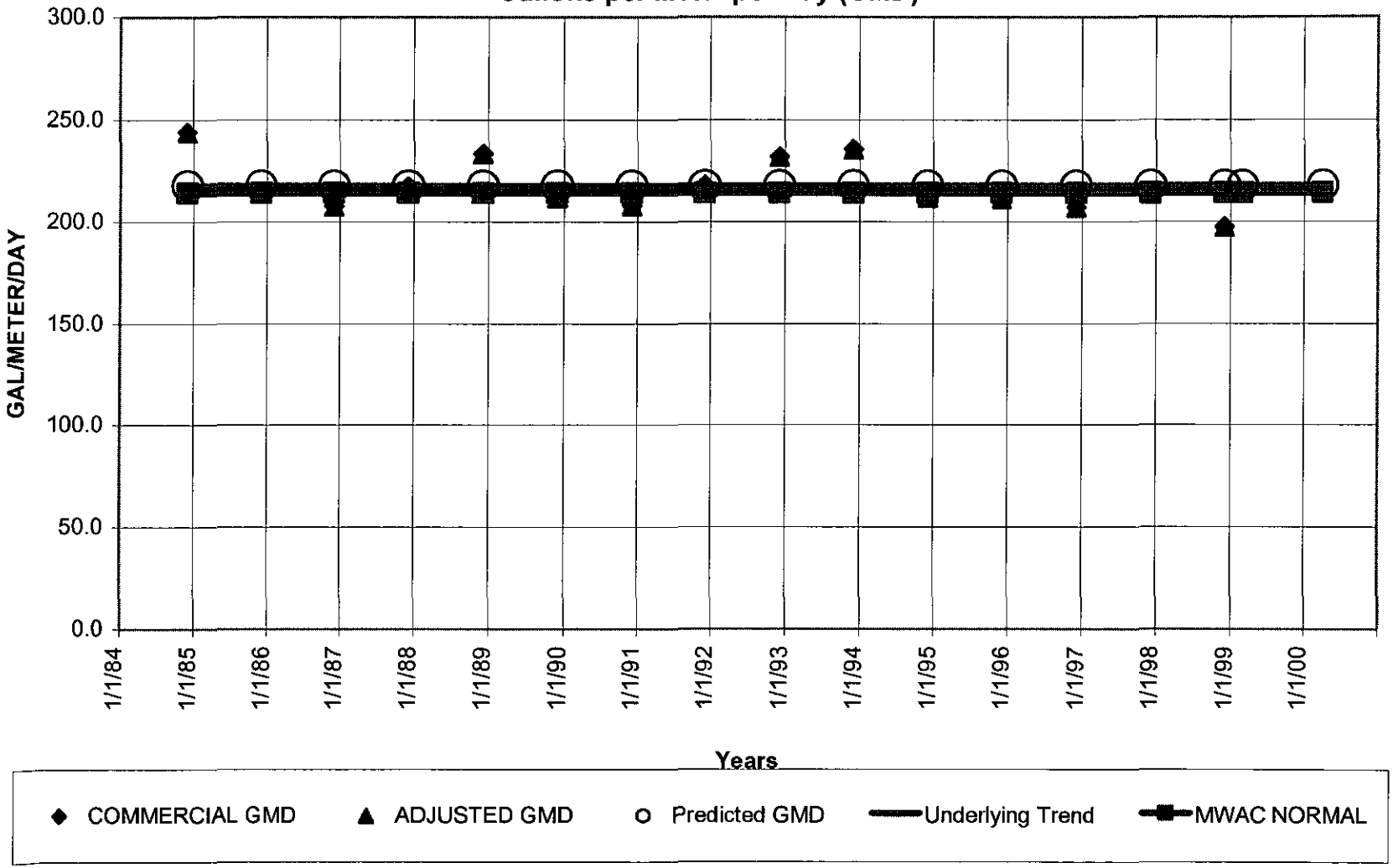
Schedule 2-6

Missouri American Water Company
WR-2000-281
Warrensburg Residential Water Sales
Gallons per Meter per Day (GMD)



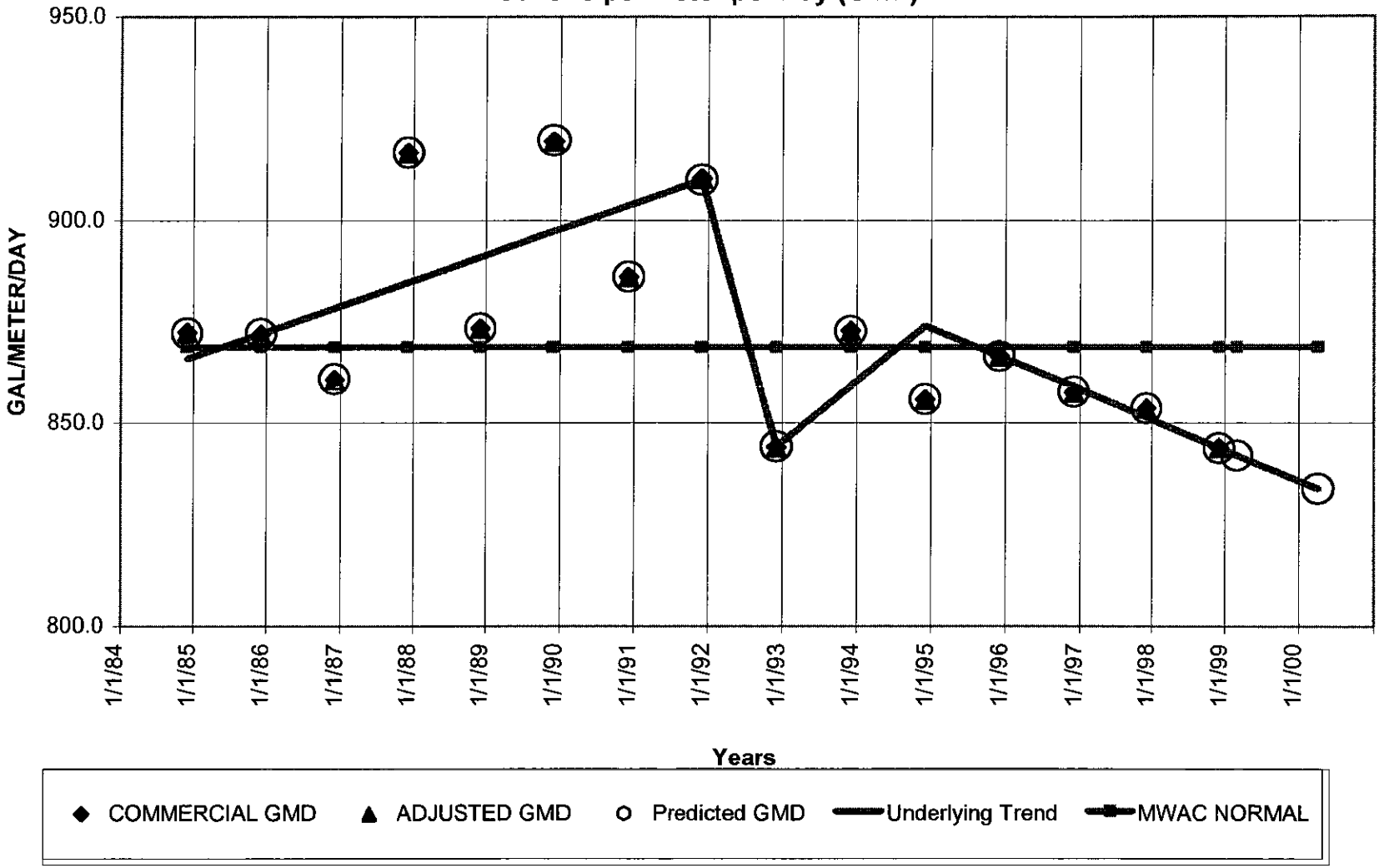
Schedule 2-7

Missouri American Water Company
WR-2000-281
Brunswick Commercial Water Sales
Gallons per Meter per Day (GMD)



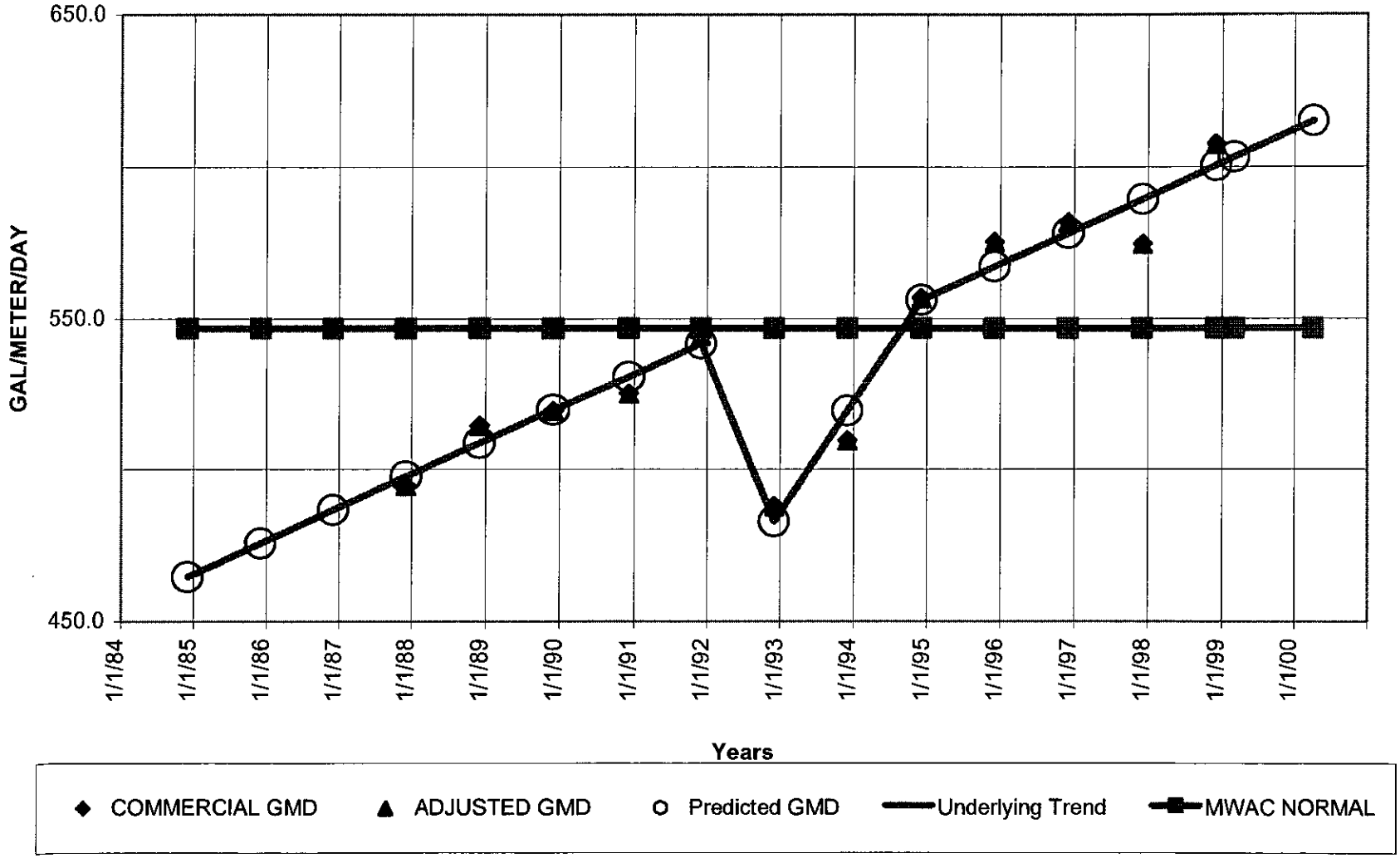
Schedule 3-1

Missouri American Water Company
WR-2000-281
Joplin Commercial Water Sales
Gallons per Meter per Day (GMD)



