

**REGIONAL WATER MASTER PLAN**

**FOR THE**

**CITY OF MCALLEN, TEXAS**

**VOLUME 1 OF 3**

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**TABLE OF CONTENTS**  
**VOLUME 1**

<b>Section</b>		<b>Page</b>
<b>1.0</b>	<b>EXECUTIVE SUMMARY</b>	<b>1-1</b>
1.1	BACKGROUND	1-1
1.2	OVERVIEW OF PLANNING EFFORT	1-1
	1.2.1 Planning Objectives	1-1
	1.2.2 Planning Areas	1-2
1.3	REGIONAL WATER SUPPLY MASTER PLAN	1-2
	1.3.1 Scope	1-2
	1.3.2 Raw Water	1-2
	1.3.3 Finished Water	1-3
1.4	MCALLEN WATER MASTER PLAN	1-3
	1.4.1 Basis of Planning	1-3
	1.4.2 5-Year Capital Improvements Plan	1-4
	1.4.3 20-year Capital Improvements Plan	1-5
1.5	PROVIDING FINISHED WATER TO OTHER COMMUNITIES	1-7
1.6	OTHER DELIVERABLES	1-7
<b>2.0</b>	<b>INTRODUCTION</b>	<b>2-1</b>
2.1	BACKGROUND	2-1
2.2	AUTHORIZATION	2-1
2.3	OVERVIEW OF PLANNING EFFORT	2-1
	2.3.1 Planning Objectives	2-1
	2.3.2 Planning Areas	2-2
	2.3.3 Approach	2-2
	2.3.4 Scope	2-3
	2.3.5 Deliverables	2-4
	2.3.6 Water Geographical Information System	2-4
2.4	APPLICABLE CITY ORDINANCES	2-4
2.5	RELATED STUDIES/ PLANNING PROJECTS	2-4
	2.5.1 Completed Studies	2-4
	2.5.2 Ongoing Studies/Planning Projects	2-5
2.6	ABBREVIATIONS USED	2-5
<b>3.0</b>	<b>EXISTING REGIONAL WATER SUPPLY SYSTEM</b>	<b>3-1</b>
3.1	SECTION INTRODUCTION	3-1
3.2	PLANNING AREA	3-1
3.3	POPULATION	3-1

**TABLE OF CONTENTS**  
(continued)

<b><u>Section</u></b>	<b><u>Page</u></b>
3.3.1 Region	3-2
3.4 FINISHED WATER DEMANDS	3-2
3.4.1 McAllen	3-2
3.4.2 Sharyland Water Supply Corporation (SWSC)	3-3
3.4.3 Hidalgo	3-3
3.4.4 Region	3-4
3.5 RAW WATER	3-4
3.5.1 McAllen	3-4
3.5.2 Sharyland Water Supply Corporation	3-4
3.5.3 Hidalgo	3-5
3.5.4 Reynosa	3-5
3.6 TREATMENT PLANTS	3-5
3.6.1 McAllen	3-5
3.6.2 Sharyland Water Supply Corporation	3-5
3.6.3 Hidalgo	3-5
3.6.4 Reynosa	3-6
3.6.5 Region	3-6
<b>4.0 REGIONAL WATER SUPPLY MASTER PLAN</b>	<b>4-1</b>
4.1 SECTION INTRODUCTION	4-1
4.2 PROJECTED REGIONAL POPULATION	4-1
4.3 PROJECTED REGIONAL WATER AND TREATMENT CAPACITY NEEDS	4-2
4.3.1 Finished Water and Treatment Capacity	4-2
4.3.2 Raw Water	4-3
4.4 REGIONAL WATER SUPPLY MASTER PLAN	4-3
4.4.1 Raw Water	4-3
4.4.2 Finished Water	4-4
<b>5.0 EXISTING MCALLEN WATER SYSTEM</b>	<b>5-1</b>
5.1 SECTION INTRODUCTION	5-1
5.2 DESCRIPTION OF SYSTEM	5-1
5.2.1 Treatment Plant No. 1	5-1
5.2.2 Treatment Plant No. 2	5-2
5.2.3 Elevated Storage	5-3
5.2.4 Distribution Mains	5-3
5.3 SERVICE CONNECTIONS	5-3

**TABLE OF CONTENTS**  
**(continued)**

<b><u>Section</u></b>	<b><u>Page</u></b>
5.4 REGULATORY ANALYSIS OF EXISTING SYSTEM	5-4
5.5 HYDRAULIC AND FIRE FIGHTING ANALYSIS	5-4
5.5.1 Hydraulic Analysis	5-4
5.5.2 Fire Fighting Analysis	5-4
5.6 SUMMARY OF DEFICIENCIES IDENTIFIED	5-4
5.6.1 Inadequately Sized Distribution Mains	5-4
5.6.2 Inadequate Fire Flows	5-4
5.6.3 Inadequate Transfer Pumping Capacity	5-5
5.6.4 Different Suction Conditions Between High Service Pump Stations Nos. 1 and 2	5-5
5.6.5 Houston Tower Too Low	5-5
5.6.6 Trade Zone Tower Too Low	5-5
<b>6.0 MCALLEN WATER SYSTEM MASTER PLAN</b>	<b>6-1</b>
6.1 SECTION INTRODUCTION	6-1
6.1.1 Scope of Section	6-1
6.1.2 Recommended Capital Improvements	6-1
6.1.3 Use of Master Plan Recommendations	6-1
6.1.4 Capital Cost Estimates	6-2
6.2 BASIS OF PLANNING	6-3
6.2.1 Planning and Service Areas	6-3
6.2.2 Projected Population and Connections	6-3
6.2.3 Water Demands	6-3
6.2.4 Fire Demands	6-4
6.3 RAW WATER	6-4
6.3.1 General	6-4
6.3.2 Reuse of Wastewater Effluent	6-4
6.3.3 Acquisition of Additional Surface Water	6-5
6.3.4 Probable Difficulties with Use of Ground Water	6-5
6.4 RAW WATER FACILITIES	6-6
6.4.1 Conveyance Facilities	6-6
6.4.2 Storage Facilities	6-6
6.5 TREATMENT FACILITIES	6-7
6.5.1 General	6-7
6.5.2 Decommissioning of Plant No. 1	6-7
6.5.3 Improvements to Plant No. 2	6-7
6.5.4 Plant No. 3	6-7

**TABLE OF CONTENTS**  
**(continued)**

<b><u>Section</u></b>	<b><u>Page</u></b>	
6.6	GROUND STORAGE FACILITIES FOR FINISHED WATER	6-8
6.6.1	General	6-8
6.6.2	Aquifer Storage and Recovery	6-8
6.7	FINISHED WATER PUMPING FACILITIES	6-9
6.7.1	General	6-9
6.7.2	High Service, Transfer and Raw Water Pumping Projects at Plant No. 2	6-9
6.7.3	Southwest Booster Station	6-9
6.7.4	High Service Pumping Projects at Plant No. 3	6-10
6.8	ELEVATED STORAGE TANKS FOR FINISHED WATER	6-10
6.8.1	General	6-10
6.8.2	5-Year Plan	6-10
6.8.3	20-Year Plan	6-11
6.9	DISTRIBUTION MAINS	6-11
6.9.1	General	6-11
6.9.2	5-Year Plan	6-12
6.9.3	20-Year Plan	6-12
6.10	OTHER NON STRUCTURAL RECOMMENDATIONS	6-12
6.10.1	Water Conservation Measures	6-12
6.10.2	Water GIS Improvements	6-13
6.10.3	Future Updating of Master Plan	6-13
6.11	REGULATORY ANALYSIS	6-13
6.12	PROVIDING FINISHED WATER TO NEARBY COMMUNITIES	6-13
6.12.1	Year 2001 Supply Capability	6-14
6.12.2	Year 2016 Supply Capability	6-14
6.13	SUMMARY OF CAPITAL COSTS	6-15
<b>7.0</b>	<b>IMPLEMENTATION PLAN</b>	<b>7-1</b>
7.1	SECTION INTRODUCTION	7-1
7.2	5-YEAR CAPITAL IMPROVEMENTS PLAN	7-1
7.3	20-YEAR CAPITAL IMPROVEMENTS PLAN	7-1
7.4	FUNDING PLAN	7-2
7.4.1	General	7-2
7.4.2	SRF Funding	7-3
7.4.3	EDAP Funding	7-3