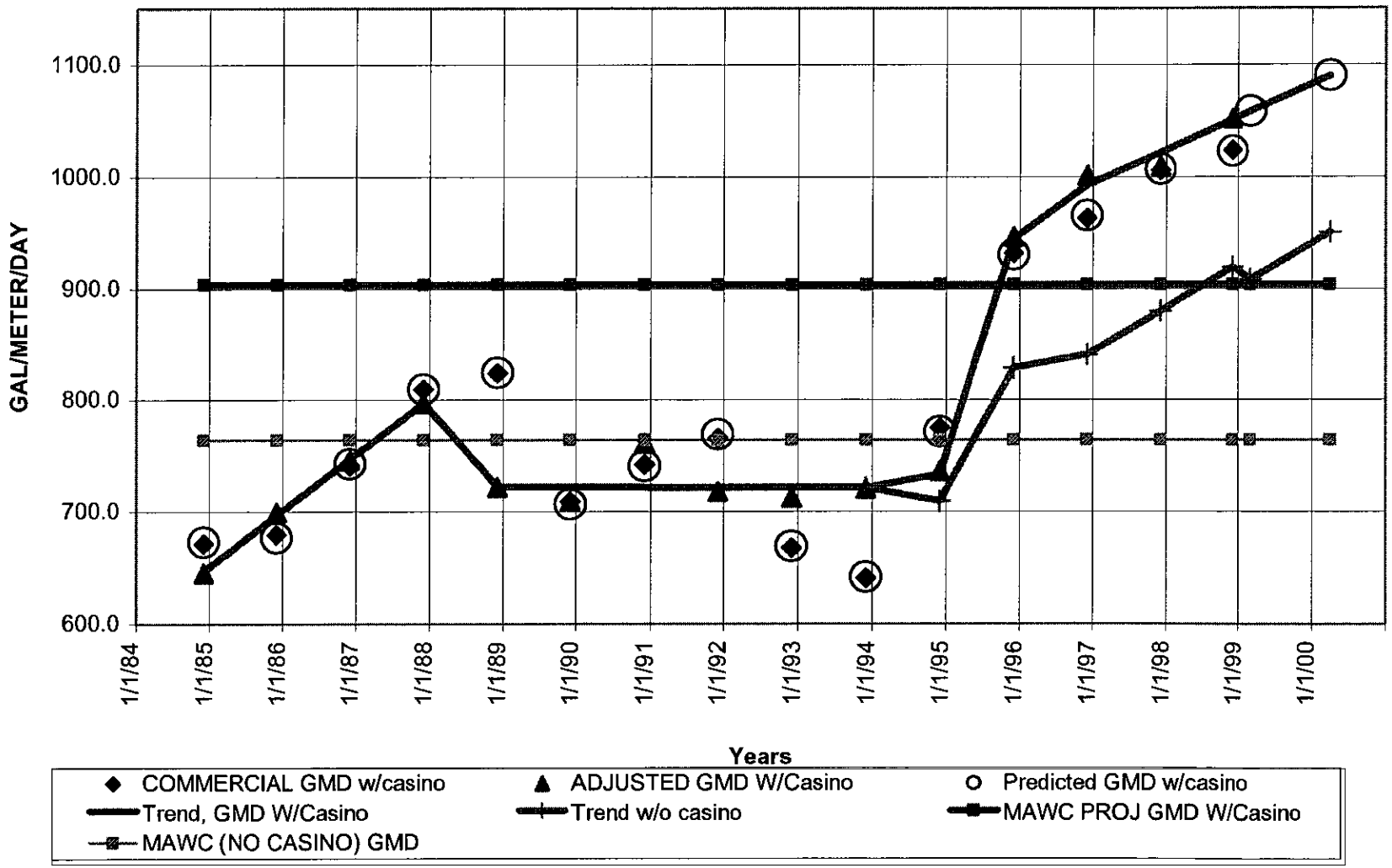
Schedule 3-2

Missouri American Water Company
WR-2000-281
Mexico
Commercial Water Sales



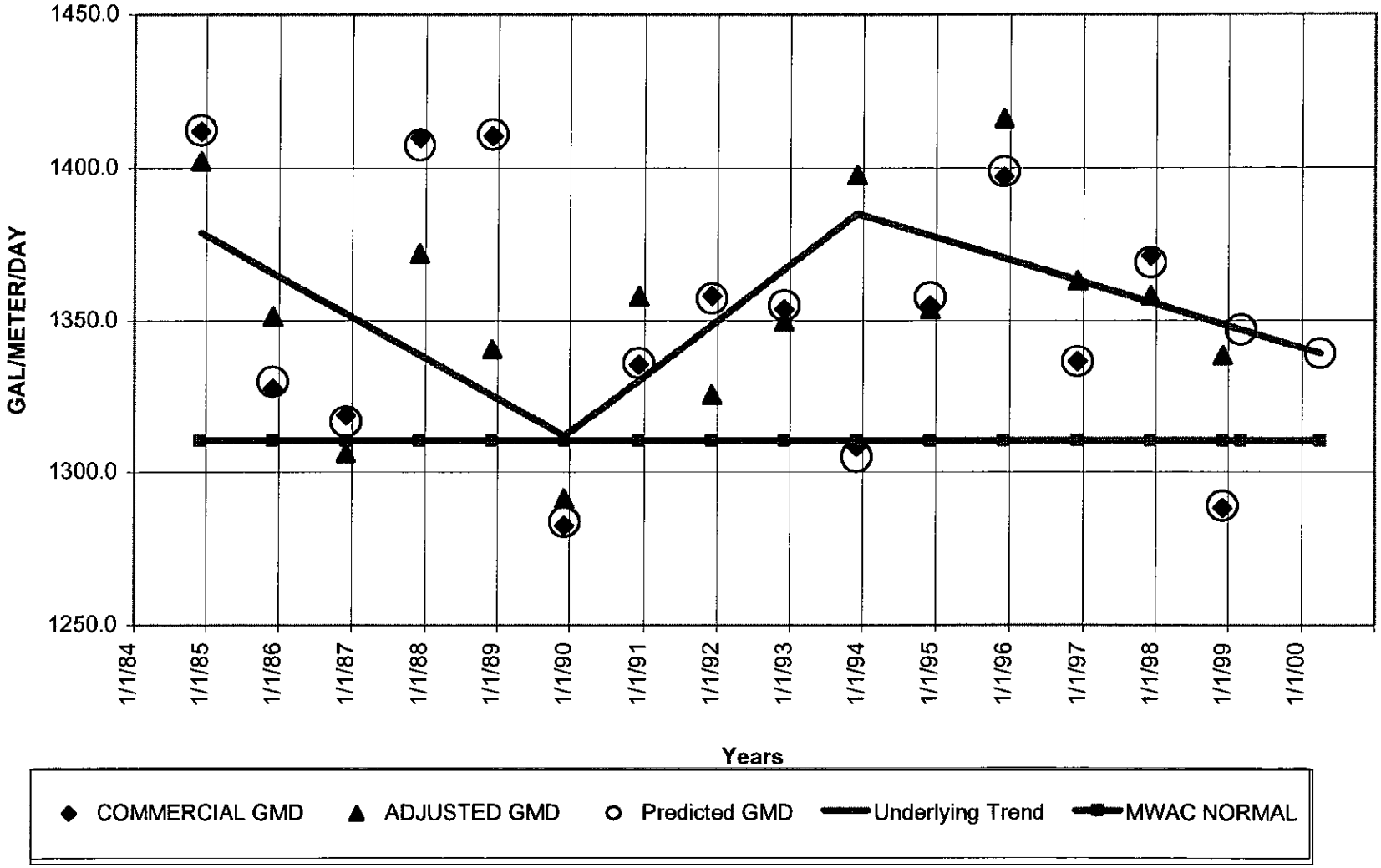
Schedule 3-3

Missouri American Water Company
WR-2000-281
Parkville
Commercial Water Sales



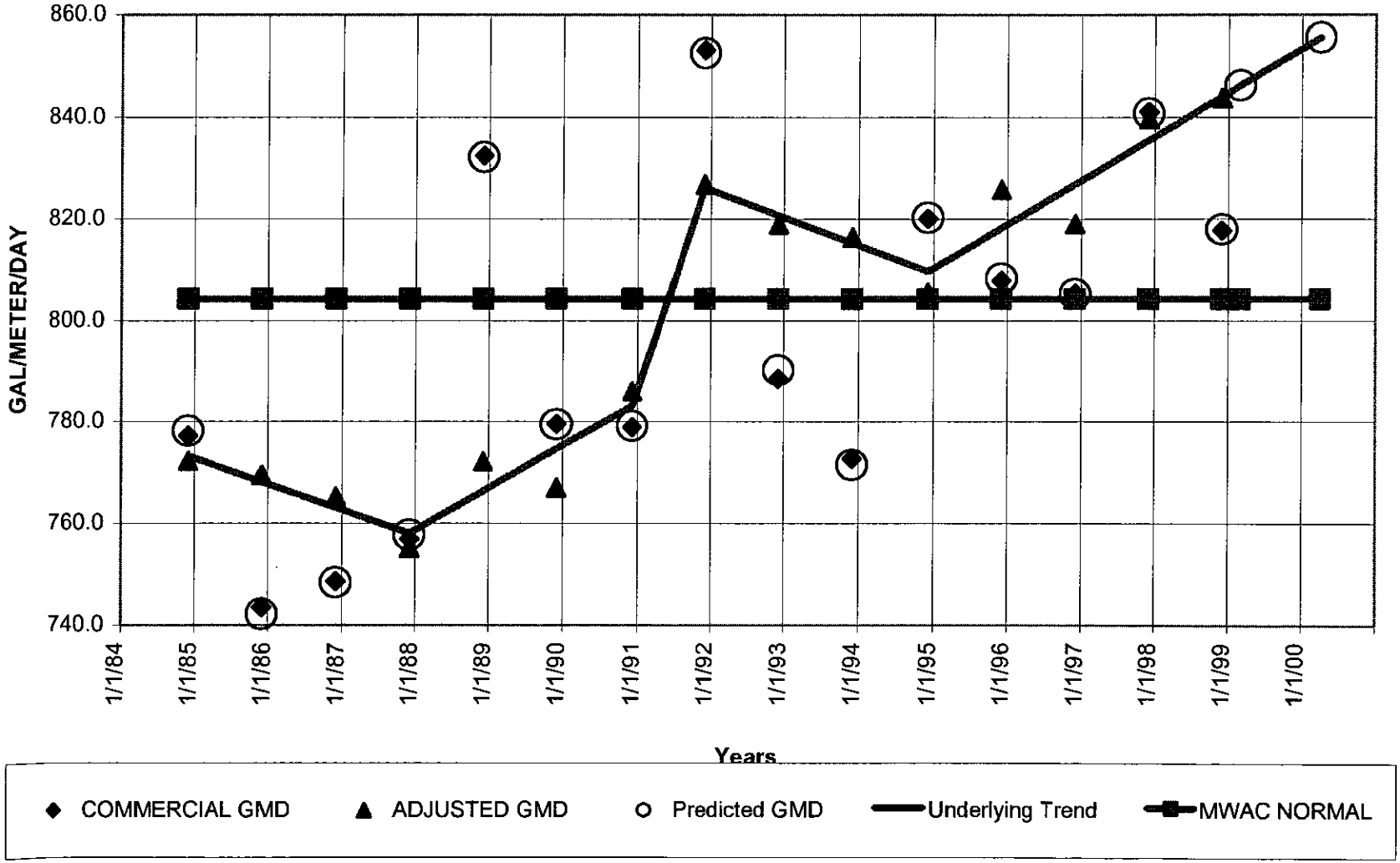
Schedule 3-4

Missouri American Water Company
WR-2000-281
St. Charles
Commercial Water Sales



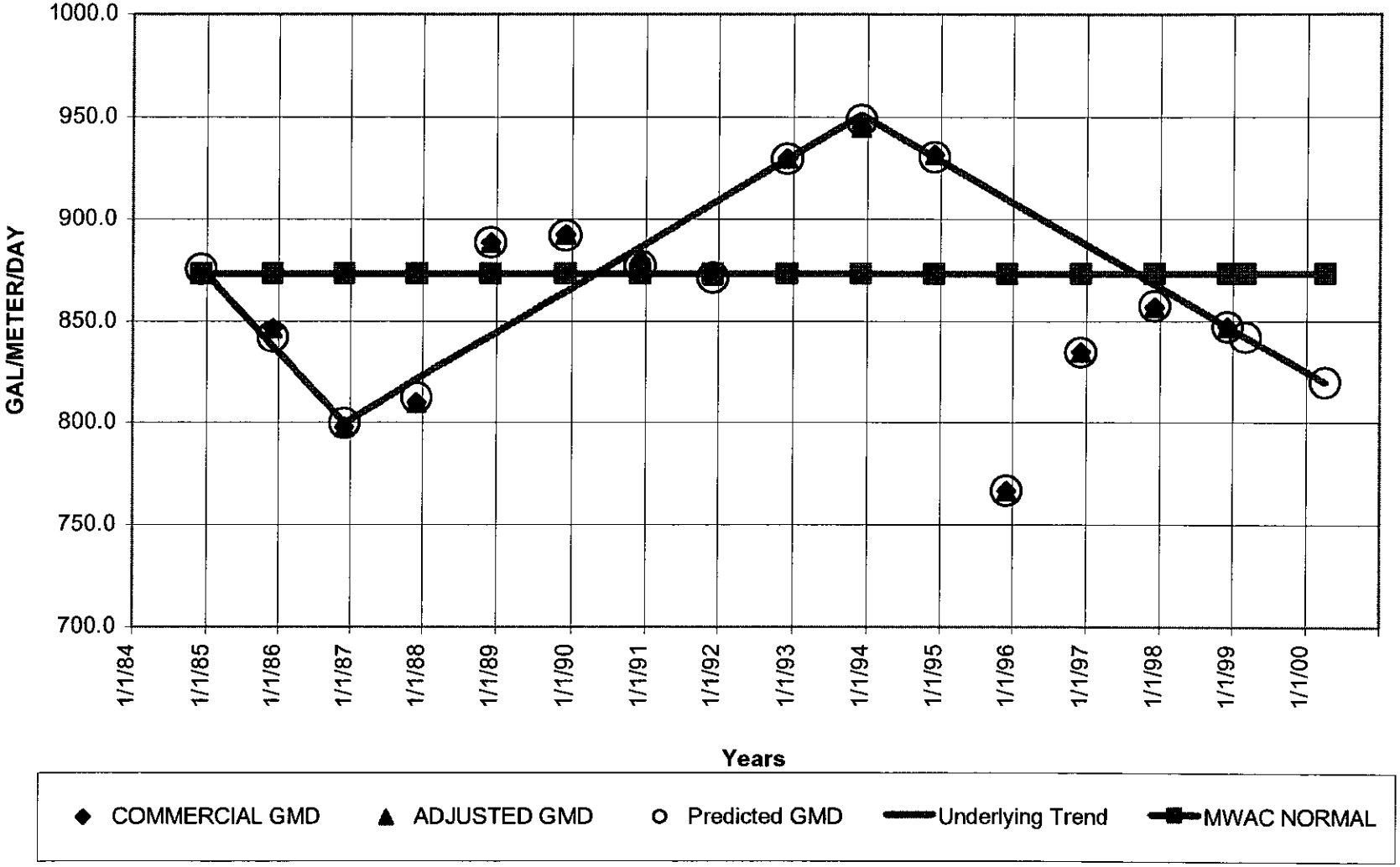
Schedule 3-5

Missouri American Water Company
WR-2000-281
St. Joseph
Commercial Water Sales



Schedule 3-6

Missouri American Water Company
WR-2000-281
Warrensburg
Commercial Water Sales



Schedule 3-7

MISSOURI AMERICAN WATER COMPANY WR-2000-281
BRUNSWICK RESIDENTIAL SALES

BILLING YEAR	SALES, MGAL	RESIDENTIAL METERS	NOMINAL DAYS	RESIDENTIAL GAL/M/D
12/1/84	20,512	451	366	124.3
12/1/85	21,328	444	365	131.6
12/1/86	18,468	435	365	116.3
12/1/87	18,613	428	365	119.2
12/1/88	19,251	434	366	121.2
12/1/89	18,016	431	365	114.6
12/1/90	19,717	436	365	123.9
12/1/91	19,651	429	365	125.5
12/1/92	19,562	430	366	124.4
12/1/93	19,118	416	365	125.9
12/1/94	19,409	396	365	134.2
12/1/95	19,015	409	365	127.4
12/1/96	18,153	403	366	123.2
12/1/97	17,849	394	365	124.2
12/1/98	18,413	393	365	128.4
3/1/99	#N/A	396	365	#N/A
4/1/00	#N/A	407	366	#N/A

MISSOURI AMERICAN WATER COMPANY WR-2000-281
BRUNSWICK COMMERCIAL SALES

BILLING YEAR	SALES, MGAL	COMMERCIAL METERS	NOMINAL DAYS	COMMERCIAL GAL/M/D
12/1/84	7,142	80	366	243.9
12/1/85	6,243	80	365	213.8
12/1/86	6,060	80	365	207.5
12/1/87	6,181	78	365	217.3
12/1/88	6,550	77	366	233.4
12/1/89	5,769	75	365	211.9
12/1/90	5,370	71	365	207.9
12/1/91	5,676	71	365	218.0
12/1/92	6,018	71	366	231.9
12/1/93	5,981	70	365	235.5
12/1/94	5,304	69	365	211.9
12/1/95	5,180	67	365	211.3
12/1/96	5,156	68	366	207.2
12/1/97	5,745	74	365	213.7
12/1/98	5,235	73	365	197.4
3/1/99	#N/A	73	365	#N/A
4/1/00	#N/A	75	366	#N/A

MISSOURI AMERICAN WATER COMPANY WR-2000-281
JOPLIN RESIDENTIAL SALES

BILLING YEAR	SALES, MGAL	RESIDENTIAL METERS	NOMINAL DAYS	RESIDENTIAL GAL/M/D
12/1/84	1,013,651	14,320	366	193.4
12/1/85	985,762	14,559	365	185.5
12/1/86	1,008,541	14,820	365	186.4
12/1/87	1,041,177	15,172	365	188.0
12/1/88	1,127,210	15,634	366	197.0
12/1/89	1,093,075	15,951	365	187.7
12/1/90	1,118,202	16,142	365	189.8
12/1/91	1,224,537	16,319	365	205.6
12/1/92	1,100,665	16,661	366	180.5
12/1/93	1,107,828	17,038	365	178.1
12/1/94	1,255,333	17,330	365	198.5
12/1/95	1,283,993	17,716	365	198.6
12/1/96	1,315,562	17,935	366	200.4
12/1/97	1,381,456	18,091	365	209.2
12/1/98	1,311,483	18,262	365	196.8
3/1/99	#N/A	18,367	365	#N/A
4/1/00	#N/A	18,832	366	#N/A

MISSOURI AMERICAN WATER COMPANY WR-2000-281
JOPLIN COMMERCIAL SALES

BILLING YEAR	SALES, MGAL	COMMERCIAL METERS	NOMINAL DAYS	COMMERCIAL GAL/M/D
12/1/84	768,634	2,407	366	872.5
12/1/85	776,883	2,441	365	872.0
12/1/86	774,276	2,465	365	860.6
12/1/87	835,795	2,498	365	916.6
12/1/88	788,925	2,468	366	873.3
12/1/89	795,208	2,370	365	919.4
12/1/90	778,207	2,406	365	886.1
12/1/91	796,417	2,397	365	910.3
12/1/92	763,236	2,471	366	844.0
12/1/93	819,602	2,573	365	872.9
12/1/94	852,946	2,731	365	855.8
12/1/95	900,486	2,848	365	866.4
12/1/96	930,837	2,966	366	857.5
12/1/97	965,413	3,099	365	853.6
12/1/98	957,142	3,107	365	843.9
3/1/99	#N/A	3,121	365	#N/A
4/1/00	#N/A	3,180	366	#N/A

MISSOURI AMERICAN WATER COMPANY WR-2000-281
MEXICO RESIDENTIAL SALES

BILLING YEAR	SALES, MGAL	RESIDENTIAL METERS	NOMINAL DAYS	RESIDENTIAL GAL/M/D
12/1/84	#N/A	#N/A	366	#N/A
12/1/85	#N/A	#N/A	365	#N/A
12/1/86	#N/A	#N/A	365	#N/A
12/1/87	239,693	3,974	365	165.3
12/1/88	264,328	4,006	366	180.3
12/1/89	247,835	4,017	365	169.0
12/1/90	240,944	4,049	365	163.1
12/1/91	251,522	4,052	365	170.1
12/1/92	257,611	4,058	366	173.5
12/1/93	235,717	4,070	365	158.7
12/1/94	255,264	4,102	365	170.5
12/1/95	243,628	4,161	365	160.4
12/1/96	244,389	4,253	366	157.0
12/1/97	251,070	4,288	365	160.4
12/1/98	247,161	4,313	365	157.0
3/1/99	#N/A	4,330	365	#N/A
4/1/00	#N/A	4,404	366	#N/A

MISSOURI AMERICAN WATER COMPANY WR-2000-281
MEXICO COMMERCIAL SALES

BILLING YEAR	SALES, MGAL	COMMERCIAL METERS	NOMINAL DAYS	COMMERCIAL GAL/M/D
12/1/84	#N/A	#N/A	366	#N/A
12/1/85	#N/A	#N/A	365	#N/A
12/1/86	#N/A	#N/A	365	#N/A
12/1/87	78,983	437	365	494.7
12/1/88	79,734	424	366	514.3
12/1/89	81,046	428	365	519.3
12/1/90	82,666	431	365	525.1
12/1/91	84,382	425	365	544.4
12/1/92	79,091	443	366	487.7
12/1/93	83,806	451	365	509.5
12/1/94	93,392	460	365	556.7
12/1/95	95,389	454	365	575.2
12/1/96	96,690	454	366	581.7
12/1/97	96,298	459	365	574.6
12/1/98	104,089	469	365	607.5
3/1/99	#N/A	472	365	#N/A
4/1/00	#N/A	483	366	#N/A

MISSOURI AMERICAN WATER COMPANY WR-2000-281
PARKVILLE RESIDENTIAL SALES

BILLING YEAR	SALES, MGAL	RESIDENTIAL METERS	NOMINAL DAYS	RESIDENTIAL GMD
12/1/84	321,324	2,940	366	298.6
12/1/85	305,147	2,995	365	279.1
12/1/86	309,775	3,046	365	278.6
12/1/87	320,847	3,110	365	282.7
12/1/88	367,610	3,164	366	317.5
12/1/89	330,298	3,253	365	278.2
12/1/90	329,036	3,271	365	275.6
12/1/91	367,571	3,393	365	296.8
12/1/92	335,795	3,485	366	263.3
12/1/93	322,964	3,594	365	246.2
12/1/94	374,678	3,665	365	280.1
12/1/95	382,056	3,753	365	278.9
12/1/96	358,073	3,823	366	255.9
12/1/97	401,108	3,895	365	282.1
12/1/98	395,963	3,957	365	274.2
3/1/99	#N/A	3,988	365	#N/A
4/1/00	#N/A	4,125	366	#N/A

MISSOURI AMERICAN WATER COMPANY WR-2000-281
PARKVILLE COMMERCIAL SALES W/CASINO

BILLING YEAR	SALES, MGAL W/CASINO	COMMERCIAL METERS W/CASINO	NOMINAL DAYS	COMMERCIAL GMD W/CASINO
12/1/84	57,970	236	366	671.1
12/1/85	58,786	237	365	679.6
12/1/86	64,909	240	365	741.0
12/1/87	72,091	244	365	809.2
12/1/88	76,743	255	366	823.9
12/1/89	67,551	261	365	708.6
12/1/90	72,171	267	365	741.7
12/1/91	74,337	266	365	765.4
12/1/92	65,279	267	366	667.4
12/1/93	61,565	263	365	640.5
12/1/94	74,927	265	365	774.5
12/1/95	95,229	280	365	931.7
12/1/96	98,349	279	366	962.8
12/1/97	104,900	286	365	1005.8
12/1/98	109,836	294	365	1023.5
3/1/99	#N/A	296	365	#N/A
4/1/00	#N/A	317.00	366	#N/A

MISSOURI AMERICAN WATER COMPANY WR-2000-281
ST CHARLES RESIDENTIAL SALES

BILLING YEAR	SALES, MGAL	RESIDENTIAL METERS	NOMINAL DAYS	RESIDENTIAL GAL/M/D
12/1/84	1,218,899	12,038	366	276.7
12/1/85	1,207,469	12,846	365	257.5
12/1/86	1,409,220	13,738	365	281.0
12/1/87	1,633,284	15,033	365	297.7
12/1/88	1,824,191	15,919	366	313.1
12/1/89	1,682,898	16,489	365	279.6
12/1/90	1,583,612	17,005	365	255.1
12/1/91	1,783,167	17,530	365	278.7
12/1/92	1,811,527	18,113	366	273.3
12/1/93	1,612,803	18,768	365	235.4
12/1/94	2,011,009	19,671	365	280.1
12/1/95	2,146,503	21,046	365	279.4
12/1/96	2,178,820	22,020	366	270.4
12/1/97	2,320,674	23,081	365	275.5
12/1/98	2,274,780	24,141	365	258.2
3/1/99	#N/A	24,401	365	#N/A
4/1/00	#N/A	25,548	366	#N/A

MISSOURI AMERICAN WATER COMPANY WR-2000-281
ST CHARLES COMMERCIAL SALES

BILLING YEAR	SALES, MGAL	ADJUSTED METERS	NOMINAL DAYS	COMMERCIAL GAL/M/D
12/1/84	195,335	378	366	1411.9
12/1/85	204,460	422	365	1327.4
12/1/86	228,606	475	365	1318.6
12/1/87	273,005	531	365	1409.7
12/1/88	291,993	566	366	1410.4
12/1/89	280,524	599	365	1282.4
12/1/90	301,257	618	365	1335.2
12/1/91	315,163	636	365	1358.0
12/1/92	322,118	650	366	1353.7
12/1/93	319,964	**670**	365	1308.2
12/1/94	341,230	**690**	365	1354.8
12/1/95	299,271	587	365	1397.0
12/1/96	356,974	**730**	366	1336.3
12/1/97	375,258	750	365	1371.1
12/1/98	365,963	778	365	1288.2
3/1/99	#N/A	787	365	#N/A
4/1/00	#N/A	824	366	#N/A

MISSOURI AMERICAN WATER COMPANY WR-2000-281 ST JOSEPH RESIDENTIAL SALES				
BILLING YEAR	SALES, MGAL	ADJUSTED METERS	NOMINAL DAYS	RESIDENTIAL GAL/M/D
12/1/84	1,587,311	23,362	366	185.6
12/1/85	1,524,753	23,551	365	177.4
12/1/86	1,534,806	23,671	365	177.6
12/1/87	1,584,798	23,733	365	183.0
12/1/88	1,792,504	23,878	366	205.1
12/1/89	1,705,993	24,066	365	194.2
12/1/90	1,654,782	24,193	365	187.4
12/1/91	1,728,498	24,227	365	195.5
12/1/92	1,683,422	25,362	366	181.4
12/1/93	1,691,082	26,281	365	176.3
12/1/94	1,800,800	26,436	365	186.6
12/1/95	1,792,798	26,653	365	184.3
12/1/96	1,785,153	26,813	366	181.9
12/1/97	1,842,196	26,958	365	187.2
12/1/98	1,762,985	27,105	365	178.2
3/1/99	1,766,397	27,151	365	178.2
4/1/00	2,504,317	27,351	366	250.2

MISSOURI AMERICAN WATER COMPANY WR-2000-281 ST JOSEPH COMMERCIAL SALES				
BILLING YEAR	SALES, MGAL	ADJUSTED METERS	NOMINAL DAYS	COMMERCIAL GAL/M/D
12/1/84	898,243	3,158	366	777.1
12/1/85	852,635	3,142	365	743.5
12/1/86	852,352	3,120	365	748.5
12/1/87	867,136	3,139	365	756.8
12/1/88	955,664	3,137	366	832.4
12/1/89	892,727	3,138	365	779.5
12/1/90	887,070	3,121	365	778.8
12/1/91	979,061	3,144	365	853.1
12/1/92	915,854	3,174	366	788.4
12/1/93	898,211	3,185	365	772.7
12/1/94	950,189	3,175	365	820.0
12/1/95	940,736	3,190	365	807.8
12/1/96	934,916	3,172	366	805.3
12/1/97	966,800	3,149	365	841.0
12/1/98	941,795	3,156	365	817.7
3/1/99		3,177	365	
4/1/00		3,222	366	

MISSOURI AMERICAN WATER COMPANY WR-2000-281
WARRENSBURG RESIDENTIAL SALES

BILLING YEAR	SALES, MGAL	RESIDENTIAL METERS	NOMINAL DAYS	RESIDENTIAL GAL/M/D
12/1/84	268,699	3,736	366	196.5
12/1/85	250,194	3,760	365	182.3
12/1/86	242,598	3,798	365	175.0
12/1/87	262,657	3,877	365	185.6
12/1/88	294,128	3,971	366	202.4
12/1/89	274,724	4,159	365	181.0
12/1/90	305,032	4,262	365	196.1
12/1/91	290,387	4,389	365	181.3
12/1/92	326,819	4,535	366	196.9
12/1/93	292,658	4,647	365	172.5
12/1/94	338,930	4,839	365	191.9
12/1/95	365,423	5,007	365	200.0
12/1/96	309,386	4,977	366	169.8
12/1/97	343,367	5,075	365	185.4
12/1/98	334,346	5,127	365	178.7
3/1/99	#N/A	5,132	365	#N/A
4/1/00	#N/A	5,312	366	#N/A

MISSOURI AMERICAN WATER COMPANY WR-2000-281
WARRENSBURG COMMERCIAL SALES

BILLING YEAR	SALES, MGAL	COMMERCIAL METERS	NOMINAL DAYS	COMMERCIAL GAL/M/D
12/1/84	139,352	436	366	873.3
12/1/85	139,321	451	365	846.3
12/1/86	132,175	454	365	797.6
12/1/87	137,863	467	365	809.7
12/1/88	153,721	473	366	888.4
12/1/89	157,338	483	365	892.3
12/1/90	157,126	490	365	879.4
12/1/91	160,667	505	365	872.4
12/1/92	174,642	513	366	929.7
12/1/93	182,697	530	365	944.9
12/1/94	174,408	513	365	931.4
12/1/95	130,453	466	365	766.3
12/1/96	175,436	574	366	834.6
12/1/97	181,965	582	365	856.6
12/1/98	180,990	585	365	847.0
3/1/99	#N/A	587	365	#N/A
4/1/00	#N/A	597	366	#N/A

MISSOURI AMERICAN WATER CO WR-2000-281

JOPLIN SERVICE AREA WEATHER: JOPLIN FAA AIRPORT, MISSOURI

YEAR	GALLONS /METER /DAY	MEAN DAILY TEMPER-ATURE	PRECIPI-TATION	LITE: DAY LENGTH INDEX	EVAP: EVAPORATION INDEX	OPENING SOIL WATER	GAINS FROM PRECIP	DRAIN-AGE AND EVAP. LOSSES	CLOSING SOIL WATER	AVAIL-ABLE MOIS-TURE	MOIS-TURE NEEDS	MOIS-TURE SHORT-FALL	NSHORT: NORMAL SHORT-FALL	DNSHORT: DEPAR-TURE FROM NORMAL
1960 .		56.3	32.3	335	295	3.3	25.45	28.01	0.74	10.04	19.04	9	7.905	1.095
1961 .		56.9	48.01	334	284	0.74	35.35	35.24	0.85	13.95	18.69	4.74	7.905	-3.165
1962 .		58.2	39.72	334	307	0.85	30.35	30.32	0.88	12.94	20.3	7.37	7.905	-0.535
1963 .		58.2	18.35	334	331	0.88	15.37	15.55	0.7	7.74	22.05	14.3	7.905	6.395
1964 .		57.6	41.23	335	294	0.7	31.09	31.04	0.75	12.19	19	6.81	7.905	-1.095
1965 .		59	39.37	334	305	0.75	29.44	28.88	1.31	12.37	19.62	7.24	7.905	-0.665
1966 .		56.3	37.3	334	290	1.31	26.86	27.16	1.01	11.04	18.9	7.86	7.905	-0.045
1967 .		56.9	42.38	334	280	1.01	33.11	33.1	1.03	12.33	18.18	5.84	7.905	-2.065
1968 .		55.8	42.09	335	283	1.03	28.85	28.42	1.45	11.37	18.56	7.19	7.905	-0.715
1969 .		57	37.66	334	290	1.45	28.73	29.77	0.41	12.3	19.27	6.97	7.905	-0.935
1970 .		57.2	45.04	334	304	0.41	32.54	32.13	0.82	12.2	20.14	7.93	7.905	0.025
1971 .		58.6	38.05	334	307	0.82	29.26	28.94	1.14	11.08	20.34	9.26	7.905	1.355
1972 .		57.8	39.3	335	304	1.14	27.44	27.65	0.93	10.22	20.37	10.15	7.905	2.245
1973 .		57.8	61.98	334	294	0.93	45.96	45.45	1.45	13.76	19.37	5.62	7.905	-2.285
1974 .		56.6	46.97	334	283	1.45	33.32	33.55	1.21	10.89	18.68	7.8	7.905	-0.105
1975 .		56.9	44.07	334	294	1.21	33.81	33.28	1.75	11.47	19.22	7.74	7.905	-0.165
1976 .		54.9	42.11	335	276	1.75	24.82	26.18	0.38	10.62	17.79	7.17	7.905	-0.735
1977 .		57.5	46.31	334	298	0.38	34.4	34.25	0.53	12.88	19.83	6.95	7.905	-0.955
1978 .		56.6	39.67	334	315	0.53	31.56	31.57	0.52	12.43	20.65	8.22	7.905	0.315
1979 .		55.6	41.4	334	297	0.52	31.92	31.94	0.5	12.75	19.44	6.7	7.905	-1.205
1980 .		59.3	29.9	335	337	0.5	21.46	21.58	0.38	9.16	22.83	13.67	7.905	5.765
1981 .		58.2	38.55	334	295	0.38	27.8	27.48	0.7	11.72	19.49	7.76	7.905	-0.145
1982 .		57.9	38.38	334	306	0.7	31.46	30.51	1.65	11.74	20.05	8.31	7.905	0.405
1983 .		57.2	45.62	334	314	1.65	32.64	32.79	1.5	11.13	20.77	9.64	7.905	1.735
1984	193.4	57.9	46.17	335	303	1.5	35.03	35.65	0.89	10.81	19.96	9.15	7.905	1.245
1985	185.5	56.9	65.25	334	300	0.89	40.66	40.41	1.13	13.26	20.05	6.79	7.905	-1.115
1986	186.4	59.1	51.09	334	306	1.13	33.9	34.69	0.34	13.09	20.57	7.49	7.905	-0.415
1987	188	58.8	48.22	334	309	0.34	35.06	33.17	2.23	13.19	20.78	7.59	7.905	-0.315
1988	197	57.4	44.78	335	314	2.23	32.88	33.41	1.71	11.53	20.78	9.25	7.905	1.345
1989	187.7	55.9	34.39	334	294	1.71	26.33	27.54	0.5	11.77	18.98	7.21	7.905	-0.695
1990	189.8	59	63.57	334	305	0.5	46.01	44.43	2.07	13.9	19.72	5.81	7.905	-2.095
1991	205.6	59	33.03	334	315	2.07	28.31	29.26	1.12	10.28	21.34	11.06	7.905	3.155
1992	180.5	57.1	61.37	335	275	1.12	40.37	40.16	1.33	12.93	17.95	5.02	7.905	-2.885
1993	178.1	56.4	59.82	334	286	1.33	40.11	40.94	0.5	14.65	19	4.36	7.905	-3.545
1994	198.5	58.4	48.57	334	308	0.5	35.05	34.91	0.64	12.07	20.68	8.62	7.905	0.715
1995	198.6	58.3	42.88	334	310	0.64	34.9	33.97	1.57	11.74	20.41	8.66	7.905	0.755
1996	200.4	57.5	45.52	335	306	1.57	28.14	29.38	0.33	11.47	19.93	8.46	7.905	0.555
1997	209.2	57.4	44.2	334	297	0.33	35.52	34.39	1.46	13.65	19.72	6.07	7.905	-1.835
1998	196.8	58.9	47.57	334	307	1.46	34.9	35.79	0.58	12.54	20.26	7.72	7.905	-0.185

Schedule 5-1

MISSOURI AMERICAN WATER CO WR-2000-281
MEXICO SERVICE AREA WEATHER: MEXICO, MISSOURI

YEAR	GALLONS /METER /DAY	MEAN DAILY TEMPER-ATURE	PRECIPI-TATION	LITE: DAY LENGTH INDEX	EVAP: EVAPORA TION INDEX	OPENING SOIL WATER	GAINS FROM PRECIP	DRAIN-AGE AND EVAP. LOSSES	CLOSING SOIL WATER	AVAIL-ABLE MOIS-TURE	MOIS-TURE NEEDS	MOIS-TURE SHORT-FALL	NSHORT: NORMAL SHORT-FALL	DNSHORT: DEPAR-TURE FROM NORMAL
1960 .		52.1	31.87	321	279	4	25.02	25.32	3.71	8.45	11.4	2.95	2.643	0.307
1961 .		52.5	58	320	257	3.71	34.53	34.55	3.69	9.69	10.27	0.58	2.643	-2.063
1962 .		53.1	28.96	320	284	3.69	22.71	24.32	2.08	7.79	11.74	3.95	2.643	1.307
1963 .		53.3	26.78	320	303	2.08	22.15	22.17	2.06	8.17	11.83	3.66	2.643	1.017
1964 .		53.9	34.81	321	279	2.06	26.89	26.1	2.85	8.48	11.54	3.06	2.643	0.417
1965 .		53.7	44.23	320	270	2.85	28.3	28.63	2.52	9.25	10.95	1.7	2.643	-0.943
1966 .		52.2	26.72	320	269	2.52	22.42	22.52	2.42	6.69	10.86	4.16	2.643	1.517
1967 .		51.8	41.54	320	255	2.42	32.38	31.18	3.62	8.7	10.19	1.49	2.643	-1.153
1968 .		52	43.73	321	261	3.62	30.73	30.45	3.9	9.26	10.44	1.18	2.643	-1.463
1969 .		52	65.32	320	259	3.9	32.4	33.8	2.5	10.28	10.68	0.4	2.643	-2.243
1970 .		53	54.7	320	268	2.5	31.51	31.03	2.98	9.46	11.06	1.59	2.643	-1.053
1971 .		54.1	34.6	320	276	2.98	28.41	27.49	3.9	8.92	11.09	2.18	2.643	-0.463
1972 .		52.6	28.31	321	279	3.9	23.36	23.67	3.58	6.8	11.76	4.96	2.643	2.317
1973 .		54.1	58.81	320	266	3.58	35.06	34.89	3.76	9.87	10.73	0.86	2.643	-1.783
1974 .		52.7	44.18	320	263	3.76	30.99	31.24	3.51	8.43	10.58	2.15	2.643	-0.493
1975 .		53.4	39.15	320	273	3.51	27.64	27.6	3.55	8.81	11.15	2.34	2.643	-0.303
1976 .		51.9	25.89	321	273	3.55	21.55	22.69	2.41	6.07	11.27	5.2	2.643	2.557
1977 .		53.2	36.46	320	281	2.41	29.76	28.78	3.39	8.68	11.52	2.85	2.643	0.207
1978 .		50.8	41.34	320	271	3.39	26.62	26.93	3.08	8.77	11.06	2.29	2.643	-0.353
1979 .		50.9	27.8	320	275	3.08	22.76	23.38	2.46	7.65	11.04	3.4	2.643	0.757
1980 .		53.6	26.88	321	299	2.46	23.15	22.8	2.81	7.27	12.84	5.57	2.643	2.927
1981 .		53.1	52.26	320	263	2.81	30.55	30.27	3.09	9.39	10.62	1.23	2.643	-1.413
1982 .		51.4	54.05	320	258	3.09	33.3	32.49	3.89	9.39	10.12	0.73	2.643	-1.913
1983 .		52.4	44.48	320	286	3.89	26.94	26.93	3.9	7.49	11.7	4.21	2.643	1.567
1984		53.5	48.14	321	265	3.9	30.27	30.28	3.89	7.99	10.9	2.91	2.643	0.267
1985		51.5	49.59	320	267	3.89	26.58	26.57	3.9	8.46	10.63	2.17	2.643	-0.473
1986		54	36.95	320	275	3.9	27.88	28.66	3.12	8.75	11.49	2.74	2.643	0.097
1987	165.2	54.2	33.48	320	282	3.12	27.39	26.61	3.9	9.1	12	2.9	2.643	0.257
1988	180.3	52.7	27.9	321	295	3.9	20.5	20.5	3.9	5.95	12.62	6.67	2.643	4.027
1989	169	50.8	25.37	320	265	3.9	22.13	24.49	1.54	8	10.26	2.27	2.643	-0.373
1990	163	56.4	44.38	320	277	1.54	32.25	30.67	3.12	9.05	10.96	1.91	2.643	-0.733
1991	170.1	55.8	41.79	320	282	3.12	29.87	29.73	3.27	8.7	11.66	2.96	2.643	0.317
1992	173.4	54.6	35.87	321	254	3.27	26.51	26.13	3.64	6.43	10.23	3.8	2.643	1.157
1993	158.7	52.9	58.9	320	255	3.64	34.19	34.65	3.19	10.24	10.56	0.32	2.643	-2.323
1994	170.5	54.9	34.82	320	271	3.19	26.11	26.22	3.07	6.78	11	4.22	2.643	1.577
1995	160.4	53.9	42.31	320	268	3.07	29.37	29.75	2.69	9.37	10.72	1.35	2.643	-1.293
1996	157	52.5	37.73	321	259	2.69	30.48	30.54	2.64	8.8	10.43	1.63	2.643	-1.013
1997	160.4	52.6	37.01	320	254	2.64	30.4	29.16	3.89	7.97	10.08	2.11	2.643	-0.533
1998	157	56.1	45.69	320	269	3.89	33.66	35.1	2.45	9.57	10.94	1.38	2.643	-1.263