## LIST OF TABLES

<b><u>Table</u></b>		<b><u>Page</u></b>
2-1	Abbreviations Used	2-5
3-1	Planning Area Size	3-7
3-2	Populations - 1994-1996	3-7
3-3	Average Annual Per Capita Demands - 1994-1996	3-8
3-4	Average Annual Finished Water Consumption - 1994-1996	3-8
3-5	Treatment Plant Capacity - 1996	3-9
4-1	Projected Population Densities	4-6
5-1	Existing Distribution Mains - 1996	5-6
5-2	Regulatory Analysis of 1996 McAllen Water System	5-7
5-3	Existing High Service Pumps - 1996	5-8
5-4	Existing Water Towers - 1996	5-8
6-1	Capital Improvements Categories And Numbering System	6-16
6-2	Projected Population and Connections - McAllen Water System	6-16
6-3	Projected Water Demands - McAllen Water System	6-17
6-4	Raw Water Needs - McAllen Water System	6-17
6-5	Recommended Raw Water Acquisitions/Projects	6-18
6-6	Recommended Water Treatment Plant Projects	6-19
6-7	Recommended Elevated Storage Projects	6-22
6-8	Recommended Distribution Main Projects	6-23
6-9	Summary of Distribution Main Inventory	6-26
6-10	Regulatory Analysis - McAllen Water System	6-27
6-11	2001 Supply Simultaneous Capability	6-29
6-12	2001 Supply Individual Capability	6-29
6-13	2016 Supply Simultaneous Capability	6-29
6-14	2016 Supply Individual Capability	6-30
6-15	Summary of Capital Costs for 5-Year Program	6-30
6-16	Summary of Capital Costs for 20-Year Program	6-31
7-1	Funding Required for Water CIP Projects - Fiscal Years 1998 Through 2001	7-4
7-2	Funding Required for Water CIP Projects - Fiscal Years 1998 Through 2016	7-4
7-3	Water CIP Implementation Plan - Fiscal Year 1998	7-5
7-4	Water CIP Implementation Plan - Fiscal Year 1999	7-6
7-5	Water CIP Implementation Plan - Fiscal Year 2000	7-8
7-6	Water CIP Implementation Plan - Fiscal Year 2001	7-10
7-7	Water CIP Implementation Plan - Fiscal Years 2002 Through 2006	7-14
7-8	Water CIP Implementation Plan - Fiscal Years 2007 Through 2011	7-15
7-9	Water CIP Implementation Plan - Fiscal Years 2012 Through 2016	7-16

**LIST OF FIGURES  
VOLUMES 1 AND 2**

<b><u>Figure</u></b>		<b><u>Follows Page</u></b>
1-1	Population and Water Demands - McAllen Distribution Planning Area	1-7
2-1	Planning Area Map	2-6
2-2	McAllen Distribution Planning Area Map	2-6
3-1	Planning Area Map (medium scale)	Volume 2
3-2	1996 Boundary Map - McAllen Water Distribution System (medium scale)	Volume 2
3-3	1996 Boundary Map - Sharyland Water Corporation Service Area (medium scale)	Volume 2
3-4	1996 Boundary Map - City of Hidalgo	3-9
3-5A	1994 Monthly Water Demands and Rainfall - City of McAllen	3-9
3-5B	1995 Monthly Water Demands and Rainfall - City of McAllen	3-9
3-5C	1996 Monthly Water Demands and Rainfall - City of McAllen	3-9
3-6A	1994 Monthly Water Demands and Rainfall - Sharyland Water Supply Corporation	3-9
3-6B	1995 Monthly Water Demands and Rainfall - Sharyland Water Supply Corporation	3-9
3-6C	1996 Monthly Water Demands and Rainfall - Sharyland Water Supply Corporation	3-9
4-1	Projected Regional Population	4-5
4-2	Comparison of Regional and Reynosa Population Projections	4-5
4-3	Comparison of TWDB and TPU Population Projections For McAllen	4-5
4-4	Comparison of TWDB and TPU Population Projections For Hidalgo	4-5
4-5	Projected Regional Annual Average Finished Water Demands	4-5
4-6	Comparison of Regional and Reynosa Finished Water Demand Projections	4-5
4-7	Projected Regional Maximum Daily Finished Water Demands	4-5
4-8	Projected Regional Treatment Plant Capacity Deficit	4-5
4-9A	Projected Regional Annual Raw Water Demands	4-5
4-9B	Projected Regional Annual Raw Water Demands with Conservation	4-5
4-10A	Projected Regional Raw Water Deficit	4-5
4-10B	Projected Regional Raw Water Deficit with Conservation	4-5
5-1	1996 Water System Map - McAllen Distribution Planning Area (medium scale)	Volume 2
5-2	Water System Map Index and Legend - McAllen Distribution Planning Area	Volume 2
5-3	Existing System Maps - McAllen Distribution Planning Area (large scale)	Volume 2

<b><u>Figure</u></b>		<b><u>Follows Page</u></b>
5-4	Regulatory Analysis of 1996 System	5-8
5-5A	1996 Pressure Contours - McAllen Distribution Planning (medium scale)	Volume 2
5-5B	1996 Fire Flow Contours - McAllen Distribution Planning (medium scale)	Volume 2
5-6	1996 Distribution System Curve at Plant 2	5-8
6-1	2001 Water System Map - McAllen Distribution Planning Area (medium scale)	Volume 2
6-2	2001 Distribution System Curve at Plant 2 (medium scale)	6-33
6-3A	2001 Pressure Contours - McAllen Distribution Planning Area (medium scale)	Volume 2
6-3B	2001 Fire Flow Contours - McAllen Distribution Planning Area (medium scale)	Volume 2
6-4	2016 Water System Map - McAllen Distribution Planning Area (medium scale)	Volume 2
6-5A	2016 Pressure Contours - McAllen Distribution Planning Area (medium scale)	Volume 2
6-5B	2016 Fire Flow Contours - McAllen Distribution Planning Area (medium scale)	Volume 2
7-1	Implementation Schedule - McAllen 5-year CIP	7-16
7-2	Implementation Schedule - McAllen 20-year CIP	7-16
7-3	Recommended Treatment Plant Projects -McAllen Distribution Planning Area	7-16
7-4	Recommended Raw Water Acquisitions - McAllen Distribution Planning Area	7-16

**LIST OF APPENDICES  
VOLUME 3**

**Appendix**

- A Population Projection Sources and Calculations
- B Historical Information
- C Computer Modeling Information
- D Cost Estimating Information
- E Responses to TWDB Comments



## **1.0 EXECUTIVE SUMMARY**

### **1.1 BACKGROUND**

The City of McAllen and the areas surrounding it are undergoing rapid growth and development. A reliable, economical and safe supply of potable water is required to accommodate and support that growth. As the largest City and also the largest supplier of water in Hidalgo County, the City of McAllen undertook this planning effort to ensure that an adequate supply of water will be available throughout the planning area in future years.