Schedule 5-2

MISSOURI AMERICAN WATER CO WR-2000-281

PARKVILLE SERVICE AREA WEATHER: KANSAS CITY INTERNATIONAL AIRPORT

YEAR	GALLONS /METER /DAY	MEAN DAILY TEMPER-ATURE	PRECIPI-TATION	LITE: DAY LENGTH INDEX	EVAP: EVAPORA TION INDEX	OPENING SOIL WATER	GAINS FROM PRECIP	DRAIN-AGE AND EVAP. LOSSES	CLOSING SOIL WATER	AVAIL-ABLE MOIS-TURE	MOIS-TURE NEEDS	MOIS-TURE SHORT-FALL	NSHORT: NORMAL SHORT-FALL	DNSHORT: DEPAR-TURE FROM NORMAL
1960 .		55	32.08	321	283	3.8	27.41	30.04	1.17	4.8	11.57	6.77	6.209	0.561
1961 .		52.3	54.68	320	252	1.17	40.2	40.35	1.02	6.05	10.1	4.06	6.209	-2.149
1962 .		53.3	35.03	320	272	1.02	29.72	29.98	0.76	5.09	11.04	5.96	6.209	-0.249
1963 .		54.6	24.62	320	296	0.76	19.33	19.36	0.73	3.76	11.53	7.77	6.209	1.561
1964 .		54.5	37.55	321	270	0.73	33.38	32.96	1.15	6.1	11.12	5.02	6.209	-1.189
1965 .		53.8	52.05	320	261	1.15	40	39.98	1.17	6.87	10.51	3.64	6.209	-2.569
1966 .		53	23.76	320	261	1.17	21.24	22.28	0.13	4.35	10.34	5.98	6.209	-0.229
1967 .		53.2	41.26	320	255	0.13	35.56	34.68	1.01	5.2	10.12	4.92	6.209	-1.289
1968 .		53.1	33.55	321	263	1.01	32.04	31.46	1.59	5.18	10.52	5.34	6.209	-0.869
1969 .		52.6	41.32	320	256	1.59	34.61	35.78	0.42	6.4	10.53	4.13	6.209	-2.079
1970 .		53.8	37.27	320	273	0.42	32.2	31.57	1.06	5.56	11.47	5.9	6.209	-0.309
1971 .		53.9	30.28	320	275	1.06	26.04	25.39	1.71	3.87	11.09	7.22	6.209	1.011
1972 .		52.7	31.1	321	265	1.71	29.97	30.45	1.23	4.76	10.76	6	6.209	-0.209
1973 .		54.5	55.26	320	262	1.23	41.58	41.09	1.72	5.38	10.47	5.09	6.209	-1.119
1974 .		54.1	36.12	320	269	1.72	27.76	28.39	1.09	3.88	10.91	7.02	6.209	0.811
1975 .		54.4	34.07	320	281	1.09	24.5	23.79	1.8	3.36	11.59	8.23	6.209	2.021
1976 .		53.7	23.68	321	275	1.8	20.95	22.5	0.26	3.33	11.24	7.9	6.209	1.691
1977 .		54.4	49.74	320	274	0.26	34.54	34.25	0.54	6.11	11.2	5.09	6.209	-1.119
1978 .		52.4	33.96	320	283	0.54	28.79	28.72	0.62	5.23	11.45	6.22	6.209	0.011
1979 .		51.5	31.75	320	266	0.62	27.87	28.25	0.23	4.58	10.44	5.86	6.209	-0.349
1980 .		54.4	31.79	321	295	0.23	27.23	26.32	1.14	4.41	12.54	8.13	6.209	1.921
1981 .		54.6	42.07	320	261	1.14	32.67	32.96	0.85	5.9	10.49	4.59	6.209	-1.619
1982 .		52.6	47.21	320	261	0.85	35.57	33.98	2.44	5.33	10.27	4.94	6.209	-1.269
1983 .		53.1	32.88	320	284	2.44	28.72	28.85	2.31	3.76	11.64	7.88	6.209	1.671
1984	298.6	53.5	38.77	321	266	2.31	33.93	34.49	1.74	3.8	10.96	7.16	6.209	0.951
1985	279.1	51.5	52.72	320	260	1.74	38.45	37.28	2.91	4.99	10.46	5.47	6.209	-0.739
1986	278.6	55.5	39.44	320	271	2.91	31.05	33.4	0.56	5.19	11.23	6.04	6.209	-0.169
1987	282.6	56.5	33.99	320	284	0.56	30.57	29.62	1.51	5.38	12.05	6.67	6.209	0.461
1988	317.4	55.3	24.22	321	301	1.51	18.44	18.97	0.98	2.9	12.86	9.96	6.209	3.751
1989	278.2	52.9	37.64	320	274	0.98	26.49	26.86	0.61	4.58	10.78	6.19	6.209	-0.019
1990	275.6	56	40.61	320	277	0.61	34.64	34.21	1.04	5.61	11.1	5.5	6.209	-0.709
1991	296.8	55.7	28.7	320	289	1.04	26.96	26.79	1.21	4.04	12	7.95	6.209	1.741
1992	263.3	54	50.63	321	249	1.21	37.54	36.84	1.91	5.37	9.91	4.55	6.209	-1.659
1993	246.2	52.4	51.46	320	253	1.91	41.77	42.77	0.9	7.11	10.37	3.27	6.209	-2.939
1994	280.1	54.7	28.34	320	275	0.9	23.58	23.85	0.63	3.64	11.26	7.62	6.209	1.411
1995	278.9	53.8	34.63	320	266	0.63	27.04	27.25	0.41	4.93	10.61	5.67	6.209	-0.539
1996	255.9	52	40.44	321	259	0.41	32	31.85	0.57	5.5	10.3	4.79	6.209	-1.419
1997	282.1	53.3	33.07	320	262	0.57	31.13	30.15	1.54	4.42	10.49	6.07	6.209	-0.139
1998	274.2	56.9	49.54	320	276	1.54	40.7	41.48	0.76	6.2	11.36	5.16	6.209	-1.049

Schedule 5-3

MISSOURI AMERICAN WATER CO WR-2000-281

ST CHARLES SERVICE AREA WEATHER: ST LOUIS -LAMBERT AIRPORT WITH ASOS ADJUSTMENTS

YEAR	GALLONS /METER /DAY	MEAN DAILY TEMPER-ATURE	PRECIPI-TATION	LITE: DAY LENGTH INDEX	EVAP: EVAPORA TION INDEX	OPENING SOIL WATER	GAINS FROM PRECIP	DRAIN-AGE AND EVAP. LOSSES	CLOSING SOIL WATER	AVAIL-ABLE MOIS-TURE	MOIS-TURE NEEDS	MOIS-TURE SHORT-FALL	NSHORT: NORMAL SHORT-FALL	DNSHORT: DEPAR-TURE FROM NORMAL
1960 .		54.3	31.78	335	306	4.3	23.84	25.59	2.55	11.79	19.64	7.85	8.481	-0.631
1961 .		53.5	41.2	334	292	2.55	26.78	26.97	2.37	11.67	19.18	7.5	8.481	-0.981
1962 .		54.3	34.63	334	307	2.37	23.41	24.24	1.54	11.33	20.22	8.89	8.481	0.409
1963 .		54	28.62	334	329	1.54	21.05	20.91	1.68	10.98	21.71	10.73	8.481	2.249
1964 .		55.6	32.16	335	316	1.68	24.12	23.35	2.45	10.59	20.95	10.36	8.481	1.879
1965 .		55.7	28.26	334	314	2.45	24.72	25.08	2.09	11.76	20.26	8.49	8.481	0.009
1966 .		53.8	32.34	334	306	2.09	24.3	23.72	2.67	10.66	20.25	9.59	8.481	1.109
1967 .		54.3	41.3	334	294	2.67	29.72	28.36	4.03	12.45	19.27	6.83	8.481	-1.651
1968 .		54.2	32.49	335	307	4.03	22.56	23.67	2.92	10.94	20.32	9.38	8.481	0.899
1969 .		54.3	43.72	334	306	2.92	28.07	29.48	1.51	13.34	20.44	7.1	8.481	-1.381
1970 .		54.8	36.2	334	311	1.51	26.47	26.11	1.87	13.19	20.49	7.3	8.481	-1.181
1971 .		55.9	33.73	334	323	1.87	24.17	23.38	2.67	11.03	21.25	10.22	8.481	1.739
1972 .		54.2	33.74	335	314	2.67	24.78	24.1	3.34	10.89	20.92	10.04	8.481	1.559
1973 .		55.6	39.82	334	307	3.34	28.63	28.47	3.5	11.5	20.34	8.84	8.481	0.359
1974 .		54.6	36.83	334	302	3.5	25.79	27.13	2.16	11.15	19.96	8.81	8.481	0.329
1975 .		55	40.21	334	308	2.16	28.34	28.02	2.48	13.17	20.13	6.96	8.481	-1.521
1976 .		53.7	23.46	335	311	2.48	17.84	18.8	1.52	8.53	20.41	11.88	8.481	3.399
1977 .		55.1	43.41	334	326	1.52	27.72	26.39	2.85	13.29	21.72	8.42	8.481	-0.061
1978 .		53	37.71	334	314	2.85	23.79	24.14	2.5	11.29	20.44	9.15	8.481	0.669
1979 .		53.8	29.48	334	317	2.5	21.04	21.43	2.11	9.66	20.86	11.2	8.481	2.719
1980 .		55.4	27.48	335	318	2.11	20.11	20.92	1.3	10.12	21.14	11.02	8.481	2.539
1981 .		55.1	45.52	334	285	1.3	28.42	27.59	2.14	13.4	18.47	5.07	8.481	-3.411
1982 .		53.9	54.97	334	287	2.14	32.95	31.18	3.9	13.44	18.21	4.77	8.481	-3.711
1983 .		54.9	44.8	334	310	3.9	27.62	27.43	4.1	10.06	20.32	10.26	8.481	1.779
1984	276.7	55.3	51.65	335	296	4.1	30.32	30.28	4.13	10.16	19.25	9.09	8.481	0.609
1985	257.5	54.2	50.73	334	294	4.13	28.27	28.68	3.72	12.23	19.23	6.99	8.481	-1.491
1986	281	56.6	34.88	334	306	3.72	24.6	26.51	1.81	11.36	20.6	9.24	8.481	0.759
1987	297.7	57.2	38.38	334	307	1.81	24.27	22.22	3.86	9.76	20.6	10.84	8.481	2.359
1988	313.1	55.9	33.93	335	318	3.86	22.72	22.82	3.76	8.39	21.24	12.84	8.481	4.359
1989	279.6	54	28.6	334	291	3.76	21.48	24.09	1.15	10.62	18.53	7.91	8.481	-0.571
1990	255.1	57.2	45.09	334	297	1.15	30.21	28.06	3.3	12.09	19.14	7.06	8.481	-1.421
1991	278.7	57.4	33.48	334	312	3.3	26.15	26.36	3.09	10.42	20.92	10.51	8.481	2.029
1992	273.3	55.3	33.49	335	274	3.09	24.19	24.5	2.78	9.28	18	8.72	8.481	0.239
1993	235.4	53.8	54.76	334	274	2.78	35.74	35.65	2.87	15.03	17.93	2.9	8.481	-5.581
1994	280.1	55.9	34.7	334	295	2.87	26.65	27.18	2.34	10.71	19.27	8.55	8.481	0.069
1995	279.4	55.3	41.47	334	294	2.34	26.25	26.05	2.54	12.02	19.31	7.28	8.481	-1.201
1996	270.3	54.2	43.67	335	291	2.54	27.52	27.77	2.29	11.93	18.75	6.81	8.481	-1.671
1997	275.5	55.2	31.23	334	290	2.29	23.17	23.31	2.15	9.81	19.1	9.29	8.481	0.809
1998	258.2	58.7	43.62	334	308	2.15	33.26	34.13	1.28	14.97	20.32	5.35	8.481	-3.131