The City of McAllen has been working closely with its neighbor, the City of Reynosa, Mexico, on many common problems and economic development opportunities. Officials of the two cities have discussed water supply issues and these same issues have been discussed with the North American Development Bank and the Border Environment Cooperation Commission. The planning information presented in this master plan was needed as a stepping stone for future cooperative efforts between the two cities.

Realizing that major expansions of its water production and distribution systems will be needed in the years just ahead, the City of McAllen commissioned this planning effort in part to identify the facilities that will be required and to develop a capital improvements plan.

Funding assistance for preparation of this the regional water master plan and for an assessment of the water needs of the City of Reynosa was provided by the Texas Water Resources Development Board (TWDB) in the form of a planning grant.

### **1.2 OVERVIEW OF PLANNING EFFORT**

#### **1.2.1 Planning Objectives**

The planning objectives are as follows:

- A. Develop a 30-year water supply master plan for the region around McAllen.
- B. Develop a 20-year water distribution master plan for the City of McAllen.
- C. Develop a 5-year capital improvements plan for the City of McAllen.
- D. Identify the water needs of the City of Reynosa for the 5-year, 20-year, and 30-year horizons.

## **1.2.2 Planning Areas**

Two main planning areas were addressed:

- A. The regional water supply planning area covers approximately 206 square miles and includes the cities of Alton, Hidalgo, and McAllen as well as the unincorporated areas of Hidalgo County served by the Sharyland Water Supply Corporation (SWSC). Figure 2-1 shows the boundaries of the regional water supply planning area and follows page 2-7.
- B. The water distribution planning area covers approximately 61 square miles and includes the area within the current city limits plus additional areas which are mostly north and south of the City. Figure 2-2 shows the boundaries of the McAllen distribution planning area and follows page 2-7.

## **1.3 REGIONAL WATER SUPPLY MASTER PLAN**

### **1.3.1 Scope**

A water supply master plan has been developed for the regional planning area. This plan does not include Reynosa; however, the projected population and water demands of that city are compared with that of the regional water supply planning area. Some of the projects described in the water supply master plan are not included in the McAllen water master plan since they require the consent and cooperation of other entities in the region.

### **1.3.2 Raw Water**

- A. Projected raw water demands for the 20-year and 30-year horizons are 100% and 159% greater than water rights and contracts currently held by water purveyors in the planning area, i.e., the City of McAllen, Sharyland Water Supply Corporation, and the City of Hidalgo.
- B. The regional water supply master plan recommends implementation of all three reuse projects included in the January 1997 Reuse Feasibility Study, i.e. the South McAllen, North McAllen, and McAllen-Edinburg projects.
- C. The Integrated Water Plan now being developed by the Lower Rio Grande Development Council (LRGDC) will investigate the feasibility and cost effectiveness of treating ground water and/or blending it with surface water. If the results of that study are favorable, then a test well program is recommended to determine the safe yield of specific well sites. The test wells could be converted to production wells.
- D. Inevitably, some agricultural water rights will have to be converted to municipal use since the projected demands are far greater than the amounts of reclaimed wastewater and ground

water that can be used reliably, safely and economically. At the present time, only 11% of Rio Grande water is used for municipal supply.

- E. A feasibility study of a new municipal raw water conveyance system is recommended. Such a system would employ dual pipelines rather than canals and would save 10% to 25% of the raw water that is now lost due to leakage from the canal systems. This system would convey raw water from the river to a large reservoir that could serve McAllen, Edinburg and Sharyland Water Supply Corporation. The project would include a new pump station at the Rio Grande River.

### **1.3.3 Finished Water**

- A. The regional water supply master plan recommends that the City of Hidalgo eventually convert to surface water supplied by the City of McAllen. Such an arrangement would be safer than the shallow well supply now being used by Hidalgo. Also, Hidalgo may not be able to meet its needs with ground water over the 20 to 30-year planning period. Providing service to Hidalgo would not have a major impact on the McAllen system. At minimum it would require additional raw water, but Hidalgo has reserved water rights that could be utilized. The timing of water plant projects outlined in the McAllen Master Plan would also have to be adjusted accordingly.
- B. The regional water supply master plan also recommends that consideration be given to supplying finished water to the west side of Edinburg from McAllen's proposed Plant No. 3. Edinburg needs additional water and plans to enter into an interim agreement with SWSC to obtain water from the new Ware Rd plant. Over the 30-year planning period, SWSC will need all of its Mile 5 plant capacity and most of its Ware Rd plant capacity to serve its own customers. McAllen could provide the additional finished water needed by Edinburg over the planning period by increasing the capacities of the Plant No. 3 modules. This would be a very economical approach because it would be quite cost effective to increase the capacity of Plant No. 3 and secondly, the plant site is not far from the west side of Edinburg. However, additional raw water would have to be found to support the concept. The Edinburg-McAllen reuse project could provide at least 3 mgd of the additional raw water required.

## **1.4 MCALLEN WATER MASTER PLAN**

### **1.4.1 Basis of Planning**

- A. Projected population, raw water needs, average water demands and treatment plant capacity for the 20-year planning period are graphed in Figure 1-1. The curves shown in that figure are for the McAllen distribution planning area and for the basis of planning for the master plan described below.

## 1.4.2 5-Year Capital Improvements Plan

A. Highlights of the 5-year capital improvements program for the McAllen Water Distribution Planning area are presented below.

### 1. Construction of Module A at Plant No. 3

It is recommended that Plant No. 3 be designed for at least three 12 mgd modules. The site already owned by the City can probably accommodate a fourth module if a decision is made to serve other entities such as Edinburg or Hidalgo at some future time.

The first 12 mgd module (Module A) is required by the year 2000 and the second module by 2009. The third module is not required until approximately 2018 and is included at the end of the 20-year plan.

### 2. Construction of Distribution Mains

The master plan calls for a major investment in distribution mains over the next five years. Approximately 172,275 LF of mains are recommended. Distribution main projects have been identified to minimize pressure losses and to serve new development, particularly in the northern part of the planning area. These projects will improve available fire flows throughout the City so as to comply with the new Insurance Service Office (ISO) fire rating schedule.

### 3. High Service, Transfer, and Raw Water Pumping Capacity at Plant No. 2.

Replacement of High Service Pump Station No. 1 (the oldest of two such stations at Plant No. 2) and addition of transfer pumping capacity commensurate with the new pumping station are recommended. This project along with the distribution system improvements described above are required to deliver all the water that can be produced at Plant No. 2, to meet peak hour demands and to meet fire flow demands during maximum demand periods.

This project will likely include replacement of the pumps in High Service Pump Station No. 2 with more efficient units. The need to do this should be confirmed during the preliminary engineering phase of the project. If the savings in power costs will result in a relatively short pay-back period, then the pumps in question should be replaced.

The foregoing improvements are recommended to follow the current project which involves improving the piping within the plant, decommissioning of High Service Pump Station No. 1 and addition of booster pumps ahead of the remaining pumps.

To comply with the TNRCC regulations on raw water pumpage, the raw water pumping capacity will need to be increased. This project will complement the improvements to the high service pumpage at Plant No. 2.

4. Proposed Water Tower No. 1

A 2.0 mg elevated storage tank or water tower is recommended off Trenton Rd. east of N. Col Rowe Rd. This will improve peak hour pressures and enhance fire protection in the northern part of the service area.

There are several distribution system projects between Plant No. 2 and this tank which must be completed in order to realize any benefits from this tank. Even with all the recommended distribution projects in place, it will not be possible to completely fill this tank during maximum demand periods until the first module at Plant No. 3 is completed.

- B. Capital costs for the 5-year program are estimated to be \$46.7 million for the total 5-year program. This total is broken down into major categories in Table 6-15. All capital costs are expressed in 1997 dollars.

**1.4.3 20-Year Capital Improvements Plan**

- A. Highlights of the 20-year capital improvements program for the McAllen Water Distribution Planning area are presented below.

1. Construction of Modules B and C at Plant No. 3

Module B is required by 2009 and Module C by 2018. Both will be similar to Module A. Module C is included in the 20-year plan to since the lead time required to get the plant on line in 2018 backs into the 20-year period.

2. Razing of Plant No. 1

Razing of Plant No. 1 is recommended because it is approximately 50 years old and in poor condition. It would not be cost effective to renovate or operate Plant No. 1. This project should be deferred until Module A at Plant No. 3 is on line.

3. Implementation of the Wastewater Reuse Projects

The North McAllen and South McAllen wastewater reuse projects recommended in the January 1997 Reuse Feasibility Study are included in the 20-year plan.

#### 4. Acquisition of More Raw Water

Given the 7,000 acre-feet of raw water for which the City can acquire or use, more raw water will not be needed until 2004. In that year, implementation of the McAllen South water reclamation project is recommended. That project will satisfy raw water supply needs until the year 2010. Figure 7-2 shows historical and projected raw water supply demands for the period 1995 through 2026. The same figure also shows that the reuse projects are scheduled for after 2001 to allow time for development of those projects, particularly the process design.

Approximately 10,194 acre-feet of raw water will be needed in 2015 to provide sufficient water for the balance of the 30-year water supply planning period. See Figure 7-2. This is in addition to the previously mentioned wastewater reuse projects.

#### 5. Distribution Mains

The master plan calls for 127,205 LF of mains to be constructed during the period 2002 to 2016. These mains are required to distribute water from Plant 3 and to serve new customers throughout the service area. These projects are shown as dashed lines in Figure 6-4.

#### 6. Elevated Storage Tanks

Two additional 2 mg elevated storage tanks are recommended for the years 2002-2106 to ensure good pressure during peak flow periods and to provide enhanced fire protection.

#### 7. Southwest Booster Station

A 3.0 mgd booster station is recommended to serve new development in the Anzalduas bridge area. Since that area is over 5 miles from Plant No. 2, a booster station is more economical than increasing the capacity of the distribution system between those two points.

Also, the booster station may make it possible to continue using the Trade Zone water tower. If the booster station is not constructed, it will no longer be possible to use that tower. The tower does not perform well even under existing conditions.

#### 8. Anzalduas Water Tower

An elevated tower in the Anzalduas bridge area is included in the master plan to enhance water service near that bridge and meet TNRCC regulations.

During the preliminary engineering phase of this project, consideration should be given to creation of a separation pressure zone which would include the trade zone and the bridge

area. This would improve the operation of the Trade Zone tower. The alternative of raising the Trade Zone tower should also be considered.

- B. Capital costs for the 20-year program are estimated to be \$171 million. This total is cumulative and includes the 5-year projects. The total is broken down into major categories in Table 6-16. Plant projects, which are included in the foregoing figures, total \$93.6 million. All capital costs are expressed in 1997 dollars.

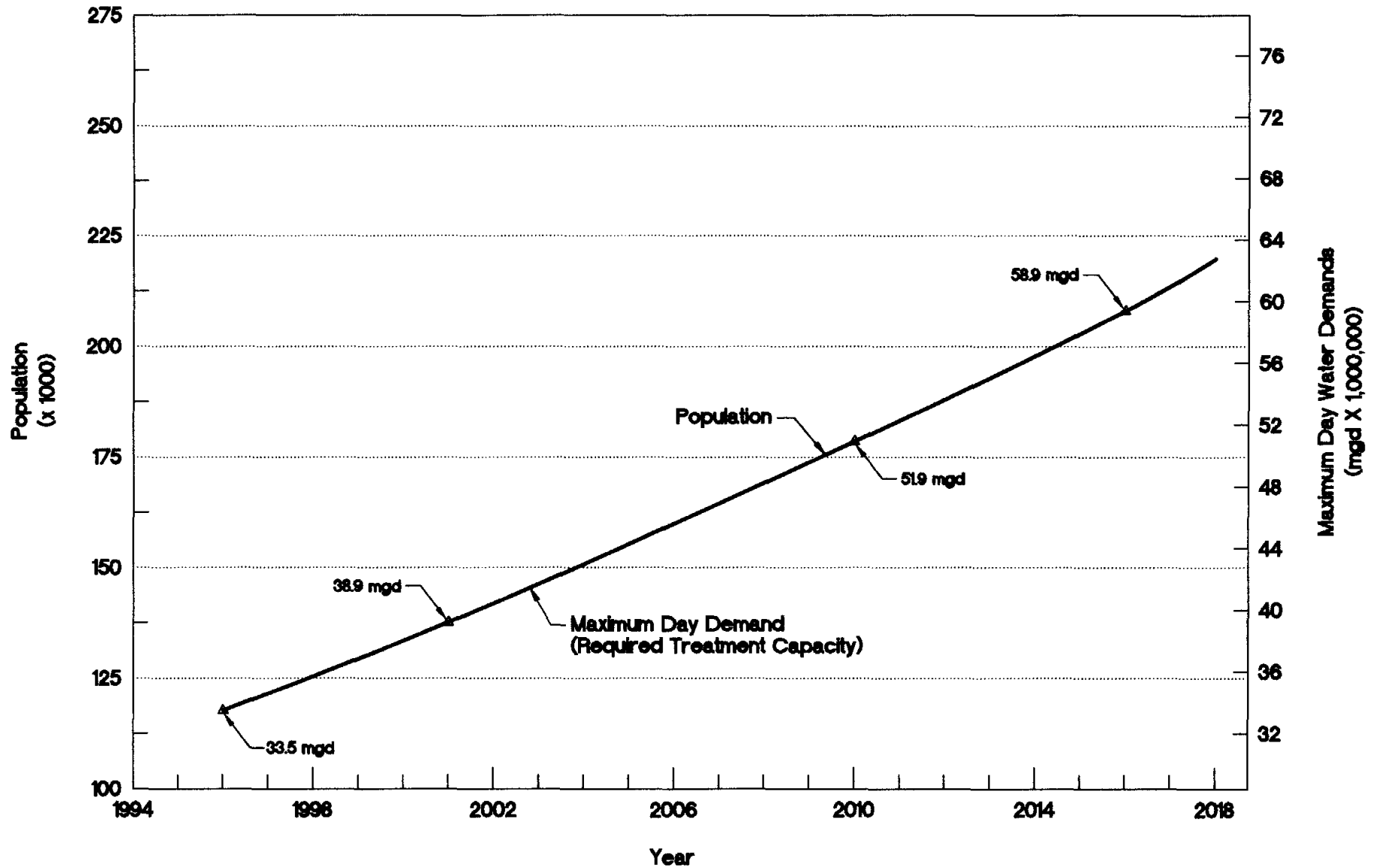
## **1.5 PROVIDING FINISHED WATER TO OTHER COMMUNITIES**

- A. With the proposed 5-year proposed improvements in place, the McAllen water system can supply water to adjacent communities including Edinburg, Pharr, Hidalgo, and Mission. The quantity of water that can be supplied ranges from 8 mgd to Mission to 1.8 mgd to Hidalgo. With the proposed 20-year improvements in place, the quantity of water that can be supplied ranges from 12.8 mgd to Pharr to 2.7 mgd to Hidalgo. The specific amounts that can be supplied individually and simultaneously to these nearby communities are provided in Table 6-11 through 6-14.
- B. The capital cost of water mains required to deliver water to the adjacent communities is estimated to be \$1.9 million. This cost has not been included in the McAllen capital improvement program cost since the City will probably want the communities purchase the water to pay for the interconnecting lines. The specific water mains required to make these interconnections are described and illustrated in Section 6.