Schedule 5-4

MISSOURI AMERICAN WATER CO WR-2000-281

ST JOSEPH SERVICE AREA WEATHER: ST JOSEPH PRECIPITATION AND CONTINUOUS KANSAS CITY INTERNATIONAL AIRPORT TEMPERATURES

YEAR	GALLONS /METER /DAY	MEAN DAILY TEMPER-ATURE	PRECIPI-TATION	LITE: DAY LENGTH INDEX	EVAP: EVAPORA TION INDEX	OPENING SOIL WATER	GAINS FROM PRECIP	DRAIN-AGE AND EVAP. LOSSES	CLOSING SOIL WATER	AVAIL-ABLE MOIS-TURE	MOIS-TURE NEEDS	MOIS-TURE SHORT-FALL	NSHORT: NORMAL SHORT-FALL	DNSHORT: DEPAR-TURE FROM NORMAL
1960 .		55	31.37	321	283	4.2	20.44	22.11	2.54	10.98	13.49	2.51	3.949	-1.439
1961 .		52.3	53.39	320	252	2.54	25.47	24.75	3.25	10.65	11.78	1.13	3.949	-2.819
1962 .		53.3	38.48	320	272	3.25	22.47	23.42	2.3	10.99	12.88	1.89	3.949	-2.059
1963 .		54.6	23.48	320	296	2.3	13.67	14.57	1.4	7.23	13.45	6.21	3.949	2.261
1964 .		54.5	36.55	321	270	1.4	20.91	19.66	2.65	10	12.98	2.97	3.949	-0.979
1965 .		53.8	47.38	320	261	2.65	23.63	23.93	2.35	11	12.26	1.26	3.949	-2.689
1966 .		53	20.74	320	261	2.35	13.87	15.28	0.95	7.35	12.06	4.71	3.949	0.761
1967 .		53.2	37.42	320	255	0.95	21.9	19.7	3.15	9.05	11.81	2.76	3.949	-1.189
1968 .		53.1	33.2	321	263	3.15	21.15	20.75	3.55	9.09	12.27	3.18	3.949	-0.769
1969 .		52.6	30.01	320	256	3.55	20.18	21.43	2.3	9.87	12.29	2.42	3.949	-1.529
1970 .		53.8	36.11	320	273	2.3	21.2	20.09	3.41	8.91	13.38	4.47	3.949	0.521
1971 .		53.9	28.29	320	275	3.41	18.02	17.73	3.7	7.85	12.94	5.09	3.949	1.141
1972 .		52.7	32.89	321	265	3.7	20.86	21.03	3.53	9.49	12.55	3.07	3.949	-0.879
1973 .		54.5	55.6	320	262	3.53	24	24.13	3.4	9.72	12.22	2.49	3.949	-1.459
1974 .		54.1	29.42	320	269	3.4	18.88	19.05	3.23	7.32	12.73	5.41	3.949	1.461
1975 .		54.4	33.24	320	281	3.23	17.77	18.3	2.7	8.45	13.52	5.07	3.949	1.121
1976 .		53.7	22.13	321	275	2.7	12.79	14.23	1.26	6.32	13.11	6.79	3.949	2.841
1977 .		54.4	43.27	320	274	1.26	20.72	18.58	3.4	8.48	13.07	4.59	3.949	0.641
1978 .		52.4	37.62	320	283	3.4	19.62	20.27	2.75	9.41	13.36	3.95	3.949	0.001
1979 .		51.5	31.22	320	266	2.75	19.55	20.34	1.96	9.58	12.18	2.6	3.949	-1.349
1980 .		54.4	27.69	321	295	1.96	16.85	16.4	2.41	7.39	14.63	7.24	3.949	3.291
1981 .		54.6	35.21	320	261	2.41	19.99	19.79	2.6	9.3	12.24	2.94	3.949	-1.009
1982 .		52.6	48.91	320	261	2.6	23.85	22.68	3.78	10.46	11.98	1.53	3.949	-2.419
1983 .		53.1	31.67	320	284	3.78	18.72	18.55	3.94	7.98	13.58	5.6	3.949	1.651
1984	185.6	53.5	37.43	321	266	3.94	20.19	20.86	3.27	8.5	12.79	4.28	3.949	0.331
1985	177.4	51.5	47.25	320	260	3.27	22.91	22.21	3.98	9.99	12.2	2.21	3.949	-1.739
1986	177.6	55.5	49.34	320	271	3.98	23.49	24.43	3.03	10.27	13.1	2.83	3.949	-1.119
1987	182.9	56.5	36.23	320	284	3.03	22.48	21.79	3.71	9.99	14.06	4.06	3.949	0.111
1988	205.1	55.3	20.34	321	301	3.71	13.64	15.39	1.96	7.02	15.01	7.99	3.949	4.041
1989	194.2	52.9	28.1	320	274	1.96	17.48	17.12	2.32	7.78	12.57	4.79	3.949	0.841
1990	187.4	56	38.21	320	277	2.32	22.27	21.93	2.66	9.48	12.95	3.47	3.949	-0.479
1991	195.5	55.7	34.24	320	289	2.66	20.36	19.28	3.74	8.29	14	5.71	3.949	1.761
1992	181.4	54	46.48	321	249	3.74	25.01	24.91	3.84	9.66	11.57	1.9	3.949	-2.049
1993	176.3	52.4	45.11	320	253	3.84	24.28	25.05	3.07	11.09	12.1	1.02	3.949	-2.929
1994	186.6	54.7	27.91	320	275	3.07	17.55	18.05	2.56	8.22	13.13	4.92	3.949	0.971
1995	184.3	53.8	41.76	320	266	2.56	20.48	20.79	2.25	9.62	12.38	2.75	3.949	-1.199
1996	181.9	52	35.3	321	259	2.25	19.69	19.23	2.71	8.98	12.01	3.03	3.949	-0.919
1997	187.2	53.3	35.9	320	262	2.71	20.57	19.33	3.96	8.2	12.24	4.04	3.949	0.091
1998	178.2	56.9	42.44	320	276	3.96	25.05	26.17	2.84	11.06	13.26	2.2	3.949	-1.749

Schedule 5-5

MISSOURI AMERICAN WATER COMPANY
JOPLIN RESIDENTIAL SALES

BILLING YEAR	ADJUSTED MGAL	METERS	NOMINAL DAYS	ADJUSTED GMD	WEATHER ADJUSTMENT	Underlying Trend, MG	Underlying Trend	Predicted mgal	Predicted GCD	Residual
12/1/84	20,512	451	366	124.3	0	20,824	126.1576	20,824	126.16	-1.8921
12/1/85	21,328	444	365	131.6	0	20,445	126.1576	20,445	126.16	5.4480
12/1/86	18,468	435	365	116.3	0	18,711	117.8454	18,711	117.85	-1.5298
12/1/87	18,613	428	365	119.2	0	18,395	117.8454	18,395	117.85	1.3936
12/1/88	19,251	434	366	121.2	0	18,719	117.8454	18,719	117.85	3.3490
12/1/89	18,016	431	365	114.6	0	18,521	117.8454	18,521	117.85	-3.2127
12/1/90	19,717	436	365	123.9	0	20,069	126.1576	20,069	126.16	-2.2130
12/1/91	19,651	429	365	125.5	0	19,751	126.1576	19,751	126.16	-0.6358
12/1/92	19,562	430	366	124.4	0	19,835	126.1576	19,835	126.16	-1.7391
12/1/93	19,118	416	365	125.9	0	19,163	126.1576	19,163	126.16	-0.2991
12/1/94	19,409	413	365	128.9	0	18,995	126.1576	18,995	126.16	2.7524
12/1/95	19,015	409	365	127.4	0	18,826	126.1576	18,826	126.16	1.2682
12/1/96	18,153	403	366	123.2	0	18,589	126.1576	18,589	126.16	-2.9573
12/1/97	17,849	394	365	124.2	0	18,127	126.1576	18,127	126.16	-1.9373
12/1/98	18,413	393	365	128.4	0	18,097	126.1576	18,097	126.16	2.2052
3/1/99	18,097	393	365	126.2	0.0	18,097	126.1576	18,097	126.16	
4/1/00	18,146	393	366	126.2	0.0	18,146	126.1576	18,146	126.16	

REGRESSION VARIABLES

	126.1575555	8.31218
YEAR	GMD	SHIFT
1984	124.3	0.00
1985	131.6	0.00
1986	116.3	(1.00)
1987	119.2	(1.00)
1988	121.2	(1.00)
1989	114.6	(1.00)
1990	123.9	0.00
1991	125.5	0.00
1992	124.4	0.00
1993	125.9	0.00
1994	128.9	0.00
1995	127.4	0.00
1996	123.2	0.00
1997	124.2	0.00
1998	128.4	0.00
1998.25		0.00
1999.33		0.00

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.82647
R Square	0.683053
Adjusted R Squ	0.658673
Standard Error	2.689614
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	202.6709	202.6709	28.01634	0.0001456
Residual	13	94.0423	7.234023		
Total	14	296.7132			

	Coefficients	*tandard Er*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*ower 95.0%*	*Jpper 95.0%*
Intercept	126.1576	0.810949	155.5678	1.2E-22	124.40561	127.909504	124.4056	127.9095
shift	8.31218	1.570396	5.293046	0.000146	4.919546	11.7048143	4.919546	11.704814

MISSOURI AMERICAN WATER COMPANY
JOPLIN RESIDENTIAL SALES

BILLING YEAR	ADJUSTED MGAL	METERS	NOMINAL ADJUSTED DAYS	GMD	Wthr Adjustment GMD	Underlying Trend, MG	Underlying Trend	Predicted mgal	Predicted GMD	Residual
12/1/84	985,914	14,320	366	188.1	-5.2922	986,969	188.3127	1,016,087	193.8683	-0.4648
12/1/85	1,010,948	14,559	365	190.2	4.7396	1,003,454	188.8308	985,267	185.4084	0.0932
12/1/86	1,018,083	14,820	365	188.2	1.7641	1,024,246	189.3490	1,008,291	186.3995	0.0462
12/1/87	1,048,592	15,172	365	189.4	1.3390	1,051,448	189.8672	1,040,386	187.8696	0.1428
12/1/88	1,094,495	15,634	366	191.3	-5.7172	1,089,405	190.3853	1,125,134	196.6294	0.3628
12/1/89	1,110,275	15,951	365	190.7	2.9543	1,111,439	190.9035	1,092,322	187.6199	0.1293
12/1/90	1,170,669	16,142	365	198.7	8.9053	1,127,800	191.4216	1,118,202	189.7925	0.0000
12/1/91	1,144,657	16,319	365	192.2	-13.4111	1,143,254	191.9398	1,223,134	205.3509	0.2355
12/1/92	1,175,445	16,661	366	192.8	12.2634	1,173,583	192.4579	1,098,802	180.1946	0.3055
12/1/93	1,201,541	17,038	365	193.2	15.0688	1,205,283	193.8078	1,110,469	178.5619	-0.4247
12/1/94	1,236,108	17,330	365	195.4	-3.0393	1,234,449	195.1577	1,255,914	198.5512	-0.0918
12/1/95	1,263,241	17,716	365	195.4	-3.2093	1,270,667	196.5076	1,289,129	199.3627	-0.7943
12/1/96	1,300,076	17,935	366	198.1	-2.3592	1,298,802	197.8575	1,316,614	200.5709	-0.1602
12/1/97	1,432,962	18,091	365	217.0	7.8001	1,315,415	199.2074	1,380,856	209.1178	0.0908
12/1/98	1,316,725	18,262	365	197.5	0.7864	1,336,804	200.5573	1,307,953	196.2288	0.5296
3/1/99	1,346,784	18,367	365	200.9	0.0	1,346,784	200.8948	1,346,784	200.8948	
4/1/00	1,394,749	18,832	366	202.4	0.0	1,394,749	202.3571	1,394,749	202.3571	

REGRESSION VARIABLES

			1999.33	1992			
	202.3571266	4.250733	1.349888	-0.83173	1.317144	7.2761413	17.7105085
YEAR	GMD	DNSHORT	TRND2000	TRND8492	IND8489	IND9093	IND9398
1984	193.4	1.25	(15.33)	(8.00)	0.20	0.00	0.00
1985	185.5	(1.12)	(14.33)	(7.00)	1.00	0.00	0.00
1986	186.4	(0.42)	(13.33)	(6.00)	(0.90)	0.00	0.00
1987	188.0	(0.32)	(12.33)	(5.00)	(0.50)	0.00	0.00
1988	197.0	1.35	(11.33)	(4.00)	0.40	0.00	0.00
1989	187.7	(0.70)	(10.33)	(3.00)	(0.25)	0.00	0.00
1990	189.8	(2.10)	(9.33)	(2.00)	0.00	1.00	0.00
1991	205.6	3.16	(8.33)	(1.00)	0.00	0.00	0.00
1992	180.5	(2.89)	(7.33)	0.00	0.00	0.00	0.00
1993	178.1	(3.55)	(6.33)	0.00	0.00	0.00	(0.01)
1994	198.5	0.71	(5.33)	0.00	0.00	0.00	0.02
1995	198.6	0.75	(4.33)	0.00	0.00	0.00	(0.02)
1996	200.4	0.56	(3.33)	0.00	0.00	0.00	0.02
1997	209.2	(1.84)	(2.33)	0.00	0.00	0.00	1.00
1998	196.8	(0.19)	(1.33)	0.00	0.00	0.00	(0.20)
1998.25		0	(1.08)				
1999.33		0	0.00				

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.999241
R Square	0.998483
Adjusted R Squ	0.997345
Standard Error	0.458049
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	6	1104.469	184.0781	877.3624	7.933E-11
Residual	8	1.678468	0.209809		
Total	14	1106.147			

	Coefficients	*tandard Er*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*ower 95.0%*	*Upper 95.0%*
Intercept	202.3571	0.42474	476.4257	4.22E-19	201.37767	203.33658	201.3777	203.3366
dnshort	4.250733	0.075977	55.9474	1.16E-11	4.0755288	4.425937	4.075529	4.425937
trend99	1.349888	0.079485	16.98293	1.47E-07	1.1665955	1.5331813	1.166596	1.533181
trnd8492	-0.83173	0.120884	-6.88043	0.000127	-1.1104895	-0.5529729	-1.11049	-0.55297
ind_1985	1.317144	0.303294	4.342795	0.002469	0.6177459	2.01654109	0.617746	2.016541
ind_1990	7.276141	0.507842	14.32757	5.5E-07	6.1050553	8.44722741	6.105055	8.447227
ind_1997	17.71051	0.505497	35.03585	4.82E-10	16.54483	18.8761867	16.54483	18.87619

MISSOURI AMERICAN WATER COMPANY
MEXICO RESIDENTIAL SALES

BILLING YEAR	ADJUSTED MGAL	METERS	NOMINAL DAYS	ADJUSTED GAL/M/D	Wthr Adjustment GAL/M/D	Underlying Trend, MG	Underlying Trend	Predicted mgal	Predicted GCD	Residual
12/1/84	#N/A	#N/A	366	#N/A	-0.9052234	#N/A	162.1566	#N/A	163.0618	
12/1/85	#N/A	#N/A	365	#N/A	1.6067716	#N/A	163.1391	#N/A	161.5323	
12/1/86	#N/A	#N/A	365	#N/A	-0.3281435	#N/A	164.1216	#N/A	164.4498	
12/1/87	238,429	3,974	365	164.4	-0.8712776	239,475	165.1042	240,739	165.9754	-0.7211
12/1/88	244,286	4,006	366	166.6	-13.668874	243,521	166.0867	263,562	179.7556	0.5222
12/1/89	249,693	4,017	365	170.3	1.2673128	244,978	167.0692	247,642	168.8862	0.1314
12/1/90	244,623	4,049	365	165.5	2.4893645	248,331	168.0518	240,094	162.4781	0.5750
12/1/91	249,932	4,052	365	169.0	-1.0749528	249,973	169.0343	251,562	170.1092	-0.0273
12/1/92	251,780	4,058	366	169.5	-3.9264067	252,493	170.0168	258,324	173.9432	-0.4802
12/1/93	247,432	4,070	365	166.6	7.8867593	247,243	166.4422	235,528	158.5555	0.1275
12/1/94	247,252	4,102	365	165.2	-5.3521336	247,573	165.3741	255,585	170.7262	-0.2146
12/1/95	250,297	4,161	365	164.8	4.3903337	249,567	164.3059	242,898	159.9155	0.4803
12/1/96	249,743	4,253	366	160.4	3.4398491	254,090	163.2377	245,375	157.6388	-0.6338
12/1/97	253,904	4,288	365	162.2	1.8104469	253,830	162.1695	250,996	160.3590	0.0474
12/1/98	253,912	4,313	365	161.3	4.2884961	253,608	161.1013	246,857	156.8128	0.1931
3/1/99	254,176	4,330	365	160.8	0.0	254,176	160.8343	254,176	160.8343	
4/1/00	257,378	4,404	366	159.7	0.0	257,378	159.6771	257,378	159.6771	

REGRESSION VARIABLES

			1999.33	1992	1992	
	159.6770587	3.394588	-1.06819	2.506392	2.050719	3.0842895
YEAR	GMD	DNSHORT	TRND200(	SHFT1992	TRND199:	BILL ADJ
1984	#N/A	0.27	(15.33)	1.00	(8.00)	0.00
1985	#N/A	(0.47)	(14.33)	1.00	(7.00)	0.00
1986	#N/A	0.10	(13.33)	1.00	(6.00)	0.00
1987	165.3	0.26	(12.33)	1.00	(5.00)	0.00
1988	180.3	4.03	(11.33)	1.00	(4.00)	0.00
1989	169.0	(0.37)	(10.33)	1.00	(3.00)	1.00
1990	163.1	(0.73)	(9.33)	1.00	(2.00)	(1.00)
1991	170.1	0.32	(8.33)	1.00	(1.00)	0.00
1992	173.5	1.16	(7.33)	1.00	0.00	0.00
1993	158.7	(2.32)	(6.33)	0.00	0.00	0.00
1994	170.5	1.58	(5.33)	0.00	0.00	0.00
1995	160.4	(1.29)	(4.33)	0.00	0.00	0.00
1996	157.0	(1.01)	(3.33)	0.00	0.00	(0.70)
1997	160.4	(0.53)	(2.33)	0.00	0.00	0.00
1998	157.0	(1.26)	(1.33)	0.00	0.00	0.00
1998.25		0	(1.08)	0.00	0.00	0.00
1999.33		0	0.00	0.00	0.00	0.00

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.998211
R Square	0.996425
Adjusted R Squ	0.993445
Standard Error	0.592463
Observations	12

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	5	586.9398	117.388	334.4274	2.987E-07
Residual	6	2.106071	0.351012		
Total	11	589.0459			

	Coefficients	*tandard Er*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*ower 95.0%*	*Upper 95.0%*
Intercept	159.6771	0.608679	262.3337	2.07E-13	158.18767	161.166444	158.1877	161.1664
X Variable 1	3.394588	0.124649	27.23311	1.62E-07	3.0895819	3.69959395	3.089582	3.699594
X Variable 2	-1.06819	0.141856	-7.53006	0.000284	-1.4152984	-0.7210772	-1.4153	-0.72108
X Variable 3	2.506392	0.711099	3.524671	0.012448	0.766393	4.24639087	0.766393	4.246391
X Variable 4	2.050719	0.201966	10.15377	5.31E-05	1.5565249	2.54491344	1.556525	2.544913
X Variable 5	3.084289	0.387279	7.963996	0.000209	2.1366509	4.03192803	2.136651	4.031928