## **1.6 OTHER DELIVERABLES**

- A. The Reynosa water supply assessment is presented in a separate report.
- B. Recommendations for Creation of a Water Geographical Information System (Water GIS) are covered in a separate report. The Water GIS work station was procured, configured, loaded, and delivered as a part of the master planning project.

**FIGURE 1-1  
POPULATION AND WATER DEMANDS  
McALLEN WATER DISTRIBUTION PLANNING AREA**





## **2.0 INTRODUCTION**

### **2.1 BACKGROUND**

The City of McAllen and the areas surrounding it are undergoing rapid growth and development. A reliable, economical and safe supply of potable water is required to accommodate and support that growth. As the largest City and also the largest supplier of water in Hidalgo County, the City of McAllen undertook this planning effort to ensure that an adequate supply of water will be available throughout the planning area over the next 30 years.

The City of McAllen has been working closely with its neighbor, the City of Reynosa, Mexico, on many common problems and economic development opportunities. Officials of the two cities have discussed water supply issues and these same issues have been discussed with the North American Development Bank and the Border Economic and Environmental Commission. The planning information presented in this master plan was needed as a stepping stone for future cooperative efforts between the two cities.

As growth has occurred within and around the City of McAllen, the City has expanded its main water production facility, Water Plant No. 2, and has constructed new water lines to serve its new customers. The City has also purchased water systems of developing areas within the City's extraterritorial jurisdiction (ETJ) from SWSC. There have been four such buyouts since 1994.

Realizing that major expansions of its water production and distribution systems will be needed in the years just ahead, the City of McAllen commissioned this planning effort to identify the facilities that will be required and also to develop a capital improvements plan (CIP).

Funding assistance for this project was provided by the Texas Water Resources Development Board (TWDB) in the form of a planning grant.

### **2.2 AUTHORIZATION**

The regional water master plan was prepared under an engineering services contract between the City of McAllen and Rust Environment & Infrastructure, Inc., formerly Rust Lichliter/Jameson. That contract between parties is dated March 12, 1996.

### **2.3 OVERVIEW OF PLANNING EFFORT**

#### **2.3.1 Planning Objectives**

The planning objectives are as follows:

- A. Develop a 30-year water supply master plan for the region around McAllen.

- B. Develop a 20-year water distribution master plan for the City of McAllen.
- C. Develop a 5-year capital improvements plan for the City of McAllen.

### **2.3.2 Planning Areas**

- A. Two different planning areas were identified for study. A larger area or region was established for water supply planning. A smaller area within the regional planning area was established for water distribution system planning. A cursory study of the water supply requirements of Reynosa was also performed. The results of that study are presented in a separate study but are also addressed in this plan.
- B. The regional water supply planning area, less Reynosa, covers approximately 206 square miles and includes the cities of Alton, Hidalgo, and McAllen as well as the unincorporated areas of Hidalgo County served by the Sharyland Water Supply Corporation. Figure 2-1 shows the boundaries of the regional water supply planning area and is located at the end of this section.
- C. The McAllen water distribution planning area covers approximately 61 square miles and includes the area within the current city limits plus additional areas which are mostly north and south of the City. Figure 2-2 shows the boundaries of the McAllen distribution planning area and is located at the end of this section.

### **2.3.3 Approach**

- A. A brief summary of the technical approach used to perform this planning effort follows. This summary provides a quick overview of how the planning was performed and provides a sense of what the level of effort was within each aspect of the undertaking.
- B. Population projections were furnished by the City of McAllen Planning Division and were derived from the Metropolitan Planning Organization's 1995 Transportation Plan Update.
- C. Future land use projections within the water distribution planning area were developed by the City of McAllen Planning Division.
- D. Historical information about water demands were obtained from the three water purveyors in the water supply planning area, the City of McAllen, SWSC and the City of Hidalgo. This information was derived from water billing records.
- E. The average-annual/maximum day ratio is based on system demands recorded by the SCADA system after the high service meters were recalibrated in mid 1997. Historical pumping records could not be used because they were incorrect due to metering problems.

- F. Existing water rights information was provided by the water purveyors.
- G. Information about water reuse and ground water resources was obtained from existing reports on those subjects. No new research or study was performed.
- H. An AutoCAD file and hard copy of the existing water distribution system within the distribution planning area was furnished by the City of McAllen Engineering Division. This information was redigitized for use in the water GIS and the hydraulic model of the system.
- I. An AutoCAD file and hard copy of the existing street and parcel map within the distribution planning area was furnished by the City of McAllen Engineering Division. This map was used as the background map for the water GIS and the water system maps. The map is not tied to a land survey coordinate system.
- J. A computer modeling program called Cybernet<sup>®</sup> was used to analyze the existing distribution system and plan the future system. All pipes 12" and larger were included in the existing and out year models. Where necessary, smaller pipes were included to complete loops and connect small service areas to the system.
- K. The elevated water storage tanks were surveyed to determine their elevations with respect to a common datum.

#### **2.3.4 Scope**

The planning components produced as a part of this plan include:

- A. A 30-year plan for water supply in the regional water supply planning area.
- B. A 20-year plan of water system improvements for the McAllen water distribution planning area. Water system improvements include: project descriptions, cost estimates, and a map showing the locations of the improvements.
- C. A 5-year plan of water system improvements for the McAllen water distribution planning area. Water system improvements include: project descriptions, cost estimates, and a map showing the locations of the improvements.
- D. Improved mapping of the existing water distribution system.
- E. An implementation plan for the 5-year capital improvements plan.
- F. Computer based hydraulic models of the existing and out year water distribution systems.
- G. A water geographical information system (GIS). (See paragraph 2.3.6 below.).

### **2.3.5 Deliverables**

- A. Six copies of the final report were furnished to the City. One copy was furnished to the TWDB. The report consists of 3 volumes.
- B. Volume 1 contains all text, tables and small figures. All tables and small figures are located at the end of each section. The tables precede the figures.
- C. Volume 2 contains all folded large size drawings including the water system maps and maps showing the recommended capital improvements.
- D. Volume 3 includes the appendices.
- E. A compact disc containing all text, tables and figures, as well as, the distribution system models and the initial GIS files were furnished to the City. Three copies of the disc were provided.

### **2.3.6 Water Geographical Information System**

A water geographical information system (GIS) was developed as a part of this project to provide the City of McAllen with a state-of-the-art tool for managing the operation, maintenance and growth of its water system. The development and implementation of the water GIS are described in a separate report dated October 1996.

## **2.4 APPLICABLE CITY ORDINANCES**

The following City ordinances contain requirements which were considered during the planning effort:

- A. Water Rate Ordinance, No. 1995-26, dated June 12, 1995.
- B. Water Conservation Ordinance, No. 1995-32, dated June 12, 1995.

## **2.5 RELATED STUDIES/ PLANNING PROJECTS**

### **2.5.1 Completed Studies**

The following related studies/planning projects were used as information sources in preparing the water master plan:

- A. Report No. 316, "Evaluation of Ground Water Resources in the Lower Rio Grande Valley, Texas", Texas Water Development Board, January 1990.

- B. "Regional Assessment of Water Quality in the Rio Grande Basin", Texas Natural Resource Conservation Commission, October 1994.
- C. "McAllen/Edinburg Reuse Feasibility Study", dated January 1997, and prepared for the Lower Rio Grande Development Council by Perez/Freese and Nichols in association with CH2M Hill and Freese and Nichols.

**2.5.2 Ongoing Studies/Planning Projects**

Planning information (maps and data) was shared with the firms preparing the other planning studies for the City of McAllen or the Lower Rio Grande Development Council. Those projects included:

- A. The McAllen Wastewater Master Plan being prepared by WSBC Civil Engineers.
- B. The Integrated Water Plan being for the prepared Lower Rio Grande Development Council by Turner Collie & Braden.

**2.6 ABBREVIATIONS USED**

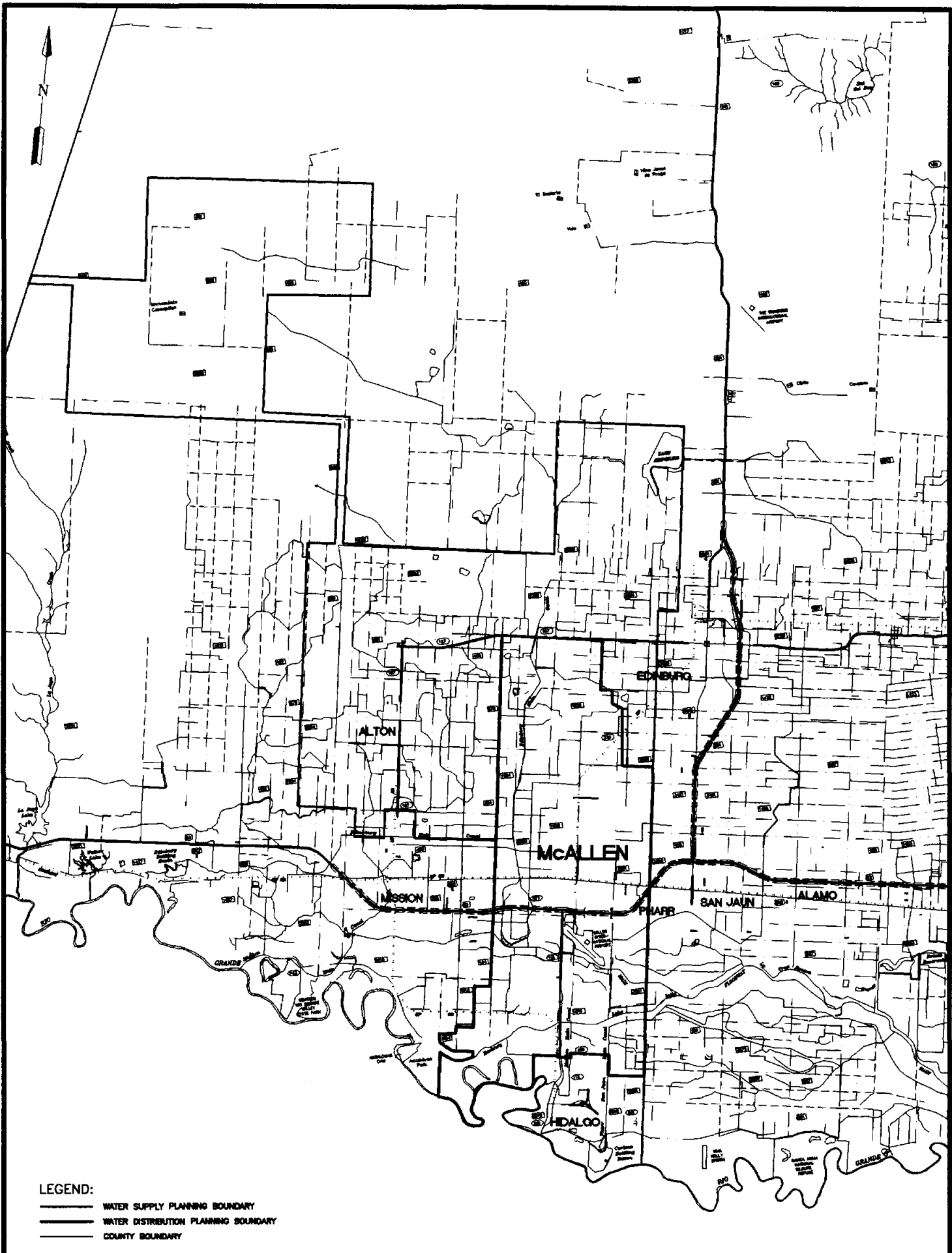
Abbreviations used throughout the report are explained in Table 2-1.

**TABLE 2-1  
ABBREVIATIONS USED**




Abbreviation	Explanation
AWWA	American Water Works Association
CCN	Certificate of Convenience and Necessity
CIP	Capital Improvements Program
DWSRF	Figure 2-1 shows the boundaries of the regional water supply planning area and is located at the end of this section.
EDAP	Economically distressed area program
ETJ	Extraterritorial Jurisdiction
FY	Fiscal year
GIS	Geographical Information System
gpcd	gallons per capita per day
gpm	gallons per minute

**TABLE 2-1  
ABBREVIATIONS USED  
(continued)**

<b>Abbreviation</b>	<b>Explanation</b>
INEGI	Instituto Nationale de Estadistica Geogrfia Informatica
ISO	Insurance Services Office
MCL	maximum contaminant level
mg	million gallons
mgd	million gallons per day
mg/l	milligrams per liter
MPO	Hidalgo County Metropolitan Planning Organization
SCADA	Supervisory control and data acquistion system
SCCPP	Steel Cylinder Concrete Pressure Pipe
SDWA	Safe Drinking Water Act
SWSC	Sharyland Water Supply Corporation
TAC	Texas Administration Code
TAZ	Traffic Analysis Zone
TPU	MPO Transportation Plan Update
TWDB	Texas Water Development Board
TNRCC	Texas Natural Resource Conservation Commission
USEPA	U.S. Environmental Protection Agency
WSBC	The name of the engineering firm which prepared the wastewater master plan
WSRF	State Revolving Fund for Drinking Water
WTP	Water treatment plant



**LEGEND:**

-  WATER SUPPLY PLANNING BOUNDARY
-  WATER DISTRIBUTION PLANNING BOUNDARY
-  COUNTY BOUNDARY

**BRIST LICHLITER/JAMESON**

Consulting Engineers, Planners,  
Architects & Surveyors  
200 West Loop West, Suite 200  
Houston, Texas 77027

JOB NO.:

**REGIONAL WATER MASTER PLAN**

**CITY OF MCALLEN, TEXAS**

88719  
DECEMBER 1997

**PLANNING AREA MAP**

FIGURE

**2-1**

### **3.0 EXISTING REGIONAL WATER SUPPLY SYSTEM**

#### **3.1 SECTION INTRODUCTION**

- A. This section describes the regional planning area and the water supply systems of the various drinking water purveyors within that region. It also documents the existing populations and water demands.
- B. The water needs of the City of Reynosa were studied and are discussed in a separate report. In this section, Reynosa's current water demands are compared with those of the water supply planning region.