MISSOURI AMERICAN WATER COMPANY
PARKVILLE RESIDENTIAL SALES

BILLING YEAR	ADJUSTED MGAL	METERS	NOMINAL DAYS	ADJUSTED GAL/M/D	Wthr Adjustment GAL/M/D	Underlying Trend, MG	Underlying Trend	Predicted mgal	Predicted GCD	Residual
12/1/84	311,656	2,940	366	289.6	-8.98466	311,584	289.5652	321,252	298.5499	0.0501
12/1/85	312,779	2,995	365	286.1	6.981772	314,648	287.8295	305,083	279.0800	0.0200
12/1/86	311,550	3,046	365	280.2	1.596643	318,076	286.0939	309,914	278.7520	-0.1520
12/1/87	315,904	3,110	365	278.3	-4.35534	322,755	284.3583	320,801	282.6369	-0.0369
12/1/88	326,574	3,164	366	282.0	-35.4379	327,267	282.6226	367,663	317.5081	-0.1081
12/1/89	330,511	3,253	365	278.4	0.179504	333,484	280.8870	330,320	278.2215	-0.0215
12/1/90	337,034	3,271	365	282.3	6.698344	333,325	279.1513	329,021	275.5466	0.0534
12/1/91	347,204	3,393	365	280.4	-16.4483	343,513	277.4157	367,643	296.9023	-0.1023
12/1/92	355,787	3,485	366	278.9	15.67356	351,641	275.6800	335,877	263.3211	-0.0211
12/1/93	359,386	3,594	365	274.0	27.76648	359,338	273.9444	322,916	246.1779	0.0221
12/1/94	356,847	3,665	365	266.8	-13.3306	369,301	276.0979	374,570	280.0371	0.0629
12/1/95	389,031	3,753	365	284.0	5.092253	381,110	278.2514	382,005	278.9044	-0.0044
12/1/96	376,830	3,823	366	269.3	13.40614	392,330	280.4048	358,114	255.9501	-0.0501
12/1/97	402,975	3,895	365	283.4	1.313216	401,732	282.5583	400,964	282.0185	0.0815
12/1/98	410,277	3,957	365	284.1	9.910526	411,211	284.7118	396,099	274.2488	-0.0488
3/1/99	415,222	3,988	365	285.3	0.0	415,222	285.2502	415,222	285.2502	
4/1/00	434,183	4,125	366	287.6	0.0	434,183	287.5830	434,183	287.5830	

REGRESSION VARIABLES

			1993.00	1999.33	
	287.5830334	9.447594	-3.889127	2.153482	11.0486
YEAR	GMD	DNSHORT	TRND1993	TRND2000	BILL ADJ
1984	298.6	0.95	(9.00)	(15.33)	0.00
1985	279.1	(0.74)	(8.00)	(14.33)	(0.16)
1986	278.6	(0.17)	(7.00)	(13.33)	(0.52)
1987	282.7	0.46	(6.00)	(12.33)	(0.55)
1988	317.5	3.75	(5.00)	(11.33)	(0.05)
1989	278.2	(0.02)	(4.00)	(10.33)	(0.23)
1990	275.6	(0.71)	(3.00)	(9.33)	0.28
1991	296.8	1.74	(2.00)	(8.33)	0.28
1992	263.3	(1.66)	(1.00)	(7.33)	0.30
1993	246.2	(2.94)	0.00	(6.33)	0.00
1994	280.1	1.41	0.00	(5.33)	(0.85)
1995	278.9	(0.54)	0.00	(4.33)	0.52
1996	255.9	(1.42)	0.00	(3.33)	(1.00)
1997	282.1	(0.14)	0.00	(2.33)	0.07
1998	274.2	(1.05)	0.00	(1.33)	(0.05)
1998.25		0	0.00	(1.08)	
1999.33		0	0.00	0.00	

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.999992
R Square	0.999984
Adjusted R Squ	0.999978
Standard Error	0.080215
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*ignificance F*
Regression	4	4098.0336	1024.508	159224.2	5.72E-24
Residual	10	0.0643438	0.006434		
Total	14	4098.0979			

	Coefficients	*tandard Erro*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*ower 95.0%*	*pper 95.0%*
Intercept	287.583	0.0772973	3720.482	4.84E-32	287.4108	287.755262	287.4108	287.7553
dnshort	9.447594	0.0142901	661.1294	1.54E-24	9.415753	9.47943405	9.415753	9.479434
trnd1993	-3.88913	0.0217174	-179.079	7.24E-19	-3.93752	-3.8407377	-3.93752	-3.84074
trnd2000	2.153482	0.0158054	136.2498	1.11E-17	2.118265	2.18869844	2.118265	2.188698
Bill Adj	11.0486	0.0502844	219.7223	9.37E-20	10.93656	11.1606385	10.93656	11.16064

MISSOURI AMERICAN WATER COMPANY
ST CHARLES RESIDENTIAL SALES

BILLING YEAR	ADJUSTED MGAL	METERS	NOMINAL DAYS	ADJUSTED GMD	ADJSTMT GMD	Underlying Trend, MGAL	Underlying Trend	Predicted mgal	Predicted GMD	Regression Residual
12/1/84	1,199,521	12,038	366	272.3	-4.39829	1,189,653	270.0130	1,218,963	276.6655	-0.0145
12/1/85	1,257,920	12,846	365	268.3	10.75993	1,279,169	272.8143	1,207,579	257.5460	-0.0235
12/1/86	1,381,736	13,738	365	275.6	-5.48102	1,382,038	275.6155	1,409,522	281.0965	-0.0602
12/1/87	1,539,841	15,033	365	280.6	-17.0301	1,527,651	278.4167	1,633,462	297.7010	-0.0325
12/1/88	1,640,858	15,919	366	281.6	-31.4665	1,638,458	281.2179	1,821,791	312.6844	0.4119
12/1/89	1,707,690	16,489	365	283.7	4.119186	1,709,382	284.0191	1,684,591	279.8999	-0.2812
12/1/90	1,647,261	17,005	365	265.4	10.25466	1,629,762	262.5771	1,583,933	255.1934	-0.0517
12/1/91	1,689,441	17,530	365	264.0	-14.6481	1,708,142	266.9606	1,783,498	278.7377	-0.0517
12/1/92	1,800,074	18,113	366	271.5	-1.72756	1,798,836	271.3440	1,810,289	273.0715	0.1868
12/1/93	1,888,751	18,768	365	275.7	40.28236	1,888,829	275.7274	1,612,881	235.4450	-0.0114
12/1/94	2,007,416	19,671	365	279.6	-0.50046	2,011,146	280.1108	2,014,740	280.6113	-0.5196
12/1/95	2,213,079	21,046	365	288.1	8.666651	2,151,778	280.1108	2,147,026	279.4922	-0.0681
12/1/96	2,276,007	22,020	366	282.4	12.05921	2,257,451	280.1108	2,179,369	270.4221	-0.0681
12/1/97	2,271,458	23,081	365	269.6	-5.84193	2,359,803	280.1108	2,321,248	275.5342	-0.0681
12/1/98	2,473,897	24,141	365	280.8	22.59778	2,468,153	280.1108	2,269,036	257.5130	0.6519
3/1/99	2,487,527	24,330	365	280.1		2,487,527	280.1108	2,487,527	280.1108	
4/1/00	2,619,195	25,548	366	280.1		2,619,195	280.1108	2,619,195	280.1108	

REGRESSION VARIABLES

			1989	1989	1994				
Coefficients		7.218199	25.82541	-1.58221	4.383421	4.508318	2.8709378	8.04804811	10.41853
YEAR	GMD	DNSHORT	IND8489	TRND8984	TRND9498	I848587	IND9091	IND9695	IND9796
1984	276.7	0.61	1.00	(5.00)	(10.00)	0.50	0.00	0.00	0.00
1985	257.5	(1.49)	1.00	(4.00)	(9.00)	(1.00)	0.00	0.00	0.00
1986	281.0	0.76	1.00	(3.00)	(8.00)	0.00	0.00	0.00	0.00
1987	297.7	2.36	1.00	(2.00)	(7.00)	0.50	0.00	0.00	0.00
1988	313.1	4.36	1.00	(1.00)	(6.00)	0.00	0.00	0.00	0.00
1989	279.6	(0.57)	1.00	0.00	(5.00)	0.00	0.00	0.00	0.00
1990	255.1	(1.42)	0.00	0.00	(4.00)	0.00	1.00	0.00	0.00
1991	278.7	2.03	0.00	0.00	(3.00)	0.00	(1.00)	0.00	0.00
1992	273.3	0.24	0.00	0.00	(2.00)	0.00	0.00	0.00	0.00
1993	235.4	(5.58)	0.00	0.00	(1.00)	0.00	0.00	0.00	0.00
1994	280.1	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1995	279.4	(1.20)	0.00	0.00	0.00	0.00	0.00	1.00	0.00
1996	270.4	(1.67)	0.00	0.00	0.00	0.00	0.00	(1.00)	1.00
1997	275.5	0.81	0.00	0.00	0.00	0.00	0.00	0.00	(1.00)
1998	258.2	(3.13)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1998.25		0							
1999.33		0							

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.999892
R Square	0.999784
Adjusted R Squ	0.999496
Standard Error	0.408943
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*ignificance F*
Regression	8	4645.387	580.6734	3472.212	2.01E-10
Residual	6	1.003407	0.167234		
Total	14	4646.391			

	Coefficients	*tandard Er*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	280.1108	0.198914	1408.198	8.66E-18	279.6241	280.59754	279.624088	280.5975
dnshort	7.218199	0.062629	115.2537	2.88E-11	7.064952	7.3714467	7.06495213	7.371447
indic8489	25.82541	0.500173	51.63294	3.54E-09	24.60153	27.049288	24.6015269	27.04929
trnd8984	-1.58221	0.144919	-10.9178	3.5E-05	-1.93681	-1.2276007	-1.9368112	-1.2276
trnd9484	4.383421	0.099161	44.20515	8.97E-09	4.140783	4.6260589	4.14078283	4.626059
i848587	4.508318	0.355459	12.68308	1.47E-05	3.638541	5.3780963	3.63854056	5.378096
xf91to90	2.870938	0.317306	9.04786	0.000102	2.094518	3.6473576	2.09451812	3.647358
xf96to95	8.048048	0.335445	23.99217	3.44E-07	7.227244	8.8688526	7.22724363	8.868853
xf97to96	10.41853	0.346808	30.0412	9.02E-08	9.569918	11.267137	9.56991817	11.26714

MISSOURI AMERICAN WATER COMPANY
ST JOSEPH RESIDENTIAL SALES

BILLING YEAR	ADJUSTED MGAL	METERS	NOMINAL DAYS	ADJUSTED GMD	Wthr Adjustment GMD	Underlying Trend, MG	Underlying Trend	Predicted mgal	Predicted GMD	Residual
12/1/84	1,575,891	23,362	366	184.3	-1.335615	1,563,777	182.8874	1,587,464	185.6576	-0.0179
12/1/85	1,585,000	23,551	365	184.4	7.008621	1,584,971	184.3822	1,524,724	177.3736	0.0034
12/1/86	1,573,767	23,671	365	182.2	4.509381	1,605,962	185.8771	1,533,947	177.5420	0.0994
12/1/87	1,580,910	23,733	365	182.5	-0.448788	1,623,083	187.3719	1,585,546	183.0385	-0.0864
12/1/88	1,650,134	23,878	366	188.8	-16.29074	1,650,566	188.8667	1,792,936	205.1575	-0.0495
12/1/89	1,676,202	24,066	365	190.8	-3.391442	1,672,153	190.3616	1,706,145	194.2312	-0.0173
12/1/90	1,671,820	24,193	365	189.3	1.929521	1,676,064	189.8064	1,654,802	187.3987	-0.0023
12/1/91	1,666,714	24,227	365	188.4	-7.099991	1,673,521	189.2512	1,727,692	195.3772	0.0911
12/1/92	1,760,080	25,362	366	189.6	8.258241	1,751,587	188.6961	1,683,971	181.4119	-0.0591
12/1/93	1,804,327	26,281	365	188.1	11.80555	1,804,748	188.1409	1,691,503	176.3354	-0.0439
12/1/94	1,763,019	26,436	365	182.7	-3.915476	1,810,053	187.5857	1,800,840	186.6310	-0.0042
12/1/95	1,839,804	26,653	365	189.1	4.831864	1,819,515	187.0306	1,791,460	184.1468	0.1375
12/1/96	1,821,495	26,813	366	185.6	3.703175	1,830,010	186.4754	1,784,109	181.7982	0.1063
12/1/97	1,838,573	26,958	365	186.9	-0.368168	1,829,377	185.9202	1,842,584	187.2625	-0.0394
12/1/98	1,832,723	27,105	365	185.2	7.048931	1,833,888	185.3651	1,764,150	178.3162	-0.1178
3/1/99	1,835,587	27,151	365	185.2	0.0	1,835,587	185.2263	1,835,587	185.2263	
4/1/00	1,848,181	27,351	366	184.6	0.0	1,848,181	184.6249	1,848,181	184.6249	

REGRESSION VARIABLES

			1999.33	1989			
	184.6248778	4.031032	-0.555167	2.050009	4.782148	4.870175	0
YEAR	GMD	DNSHORT	TRND2000	TRND198S	IND8490	IND9198	
1984	185.6	0.33	(15.33)	(5.00)	0.30	0.00	
1985	177.4	(1.74)	(14.33)	(4.00)	0.00	0.00	
1986	177.6	(1.12)	(13.33)	(3.00)	(0.80)	0.00	
1987	183.0	0.11	(12.33)	(2.00)	(1.00)	0.00	
1988	205.1	4.04	(11.33)	(1.00)	0.00	0.00	
1989	194.2	0.84	(10.33)	0.00	0.10	0.00	
1990	187.4	(0.48)	(9.33)	0.00	(0.10)	0.00	
1991	195.5	1.76	(8.33)	0.00	0.00	(0.20)	
1992	181.4	(2.05)	(7.33)	0.00	0.00	0.20	
1993	176.3	(2.93)	(6.33)	0.00	0.00	0.00	
1994	186.6	0.97	(5.33)	0.00	0.00	(1.00)	
1995	184.3	(1.20)	(4.33)	0.00	0.00	0.40	
1996	181.9	(0.92)	(3.33)	0.00	0.00	(0.20)	
1997	187.2	0.09	(2.33)	0.00	0.00	0.20	
1998	178.2	(1.75)	(1.33)	0.00	0.00	0.00	
1998.25		0	(1.08)	0.00			
1999.33		0	0.00	0.00			

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.999954
R Square	0.999908
Adjusted R Squ	0.999858
Standard Error	0.094167
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*ignificance F*
Regression	5	871.45388	174.2908	19655.1	6.96E-18
Residual	9	0.0798071	0.008867		
Total	14	871.53369			

	Coefficients	*tandard Erro*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*ower 95.0%*	*pper 95.0%*
Intercept	184.6249	0.0748184	2467.639	1.5E-27	184.4556	184.794129	184.4556	184.7941
dnshort	4.031032	0.0169321	238.071	2.07E-18	3.992729	4.069335	3.992729	4.069335
trnd2000	-0.55517	0.0108866	-50.99536	2.15E-12	-0.579794	-0.5305394	-0.57979	-0.53054
trnd1989	2.050009	0.0269443	76.0831	5.92E-14	1.989057	2.11096139	1.989057	2.110961
ind_8490	4.782148	0.0791004	60.45668	4.67E-13	4.603211	4.96108605	4.603211	4.961086
ind_9197	4.870175	0.0873563	55.75069	9.67E-13	4.672561	5.06778923	4.672561	5.067789

MISSOURI AMERICAN WATER COMPANY
WARRENSBURG RESIDENTIAL SALES

BILLING YEAR	ADJUSTED MGAL	METERS	NOMINAL DAYS	ADJUSTED GMD	Wthr Adjustment GMD	Underlying Trend, MG	Underlying Trend	Predicted mgal	Predicted GMD	Residual
12/1/84	268,699	3,736	366	196.5	0	254,814	186.35	254,814	186.35	10.1545
12/1/85	250,194	3,760	365	182.3	0	255,750	186.35	255,750	186.35	-4.0485
12/1/86	242,598	3,798	365	175.0	0	258,335	186.35	258,335	186.35	-11.3520
12/1/87	262,657	3,877	365	185.6	0	263,697	186.35	263,697	186.35	-0.7350
12/1/88	294,128	3,971	366	202.4	0	270,825	186.35	270,825	186.35	16.0346
12/1/89	274,724	4,159	365	181.0	0	282,873	186.35	282,873	186.35	-5.3682
12/1/90	305,032	4,262	365	196.1	0	289,907	186.35	289,907	186.35	9.7225
12/1/91	290,387	4,389	365	181.3	0	298,540	186.35	298,540	186.35	-5.0889
12/1/92	326,819	4,535	366	196.9	0	309,287	186.35	309,287	186.35	10.5634
12/1/93	292,658	4,647	365	172.5	0	316,088	186.35	316,088	186.35	-13.8136
12/1/94	338,930	4,839	365	191.9	0	329,159	186.35	329,159	186.35	5.5316
12/1/95	365,423	5,007	365	200.0	0	340,535	186.35	340,535	186.35	13.6193
12/1/96	309,386	4,977	366	169.8	0	339,485	186.35	339,485	186.35	-16.5220
12/1/97	343,367	5,075	365	185.4	0	345,217	186.35	345,217	186.35	-0.9989
12/1/98	334,346	5,127	365	178.7	0	348,754	186.35	348,754	186.35	-7.6989
3/1/99	349,038	5,132	365	186.4		349,038	186.35	349,038	186.35	
4/1/00	362,305	5,312	366	186.4		362,305	186.35	362,305	186.35	

REGRESSION VARIABLES

	0	186.3525
YEAR	GMD	TREND
0	196.5	1.00
0	182.3	1.00
0	175.0	1.00
0	185.6	1.00
0	202.4	1.00
0	181.0	1.00
0	196.1	1.00
0	181.3	1.00
0	196.9	1.00
0	172.5	1.00
0	191.9	1.00
0	200.0	1.00
0	169.8	1.00
0	185.4	1.00
0	178.7	1.00
1998.25		1.00
1999.33		1.00

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0
R Square	0
Adjusted R Squ	-0.07143
Standard Error	10.37509
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*ignificance F*
Regression	1	0	0	0	1
Residual	14	1506.995	107.6425		
Total	15	1506.995			

	Coefficients	*tandard Erro*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*ower 95.0%*	*pper 95.0%*
Intercept	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
TREND	186.3525	2.6788369	69.56471	3.49E-19	180.607	192.098035	180.607	192.098

MISSOURI AMERICAN WATER COMPANY
BRUNSWICK COMMERCIAL SALES

BILLING YEAR	ADJUSTED MGAL	COMMERCIAL METERS	NOMINAL DAYS	ADJUSTED GMD	WEATHER ADJUSTMENT	Underlying Trend, MG	Underlying Trend	Predicted mgal	Predicted GMD	Residual
12/1/84	7,142	80	366	243.9	0.00	6,369	217.5076	6,369	217.5076	26.4132
12/1/85	6,243	80	365	213.8	0.00	6,351	217.5076	6,351	217.5076	-3.7062
12/1/86	6,060	80	365	207.5	0.00	6,351	217.5076	6,351	217.5076	-9.9734
12/1/87	6,181	78	365	217.3	0.00	6,186	217.5076	6,186	217.5076	-0.1697
12/1/88	6,550	77	366	233.4	0.00	6,103	217.5076	6,103	217.5076	15.9208
12/1/89	5,769	75	365	211.9	0.00	5,921	217.5076	5,921	217.5076	-5.5906
12/1/90	5,370	71	365	207.9	0.00	5,617	217.5076	5,617	217.5076	-9.5595
12/1/91	5,676	71	365	218.0	0.00	5,663	217.5076	5,663	217.5076	0.4926
12/1/92	6,018	71	366	231.9	0.00	5,646	217.5076	5,646	217.5076	14.3508
12/1/93	5,981	70	365	235.5	0.00	5,524	217.5076	5,524	217.5076	17.9841
12/1/94	5,304	69	365	211.9	0.00	5,445	217.5076	5,445	217.5076	-5.6266
12/1/95	5,180	67	365	211.3	0.00	5,332	217.5076	5,332	217.5076	-6.2156
12/1/96	5,156	68	366	207.2	0.00	5,413	217.5076	5,413	217.5076	-10.3395
12/1/97	5,745	74	365	213.7	0.00	5,848	217.5076	5,848	217.5076	-3.8462
12/1/98	5,235	73	365	197.4	0.00	5,769	217.5076	5,769	217.5076	-20.1342
3/1/99	5,803	73	365	217.5	0.00	5,803	217.5076	5,803	217.5076	
4/1/00	5,971	75	366	217.5	0.00	5,971	217.5076	5,971	217.5076	

REGRESSION VARIABLES

YEAR	0 GMD	217.5076127 AVERAGE
1984	243.9	1.00
1985	213.8	1.00
1986	207.5	1.00
1987	217.3	1.00
1988	233.4	1.00
1989	211.9	1.00
1990	207.9	1.00
1991	218.0	1.00
1992	231.9	1.00
1993	235.5	1.00
1994	211.9	1.00
1995	211.3	1.00
1996	207.2	1.00
1997	213.7	1.00
1998	197.4	1.00
1998.25		1.00
1999.33		1.00

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0
R Square	0
Adjusted R Squ	-0.071428571
Standard Error	12.85632348
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0	0	0	1
Residual	14	2313.991	165.2851		
Total	15	2313.991			

	Coefficients	*tandard Em*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*ower 95.0%*	*Upper 95.0%*
Intercept	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Trend	217.5076127	3.319488	65.52444	8.04E-19	210.3880118	224.627214	210.388	224.6272

MISSOURI AMERICAN WATER COMPANY
JOPLIN COMMERCIAL SALES

BILLING YEAR	ADJUSTED MGAL	COMMERCIAL METERS	NOMINAL DAYS	ADJUSTED GMD	WEATHER ADJUSTMENT	Underlying Trend, MG	Underlying Trend	Predicted mgal	Predicted GMD	Residual
12/1/84	768,634	2,407	366	872.5	0.00	762,672	865.7267	768,307	872.1230	0.3710
12/1/85	776,883	2,441	365	872.0	0.00	776,962	872.0456	776,962	872.0456	-0.0888
12/1/86	774,276	2,465	365	860.6	0.00	790,286	878.3644	774,461	860.7748	-0.2052
12/1/87	835,795	2,498	365	916.6	0.00	806,655	884.6833	835,815	916.6644	-0.0219
12/1/88	788,925	2,468	366	873.3	0.00	804,913	891.0021	789,023	873.4125	-0.1084
12/1/89	795,208	2,370	365	919.4	0.00	776,118	897.3209	795,481	919.7077	-0.3160
12/1/90	778,207	2,406	365	886.1	0.00	793,650	903.6398	778,201	886.0502	0.0065
12/1/91	796,417	2,397	365	910.3	0.00	796,100	909.9586	796,100	909.9586	0.3627
12/1/92	763,236	2,471	366	844.0	0.00	763,286	844.0400	763,286	844.0400	-0.0558
12/1/93	819,602	2,573	365	872.9	0.00	806,610	859.0157	819,497	872.7406	0.1115
12/1/94	852,946	2,731	365	855.8	0.00	871,075	873.9914	852,858	855.7134	0.0885
12/1/95	900,486	2,848	365	866.4	0.00	900,570	866.4337	900,570	866.4337	-0.0806
12/1/96	930,837	2,966	366	857.5	0.00	932,384	858.8760	930,995	857.5966	-0.1458
12/1/97	965,413	3,099	365	853.6	0.00	962,878	851.3183	965,462	853.6031	-0.0437
12/1/98	957,142	3,107	365	843.9	0.00	956,999	843.7606	956,999	843.7606	0.1258
3/1/99	958,978	3,121	365	841.9	0.00	958,978	841.8712	958,978	841.8712	
4/1/00	970,308	3,180	366	833.7	0.00	970,308	833.6840	970,308	833.6840	

REGRESSION VARIABLES

		1991	1991.00	1994.00	1999.33		
	833.6839772	-8.656885522	80.8944	22.53342	-7.55769	31.98112429	18.27801
YEAR	GMD	TRND1991	SHFT1991	TRND1994	TRND2000	ADJ8491	ADJ9498
1984	872.5	(7.00)	1.00	(10.00)	(15.33)	0.20	0.00
1985	872.0	(6.00)	1.00	(9.00)	(14.33)	0.00	0.00
1986	860.6	(5.00)	1.00	(8.00)	(13.33)	(0.55)	0.00
1987	916.6	(4.00)	1.00	(7.00)	(12.33)	1.00	0.00
1988	873.3	(3.00)	1.00	(6.00)	(11.33)	(0.55)	0.00
1989	919.4	(2.00)	1.00	(5.00)	(10.33)	0.70	0.00
1990	886.1	(1.00)	1.00	(4.00)	(9.33)	(0.55)	0.00
1991	910.3	0.00	1.00	(3.00)	(8.33)	0.00	0.00
1992	844.0	0.00	0.00	(2.00)	(7.33)	0.00	0.00
1993	872.9	0.00	0.00	(1.00)	(6.33)	0.00	0.75
1994	855.8	0.00	0.00	0.00	(5.33)	0.00	(1.00)
1995	866.4	0.00	0.00	0.00	(4.33)	0.00	0.00
1996	857.5	0.00	0.00	0.00	(3.33)	0.00	(0.07)
1997	853.6	0.00	0.00	0.00	(2.33)	0.00	0.13
1998	843.9	0.00	0.00	0.00	(1.33)	0.00	0.00
1998.25		0.00	0.00	0.00	(1.08)	0.00	0.00
1999.33		0.00	0.00	0.00	0.00	0.00	0.00

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.999970298
R Square	0.999940598
Adjusted R Squ	0.999896046
Standard Error	0.250029948
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	6	8418.709	1403.118	22444.51	1.8675E-16
Residual	8	0.50012	0.062515		
Total	14	8419.209			

	Coefficients	*tandard Em*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*ower 95.0%*	*pper 95.0%*
Intercept	833.6839772	0.292769	2847.58	2.59E-25	833.0088495	834.359105	833.0088	834.3591
trnd1991	-8.656885522	0.183717	-47.1207	4.55E-11	-9.080538868	-8.2332322	-9.08054	-8.23323
shft1991	80.89440147	0.43641	185.3631	8.03E-16	79.88803664	81.9007663	79.88804	81.90077
trnd1994	22.53341603	0.24071	93.61237	1.89E-13	21.97833784	23.0884942	21.97834	23.08849
trnd2000	-7.557689795	0.082403	-91.7163	2.23E-13	-7.747711446	-7.3676681	-7.74771	-7.36767
adj8491	31.98112429	0.161157	198.447	4.65E-16	31.60949536	32.3527532	31.6095	32.35275
adj9298	18.27801	0.229226	79.73796	6.82E-13	17.74941365	18.8066063	17.74941	18.80661

MISSOURI AMERICAN WATER COMPANY
MEXICO COMMERCIAL SALES

BILLING YEAR	ADJUSTED MGAL	COMMERCIAL METERS	NOMINAL DAYS	ADJUSTED GMD	WEATHER ADJUSTMENT	Underlying Trend, MGAL	Underlying Trend	Predicted mgal	Predicted GMD	Residual
12/1/84	#N/A	#N/A	366	#N/A	#N/A	#N/A	464.49	#N/A	464.49	
12/1/85	#N/A	#N/A	365	#N/A	#N/A	#N/A	475.50	#N/A	475.50	
12/1/86	#N/A	#N/A	365	#N/A	#N/A	#N/A	486.51	#N/A	486.51	
12/1/87	78,983	437	365	494.7	0.00	79,434	497.53	79,434	497.53	-2.8240
12/1/88	79,734	424	366	514.3	0.00	78,840	508.54	78,840	508.54	5.7669
12/1/89	81,046	428	365	519.3	0.00	81,086	519.55	81,086	519.55	-0.2554
12/1/90	82,666	431	365	525.1	0.00	83,531	530.57	83,531	530.57	-5.4938
12/1/91	84,382	425	365	544.4	0.00	83,947	541.58	83,947	541.58	2.8064
12/1/92	79,091	443	366	487.7	0.00	78,288	482.76	78,288	482.76	4.9490
12/1/93	83,806	451	365	509.5	0.00	85,434	519.38	85,434	519.38	-9.8979
12/1/94	93,392	460	365	556.7	0.00	93,267	556.00	93,267	556.00	0.7448
12/1/95	95,389	454	365	575.2	0.00	94,039	567.08	94,039	567.08	8.1399
12/1/96	96,690	454	366	581.7	0.00	96,104	578.16	96,104	578.16	3.5248
12/1/97	96,298	459	365	574.6	0.00	98,754	589.24	98,754	589.24	-14.6526
12/1/98	104,089	469	365	607.5	0.00	102,857	600.32	102,857	600.32	7.1921
3/1/99	103,884	472	365	603.1	0.00	103,884	603.09	103,884	603.09	
4/1/00	108,735	483	366	615.1	0.00	108,735	615.09	108,735	615.09	

REGRESSION VARIABLES

		1999.33	1994.00	1991	1991.00
	615.1	11.08066069	25.5371	95.4399	-25.6043
YEAR	GMD	TRND2000	TRND1994	SHFT1991	TRND1991
1984		(15.33)	(10.00)	1.00	(7.00)
1985		(14.33)	(9.00)	1.00	(6.00)
1986		(13.33)	(8.00)	1.00	(5.00)
1987	494.7	(12.33)	(7.00)	1.00	(4.00)
1988	514.3	(11.33)	(6.00)	1.00	(3.00)
1989	519.3	(10.33)	(5.00)	1.00	(2.00)
1990	525.1	(9.33)	(4.00)	1.00	(1.00)
1991	544.4	(8.33)	(3.00)	1.00	0.00
1992	487.7	(7.33)	(2.00)	0.00	0.00
1993	509.5	(6.33)	(1.00)	0.00	0.00
1994	556.7	(5.33)	0.00	0.00	0.00
1995	575.2	(4.33)	0.00	0.00	0.00
1996	581.7	(3.33)	0.00	0.00	0.00
1997	574.6	(2.33)	0.00	0.00	0.00
1998	607.5	(1.33)	0.00	0.00	0.00
1998.25		(1.08)	0.00	0.00	0.00
1999.33		0.00	0.00	0.00	0.00

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.98279673
R Square	0.965889413
Adjusted R Squ	0.94639765
Standard Error	8.843706293
Observations	12

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	4	15502.61	3875.653	49.55372	3.21105E-05
Residual	7	547.478	78.21114		
Total	11	16050.09			

	Coefficients	*tandard Err*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	615.0918068	9.974984	61.66344	7.75E-11	591.5047353	638.67888	591.504735	638.6789
X Variable 1	11.08066069	2.694896	4.111721	0.004506	4.708249407	17.453072	4.70824941	17.45307
X Variable 2	25.53709917	7.399176	3.451344	0.010672	8.040841763	43.033357	8.04084176	43.03336
X Variable 3	95.43989791	14.64657	6.516195	0.000329	60.80629016	130.07351	60.8062902	130.0735
X Variable 4	-25.60427906	6.208617	-4.12399	0.004437	-40.28531383	-10.923244	-40.285314	-10.9232

MISSOURI AMERICAN WATER COMPANY
PARKVILLE COMMERCIAL SALES W/CASINO

BILLING YEAR	ADJUSTED MGAL W/Casino	COMMERCIAL METERS W/Casino	NOMINAL DAYS	ADJUSTED GMD W/Casino	WEATHER ADJUSTMENT	Trend, MG W/Casino	Trend, GM W/Casino	Predicted mgal w/casino	Predicted GMD w/casino	Residual
12/1/84	55,738	236	366	645.3	-25.84588985	55,867	646.79	58,099	672.63	-1.4981
12/1/85	60,523	237	365	699.7	20.08	60,276	696.79	58,538	676.71	2.8618
12/1/86	65,311	240	365	745.6	4.59	65,419	746.79	65,017	742.20	-1.2291
12/1/87	70,975	244	365	796.7	-12.53	70,987	796.79	72,103	809.32	-0.1345
12/1/88	67,247	255	366	721.9	-101.94	67,264	722.13	76,760	824.07	-0.1800
12/1/89	67,600	261	365	709.1	0.52	68,825	722.00	67,329	706.30	2.3306
12/1/90	74,046	267	365	761.0	19.27	70,241	721.87	72,059	740.56	1.1512
12/1/91	69,742	266	365	718.1	-47.32	70,096	721.75	74,692	769.06	-3.6537
12/1/92	69,689	267	366	712.5	45.09	70,584	721.62	65,432	668.94	-1.5601
12/1/93	69,242	263	365	720.4	79.87	69,348	721.49	61,670	641.62	-1.0963
12/1/94	71,217	265	365	736.1	-38.35	70,926	733.10	74,636	771.45	3.0083
12/1/95	96,726	280	365	946.4	14.65	96,535	944.52	95,037	929.87	1.8743
12/1/96	102,268	279	366	1001.4	38.57	101,377	992.48	98,601	965.31	-2.4643
12/1/97	105,294	286	365	1009.5	3.78	106,554	1021.62	104,972	1006.46	-0.6944
12/1/98	112,895	294	365	1052.0	28.51	112,758	1050.76	109,698	1022.25	1.2844
3/1/99	114,473	296	365	1058.0	0.00	114,473	1058.05	114,473	1058.05	
4/1/00	126,420	317	366	1089.6	0.00	126,420	1089.62	126,420	1089.62	

REGRESSION VARIABLES

YEAR	GMD	27.17759185 DNSHORT	1999.33 29.14015 TRND2000	1987 50.12899616 TRND1987	1994.00 -29.2668 TRND1994	1987 74.54003537 PRE1987	1994 -133.04133 PRE1994	79.79401 CASINO	37.95756 BILL ADJ
1984	671.1	0.95	(15.33)	(3.00)	(10.00)	1.00	1.00	0.00	0.00
1985	679.6	(0.74)	(14.33)	(2.00)	(9.00)	1.00	1.00	0.00	0.00
1986	741.0	(0.17)	(13.33)	(1.00)	(8.00)	1.00	1.00	0.00	0.00
1987	809.2	0.46	(12.33)	0.00	(7.00)	1.00	1.00	0.00	0.00
1988	823.9	3.75	(11.33)	0.00	(6.00)	0.00	1.00	0.00	0.00
1989	708.6	(0.02)	(10.33)	0.00	(5.00)	0.00	1.00	0.00	(0.40)
1990	741.7	(0.71)	(9.33)	0.00	(4.00)	0.00	1.00	0.00	1.00
1991	765.4	1.74	(8.33)	0.00	(3.00)	0.00	1.00	0.00	0.00
1992	667.4	(1.66)	(7.33)	0.00	(2.00)	0.00	1.00	0.00	(0.20)
1993	640.5	(2.94)	(6.33)	0.00	(1.00)	0.00	1.00	0.00	0.00
1994	774.5	1.41	(5.33)	0.00	0.00	0.00	1.00	0.15	0.00
1995	931.7	(0.54)	(4.33)	0.00	0.00	0.00	0.00	0.76	0.00
1996	962.8	(1.42)	(3.33)	0.00	0.00	0.00	0.00	1.00	0.30
1997	1005.8	(0.14)	(2.33)	0.00	0.00	0.00	0.00	1.00	(0.30)
1998	1023.5	(1.05)	(1.33)	0.00	0.00	0.00	0.00	1.00	0.00
1998.25		0.00	(1.08)	0.00	0.00	0.00	0.00	1.00	0.00
1999.33		0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.999875999
R Square	0.999752014
Adjusted R Squar	0.999421365
Standard Error	3.06881333
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	8	227801.5	28475.18279	3023.609	3.0484E-10
Residual	6	56.50569	9.417615252		
Total	14	227858			