#### **3.2 PLANNING AREA**

- A. The regional water supply planning area includes the areas currently served by the City of McAllen, the City of Hidalgo, and the Sharyland Water Supply Corporation. A map of the regional planning area is presented in Figure 3-1.
- B. The sizes of the various service areas and the entire planning area are presented in Table 3-1.
- C. Boundary maps for each of the planning entities, City of McAllen, Sharyland Water Supply Corporation and the City of Hidalgo are presented in Figures 3-2 , 3-3 and 3-4. These maps show city limits, extraterritorial jurisdiction (ETJ) boundaries and water certificate of convenience and necessity (CCN) boundaries of McAllen and Hidalgo. Figure 3-3 shows the current service area of Sharyland Water Supply Corporation.

#### **3.3 POPULATION**

- A. Population information was obtained from the traffic analysis zone (TAZ) data presented in the 1995 Hidalgo County Metropolitan Planning Organization Transportation Plan Update (TPU). More information about the use of this data and comparisons with TWDB projections area presented in Appendix A.
- B. The 1994-1996 populations of the entities within the regional planning area are presented in Table 3-2. These population numbers were used in establishing per capita water demands.
- C. The McAllen Economic Development Corporation estimates the 1997 Reynosa population to be approximately 750,000 with a growth rate of about 10% per year. It should be noted that the Instituto Nationale de Estadistica Geogrfia Informatica (INEGI) estimates the 1997 population to be only 342,000. This figure was not used for planning purposes since it apparently does not include migrant workers.



### **3.3.1 Region**

- A. The 1994 through 1996 planning area populations are shown in Table 3-2. These figures are derived from the 1995 Transportation Plan Update. Not counting Reynosa, the estimated 1996 regional population is 159,176. The estimated population for Reynosa for the same year is 681,818 or about 330% of the regional planning area population. The Reynosa population figure is based on information obtained from the McAllen Economic Development Corporation. See Section 4.2 for further discussion about the Reynosa population projections.
- B. All of the average and maximum day per capita demand calculations discussed below are based on the population figures presented in Table 3-2.

## **3.4 FINISHED WATER DEMANDS**

### **3.4.1 McAllen**

#### **A. Information Sources**

Monthly water consumption data obtained from billing records and daily high service pumping records for the period 1994 through 1996 were analyzed to establish finished water demand parameters. Copies of the foregoing records are included in Appendix B.

#### **B. Per Capita Demand**

McAllen's average annual per capita demands for the years 1994 through 1996 was 138 gpcd. Values for each year are shown in Table 3-3.

#### **C. Seasonal Demand Patterns**

Seasonal demand patterns and rainfall for the City of years 1994, 1995 and 1996 are illustrated in Figures 3-5A, 3-5B, and 3-5C. As can be seen, most of the seasonal demand peaks are caused by residential lawn irrigation during hot, dry spells.

#### **D. Maximum Day Demand**

Historical high service pumping records were found to be inaccurate. Therefore, the maximum day demand was estimated to be 1.9 times average daily demands based on data recorded by the SCADA system on August 27, 1997. That was after the high service meters at Plant No. 2 had been recalibrated. The 1.9 factor is on the high end of the range normally experienced by the Engineer.

### **3.4.2 Sharyland Water Supply Corporation (SWSC)**

#### **A. Information Sources**

Monthly operations records for the period 1994 through 1996 were analyzed to establish finished water demand parameters. Copies of the foregoing records are included in Appendix B.

#### **B. Per Capita Demand**

Per capita demand for finished water in years 1994, 1995, and 1996 averaged 121 gpcd for SWSC. Annual values are shown in Table 3-3. The data in Table 3-3 were pumped rather than billed amounts. Therefore, they were reduced by 10% to allow for unaccounted for water. The average SWSC per capita demand for the years 1994 through 1996 was approximately 18 gpcd lower than that of McAllen. The difference is due to the fact that most of SWSC's customers live in rural settings with less landscaping. Also, many of SWSC's as opposed to McAllen's customers are able to use raw water for landscape irrigation.

#### **C. Seasonal Demand Patterns**

Seasonal demand patterns and rainfall for the years 1994, 1995 and 1996 are illustrated in Figures 3-6A, 3-6B and 3-6C. As can be seen, most of the seasonal demand peaks are caused by residential lawn irrigation during hot, dry spells.

#### **D. Maximum Day Demand**

The record maximum day demand occurred in July 1995 and was 5.9 mgd or 183.6 gpcd. This quantity is somewhat lower than the 195 gpcd peak demand for the planning area as shown in the Texas Water Plan. However, SWSC's service area is mostly rural.

#### **E. Maximum to Average Day Ratio**

The ratio of maximum day to annual average over during the period 1994 through 1996 ranged from a high of 1.44 in 1995 to a low of 1.25 in 1996.

### **3.4.3 Hidalgo**

**A.** The average annual demand for 1995 was 94.4 gpcd.

**B.** The maximum day demand in Hidalgo was approximately 1 mgd in 1995. That amounts to approximately 194 gpcd. This compares favorably with the 195 gpcd maximum demand for the planning area as anticipated in the Texas Water Plan.

#### **3.4.4 Region**

- A. Total finished water consumption for the water supply planning region is presented in Table 3-4.

### **3.5 RAW WATER**

#### **3.5.1 McAllen**

- A. McAllen currently has rights to 25,798 acre-feet of Rio Grande water. A contract for an additional 5,000 acre-feet is pending and another 2,000 acre-feet is available from Irrigation District No. 3. This information is tabulated in Appendix B.
- B. McAllen gets its raw water through the canal systems of Irrigation Districts 2 and 3 as shown in Figure 3-2.
- C. McAllen is not currently using ground water or reclaimed wastewater.
- D. The amount of raw water used by McAllen is about 31% higher than the finished water pumped based on plant records for 1995. That markup includes a 15% contractual markup by the irrigation districts for canal system losses. The rest of the markup accounts for reservoir evaporation, plant losses, or potential metering errors.

#### **3.5.2 Sharyland Water Supply Corporation**

- A. Water rights owned by SWSC total 5583.47 acre-feet. The utility has also been using 400 acre-feet from United Irrigation and 466.6 acre-feet from Irrigation District No. 1. These amounts total 6450.1 acre-feet.
- B. United Irrigation supplies raw water to the Mile 5 plant. Irrigation District No. 1 supplies raw water to the Ware Road plant.
- C. SWSC is not currently using ground water or reclaimed wastewater.
- D. The amount of raw water used by SWSC is about 30% higher than the finished water pumped based on plant records for 1994 through 1996. That markup includes a 25% contractual markup by the irrigation districts for canal system losses. The rest of the markup accounts for reservoir evaporation, plant losses, and meter error.

### **3.5.3 Hidalgo**

- A. Hidalgo currently operates two wells, each about 300 ft. deep. One well pump is rated at 450 gpm; the other at 600 gpm.
- B. Even though the City is using ground water exclusively, it does own rights to 323.75 acre-ft of Rio Grande water.

### **3.5.4 Reynosa**

- A. Reynosa's raw water comes from the Anzalduas Reservoir.
- B. The aqueduct which serves the Loma Linda plant has a capacity of 2,000 LPS or 500 LPS more than the current capacity of the plant. The aqueduct to the Benito Juarez plant equals the capacity of the plant.