	Coefficients	*'andard Er*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*ower 95.0%*	*Upper 95.0%*
Intercept	1009.82276	23.81217	42.40785005	0.000000	951.5564469	1068.0891	951.5564	1068.089
dnshort	27.17759185	0.67017	40.55326893	0.000000	25.53774328	28.81744	25.53774	28.81744
tmd2000	29.14015402	2.017948	14.44048788	0.000007	24.20240946	34.077899	24.20241	34.0779
tmd1987	50.12899616	1.574318	31.84172583	0.000000	46.27677643	53.981216	46.27678	53.98122
tmd1994	-29.2668007	1.819993	-16.08072174	0.000004	-33.72016636	-24.813435	-33.7202	-24.8134
pre1987	74.54003537	4.208313	17.71256801	0.000002	64.24265617	84.837415	64.24266	84.83741
pre1994	-133.0413311	14.52236	-9.161137466	0.000095	-168.5762905	-97.506372	-168.576	-97.5064
casino	79.79400879	20.23579	3.943211354	0.007597	30.27877082	129.30925	30.27877	129.3092
bill adj	37.95755579	2.748462	13.81047031	0.000009	31.23230611	44.682805	31.23231	44.68281

MISSOURI AMERICAN WATER COMPANY
ST CHARLES COMMERCIAL SALES

BILLING YEAR	ADJUSTED MGAL	ADJUSTED METERS	NOMINAL DAYS	ADJUSTED GMD	WEATHER ADJUSTMENT	Underlying Trend, MGAL	Underlying Trend	Predicted mgal	Predicted GMD	Residual
12/1/84	193,984	378	366	1402.1	-9.766465808	190,746	1378.74	195,388	1412.29	-0.3798
12/1/85	208,140	422	365	1351.3	23.89257937	210,304	1365.34	204,792	1329.56	-2.1535
12/1/86	226,496	475	365	1306.4	-12.17068332	234,393	1351.94	228,256	1316.55	2.0174
12/1/87	265,682	531	365	1371.9	-37.81567013	259,227	1338.55	272,538	1407.28	2.4090
12/1/88	277,527	566	366	1340.5	-69.87190363	274,351	1325.15	292,067	1410.72	-0.3569
12/1/89	282,525	599	365	1291.5	9.14671196	286,955	1311.75	280,791	1283.58	-1.2218
12/1/90	306,395	618	365	1357.9	22.7706112	300,101	1330.05	301,403	1335.82	-0.6458
12/1/91	307,614	636	365	1325.5	-32.5263916	312,924	1348.35	314,953	1357.09	0.9049
12/1/92	321,205	650	366	1349.8	-3.83606261	325,209	1366.65	322,387	1354.79	-1.1299
12/1/93	341,842	**670**	365	1397.6	89.44757689	338,740	1384.95	319,189	1305.02	3.1676
12/1/94	340,950	**690**	365	1353.7	-1.111282762	346,981	1377.66	341,870	1357.37	-2.5410
12/1/95	303,394	**587**	365	1416.2	19.24442552	293,569	1370.38	299,637	1398.70	-1.7064
12/1/96	364,127	**730**	366	1363.0	26.77764039	364,141	1363.09	356,988	1336.32	-0.0516
12/1/97	371,708	750	365	1358.1	-12.97208916	371,070	1355.81	374,620	1368.78	2.3308
12/1/98	380,218	778	365	1338.4	50.17869085	383,104	1348.52	366,146	1288.83	-0.6429
3/1/99	385,167	784	365	1346.7	0.0	385,167	1346.70	385,167	1346.70	
4/1/00	403,763	824	366	1338.8	0.0	403,763	1338.81	403,763	1338.81	

REGRESSION VARIABLES

YEAR	GMD	16.028117 DNSHORT	1989 -31.6967 TRND1989	1993 25.58491 TRND1993	1999.333 -7.28559 TRND2000	47.56887017 BILL ADJ
1984	1411.9	0.61	(5.00)	(9.00)	(15.33)	0.50
1985	1327.4	(1.49)	(4.00)	(8.00)	(14.33)	(0.25)
1986	1318.6	0.76	(3.00)	(7.00)	(13.33)	(1.00)
1987	1409.7	2.36	(2.00)	(6.00)	(12.33)	0.65
1988	1410.4	4.36	(1.00)	(5.00)	(11.33)	0.33
1989	1282.4	(0.57)	0.00	(4.00)	(10.33)	(0.40)
1990	1335.2	(1.42)	0.00	(3.00)	(9.33)	0.60
1991	1358.0	2.03	0.00	(2.00)	(8.33)	(0.50)
1992	1353.7	0.24	0.00	(1.00)	(7.33)	(0.33)
1993	1308.2	(5.58)	0.00	0.00	(6.33)	0.20
1994	1354.8	0.07	0.00	0.00	(5.33)	(0.45)
1995	1397.0	(1.20)	0.00	0.00	(4.33)	1.00
1996	1336.3	(1.67)	0.00	0.00	(3.33)	0.00
1997	1371.1	0.81	0.00	0.00	(2.33)	0.00
1998	1288.2	(3.13)	0.00	0.00	(1.33)	(0.20)
1998.25		0	0.00	0.00	(1.08)	0.00
1999.33		0	0.00	0.00	(0.00)	0.00

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.9991474
R Square	0.9982955
Adjusted R Squ	0.9973486
Standard Error	2.2120379
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	5	25792.32	5158.464	1054.23	3.59844E-12
Residual	9	44.03801	4.893112		
Total	14	25836.36			

	Coefficients	*tandard Err*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	1338.8076	2.146488	623.7202	3.56E-22	1333.9519	1343.6633	1333.9519	1343.663
dnshort	16.028117	0.295562	54.22931	1.24E-12	15.35950884	16.696725	15.3595088	16.69672
trnd1989	-31.696748	0.981953	-32.2793	1.29E-10	-33.91808213	-29.475413	-33.918082	-29.4754
trnd1993	25.584912	0.965673	26.49439	7.51E-10	23.40040674	27.769418	23.4004067	27.76942
trend2000	-7.2855905	0.479329	-15.1996	1.01E-07	-8.369908004	-6.201273	-8.369908	-6.20127
ind_othr	47.56887	1.106776	42.97967	9.97E-12	45.06516672	50.072574	45.0651667	50.07257

MISSOURI AMERICAN WATER COMPANY
ST JOSEPH COMMERCIAL SALES

BILLING YEAR	ADJUSTED MGAL	COMMERCIAL METERS	NOMINAL DAYS	ADJUSTED GMD	WEATHER ADJUSTMENT	Underlying Trend, MG	Underlying Trend	Predicted mgal	Predicted GMD	Residual
12/1/84	892,528	3,158	366	772.2	-4.944500521	893,640	773.1603	899,355	778.1048	-0.9624
12/1/85	882,391	3,142	365	769.4	25.94619187	880,851	768.0747	851,095	742.1285	1.3427
12/1/86	871,363	3,120	365	765.2	16.69390719	868,892	762.9890	852,122	748.2632	0.2018
12/1/87	865,232	3,139	365	755.1	-1.661431765	868,449	757.9033	868,097	757.5966	-0.8387
12/1/88	886,424	3,137	366	772.1	-60.30897819	879,751	766.2797	955,318	832.0995	0.3017
12/1/89	878,348	3,138	365	766.9	-12.55525082	887,174	774.6560	892,536	779.3386	0.1666
12/1/90	895,206	3,121	365	786.0	7.143161718	891,860	783.0324	887,311	779.0383	-0.2116
12/1/91	948,896	3,144	365	826.8	-26.28444744	948,103	826.1251	978,269	852.4095	0.6902
12/1/92	951,369	3,174	366	819.0	30.57233421	953,305	820.6233	917,790	790.0509	-1.6661
12/1/93	949,016	3,185	365	816.4	43.70460923	947,549	815.1215	896,744	771.4169	1.2616
12/1/94	933,393	3,175	365	805.5	-14.49524599	938,149	809.6197	950,385	820.1786	-0.1688
12/1/95	961,566	3,190	365	825.7	17.88775038	952,808	818.2109	941,146	808.1959	-0.3519
12/1/96	950,831	3,172	366	819.1	13.70929923	959,827	826.8021	934,773	805.2201	0.1234
12/1/97	965,233	3,149	365	839.7	-1.362970969	960,316	835.3934	966,407	840.6927	0.3415
12/1/98	971,852	3,156	365	843.8	26.09542227	972,117	843.9846	942,060	817.8892	-0.2298
3/1/99	981,241	3,177	365	846.1	0.0	981,241	846.1324	981,241	846.1324	
4/1/00	1,008,778	3,222	366	855.4	0.0	1,008,778	855.4393	1,008,778	855.4393	

REGRESSION VARIABLES

	855.4395428	14.9230398	1987 -13.46205	1991 13.87817	1991 -34.7163	1994 -14.09303694	1999.33333 8.59123302	7.872707
YEAR	GMD	DNSHORT	TRND1987	TRND1991	SHFT1991	TRND1994	TRND2000	BILL ADJ
1984	777.1	0.33	(3.00)	(7.00)	1.00	(10.00)	(15.33)	0.00
1985	743.5	(1.74)	(2.00)	(6.00)	1.00	(9.00)	(14.33)	0.00
1986	748.5	(1.12)	(1.00)	(5.00)	1.00	(8.00)	(13.33)	0.25
1987	756.8	0.11	0.00	(4.00)	1.00	(7.00)	(12.33)	(0.25)
1988	832.4	4.04	0.00	(3.00)	1.00	(6.00)	(11.33)	0.70
1989	779.5	0.84	0.00	(2.00)	1.00	(5.00)	(10.33)	(1.00)
1990	778.8	(0.48)	0.00	(1.00)	1.00	(4.00)	(9.33)	0.40
1991	853.1	1.76	0.00	0.00	0.00	(3.00)	(8.33)	0.00
1992	788.4	(2.05)	0.00	0.00	0.00	(2.00)	(7.33)	0.00
1993	772.7	(2.93)	0.00	0.00	0.00	(1.00)	(6.33)	0.00
1994	820.0	0.97	0.00	0.00	0.00	0.00	(5.33)	(0.50)
1995	807.8	(1.20)	0.00	0.00	0.00	0.00	(4.33)	1.00
1996	805.3	(0.92)	0.00	0.00	0.00	0.00	(3.33)	(1.00)
1997	841.0	0.09	0.00	0.00	0.00	0.00	(2.33)	0.50
1998	817.7	(1.75)	0.00	0.00	0.00	0.00	(1.33)	0.00
1998.25		0	0.00	0.00	0.00	0.00	(1.08)	0.00
1999.33		0	0.00	0.00	0.00	0.00	(0.00)	0.00

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.999723542
R Square	0.99944716
Adjusted R Squ	0.99889432
Standard Error	1.12235176
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	7	15941.03	2277.29	1807.842	7.39168E-11
Residual	7	8.8177143	1.259673		
Total	14	15949.848			

	Coefficients	*tandard Erro*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*ower 95.0%*	*Upper 95.0%*
Intercept	855.4395428	1.2658141	675.8019	4.1E-18	852.4463702	858.432715	852.4464	858.4327
dnshort	14.9230398	0.1909619	78.14668	1.48E-11	14.47148697	15.3745926	14.47149	15.37459
trnd1987	-13.46204595	0.8353759	-16.11496	8.61E-07	-15.43739455	-11.486697	-15.4374	-11.4867
trnd1991	13.87817321	0.6453902	21.50354	1.19E-07	12.35206908	15.4042773	12.35207	15.40428
shft1991	-34.71629703	1.6318256	-21.27451	1.28E-07	-38.57494862	-30.857645	-38.5749	-30.8576
trnd1994	-14.09303694	0.6967024	-20.2282	1.81E-07	-15.74047516	-12.445599	-15.7405	-12.4456
trnd2000	8.591233016	0.3306788	25.9806	3.2E-08	7.809302565	9.37316347	7.809303	9.373163
billadj	7.872706896	0.5458637	14.42248	1.84E-06	6.581945173	9.16346862	6.581945	9.163469

MISSOURI AMERICAN WATER COMPANY
WARRENSBURG COMMERCIAL SALES

BILLING YEAR	ADJUSTED MGAL	COMMERCIAL METERS	NOMINAL DAYS	ADJUSTED GMD	WEATHER ADJUSTMENT	Underlying Trend, MG	Underlying Trend	Predicted mgal	Predicted GMD	Residual
						139,696	875.4227	139,696	875.4227	-2.1585
12/1/84	139,352	436	366	873.3	0.00	137,859	837.4649	138,610	842.0274	4.3171
12/1/85	139,321	451	365	846.3	0.00	132,486	799.5071	132,486	799.5071	-1.8787
12/1/86	132,175	454	365	797.6	0.00	139,819	821.1480	138,265	812.0229	-2.3619
12/1/87	137,863	467	365	809.7	0.00	145,825	842.7889	153,719	888.4143	0.0103
12/1/88	153,721	473	366	888.4	0.00	152,421	864.4298	157,248	891.8050	0.5110
12/1/89	157,338	483	365	892.3	0.00	158,312	886.0707	156,682	876.9456	2.4869
12/1/90	157,126	490	365	879.4	0.00	167,176	907.7115	160,454	871.2112	1.1592
12/1/91	160,667	505	365	872.4	0.00	174,578	929.3524	174,578	929.3524	0.3386
12/1/92	174,642	513	366	929.7	0.00	183,883	950.9933	183,354	948.2558	-3.3955
12/1/93	182,697	530	365	944.9	0.00	174,175	930.2009	174,175	930.2009	1.2418
12/1/94	174,408	513	365	931.4	0.00	154,820	909.4085	130,468	766.3669	-0.0875
12/1/95	130,453	466	365	766.3	0.00	186,792	888.6161	175,367	834.2603	0.3305
12/1/96	175,436	574	366	834.6	0.00	184,352	867.8238	182,073	857.0956	-0.5076
12/1/97	181,965	582	365	856.6	0.00	180,991	847.0314	180,991	847.0314	-0.0056
12/1/98	180,990	585	365	847.0	0.00	180,316	841.8333	180,316	841.8333	
3/1/99	180,316	587	365	841.8	0.00	179,021	819.3089	179,021	819.3089	
4/1/00	179,021	597	366	819.3	0.00					

REGRESSION VARIABLES

		1986	1993.00	1999.333		
	819.3082679	-59.59865132	42.433265	-20.79238	45.62542	143.0416199
YEAR	GMD	TRND1986	TRND1993	TRND2000	IND8493	IND9498
1984	873.3	(2.00)	(9.00)	(15.33)	0.00	0.00
1985	846.3	(1.00)	(8.00)	(14.33)	0.10	0.00
1986	797.6	0.00	(7.00)	(13.33)	0.00	0.00
1987	809.7	0.00	(6.00)	(12.33)	(0.20)	0.00
1988	888.4	0.00	(5.00)	(11.33)	1.00	0.00
1989	892.3	0.00	(4.00)	(10.33)	0.60	0.00
1990	879.4	0.00	(3.00)	(9.33)	(0.20)	0.00
1991	872.4	0.00	(2.00)	(8.33)	(0.80)	0.00
1992	929.7	0.00	(1.00)	(7.33)	0.00	0.00
1993	944.9	0.00	0.00	(6.33)	(0.06)	0.00
1994	931.4	0.00	0.00	(5.33)	0.00	0.00
1995	766.3	0.00	0.00	(4.33)	0.00	(1.00)
1996	834.6	0.00	0.00	(3.33)	0.00	(0.38)
1997	856.6	0.00	0.00	(2.33)	0.00	(0.08)
1998	847.0	0.00	0.00	(1.33)	0.00	0.00
1998.25		0.00	0.00	(1.08)	0.00	0.00
1999.33		0.00	0.00	(0.00)	0.00	0.00

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.999245044
R Square	0.998490658
Adjusted R Squ	0.997652135
Standard Error	2.443930859
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	5	35561.231	7112.246	1190.773	2.08247E-12
Residual	9	53.755182	5.972798		
Total	14	35614.987			

	Coefficients	*tandard Erro*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*ower 95.0%*	*pper 95.0%*
Intercept	819.3082679	2.4253322	337.8128	8.88E-20	813.8217812	824.794755	813.8218	824.7948
TRND1986	-59.59865132	1.653629	-36.04113	4.82E-11	-63.33942276	-55.85788	-63.3394	-55.8579
TRND1993	42.43326526	0.7552539	56.1841	9.02E-13	40.72476088	44.1417696	40.72476	44.14177
TRND2000	-20.79238452	0.4985806	-41.70316	1.31E-11	-21.92025294	-19.664516	-21.9203	-19.6645
IND8493	45.6254186	1.7730082	25.73334	9.74E-10	41.61459229	49.6362449	41.61459	49.63624
IND9498	143.0416199	2.6473689	54.03162	1.28E-12	137.0528507	149.030389	137.0529	149.0304