## **3.6 TREATMENT PLANTS**

### **3.6.1 McAllen**

- A. McAllen has two treatment plants. Plant No. 1 has a capacity of 4.2 mgd and is located at the intersection of Business 83 and Col Rowe Blvd. Plant No. 2 has a capacity of 38 mgd and is located at Hwy 83 and 26<sup>th</sup> Street.
- B. Plant No. 1 is approximately 50 years old and is used only during periods of maximum demand.
- C. McAllen has already purchased land for Plant No. 3 on Bentsen between 5 Mile and 6 Mile Roads.

### **3.6.2 Sharyland Water Supply Corporation**

- A. SWSC currently owns and operates two surface water plants. The older of the two is located near the intersection of Sharyland Road and Mile 5 North and has a capacity of 8 mgd. The second and newest plant is located on Ware Road just north of Hwy 107. This plant has a capacity of 4 mgd and can be expanded to 16 mgd. The plant began operations in May 1997 and is being operated at a rate of 2 mgd initially.

### **3.6.3 Hidalgo**

- A. Hidalgo uses only ground water and therefore does not have a treatment plant.
- B. Hidalgo chlorinates the ground water as it is pumped into a ground storage tank at each well.

### **3.6.4 Reynosa**

- A. Reynosa has two treatment plants. The Loma Linda plant is rated at 1,500 LPS or 34.2 mgd. The Benito Juarez plant is rated at 500 LPS or 11.4 mgd.

### **3.6.5 Region**

- A. The treatment capacity available in the regional planning area is summarized in Table 3-5. Not counting Reynosa, it totals 54.2 mgd.
- B. The locations of the U.S. based treatment plants are shown in Figures 3-2 and 3-3.

**TABLE 3-1  
PLANNING AREA SIZE**

Area Descriptions	Areas in Sq. Miles
McAllen Distribution Planning Area	61.3
City of Hidalgo	13.8
Sharyland Water Supply Corporation	131.2
Total Regional Water Supply Planning Area	206.3

**TABLE 3-2  
POPULATIONS  
1994-1996**

Entities	1994	1995	1996
McAllen Distribution Planning Area	110,411	114,120	117,829
City of Hidalgo	4,684	5,157	5,679
Sharyland Water Supply Corporation	28,932	32,124	35,668
Total Regional Planning Area Less Reynosa	144,027	151,401	159,176
Reynosa (See discussion in text)	563,485	619,834	681,818
Total Regional Planning Area with Reynosa	707,512	771,235	840,994

**TABLE 3-3  
AVERAGE ANNUAL PER CAPITA DEMANDS  
1994-1996**

<b>Entities</b>	<b>1994 gpcd</b>	<b>1995 gpcd</b>	<b>1996 gpcd</b>
City of McAllen	143	135	136
City of Hidalgo	94	94	94
Sharyland Water Supply Corporation	132	116	115
Reynosa	74	74	74

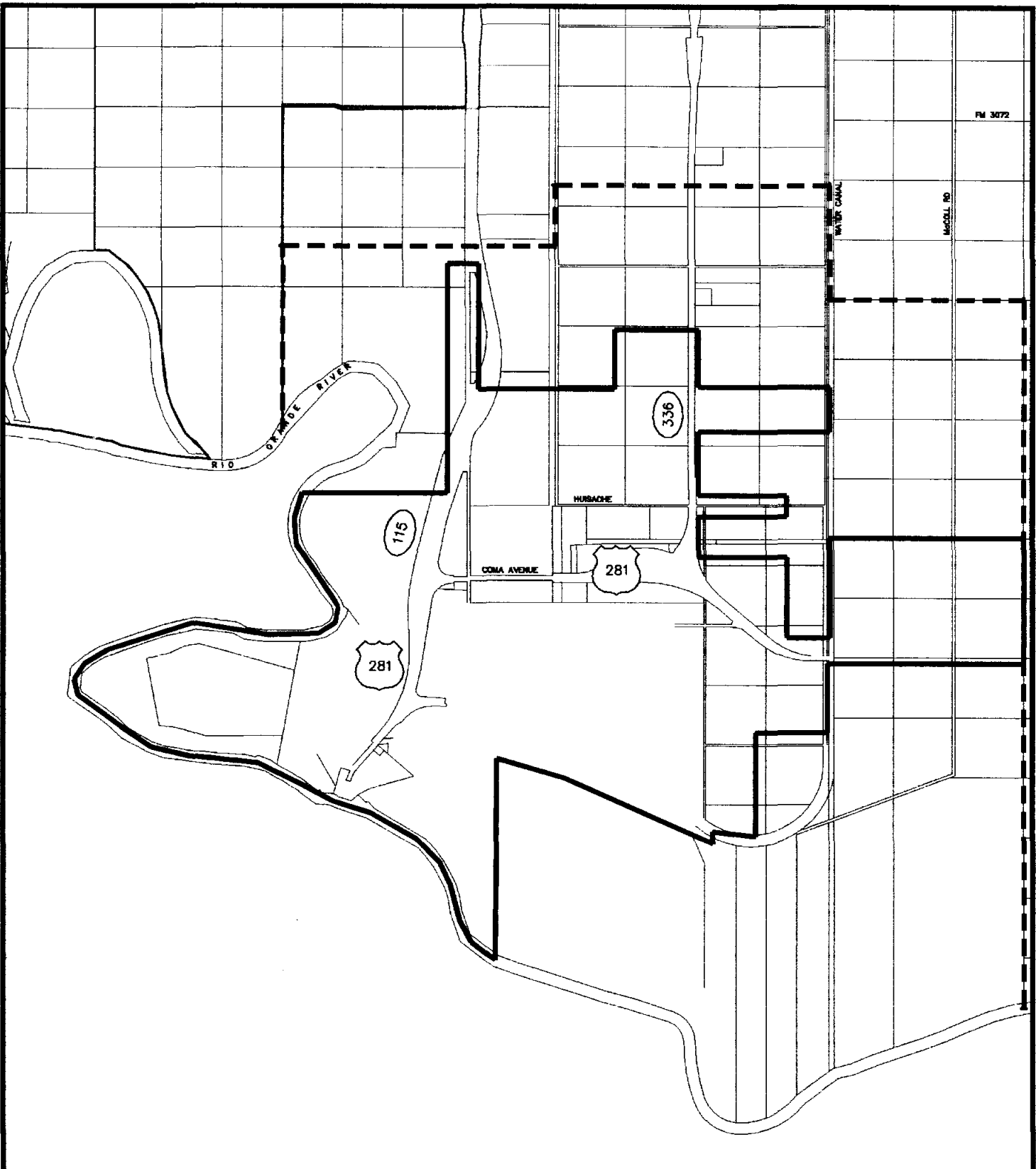
**TABLE 3-4  
AVERAGE ANNUAL FINISHED WATER CONSUMPTION  
1994-1996  
MGD**

<b>Entities</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>
McAllen Distribution Planning Area	15.82	15.45	16.04
City of Hidalgo	0.44	0.49	0.54
Sharyland Water Supply Corporation	3.81	3.72	4.09
Total Regional Planning Area Less Reynosa	20.07	19.66	20.67
Reynosa (See discussion in text.)	41.69	45.72	50.45
Total Regional Planning Area with Reynosa	61.76	65.38	71.12

**TABLE 3-5**  
**TREATMENT PLANT CAPACITY**  
**1996**

<b>Entities</b>	<b>Capacity mgd</b>
City of McAllen	42.2
City of Hidalgo	0
Sharyland Water Supply Corporation	12
Total Region	54.2
Reynosa	45.6





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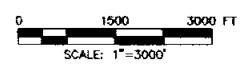
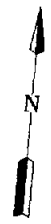
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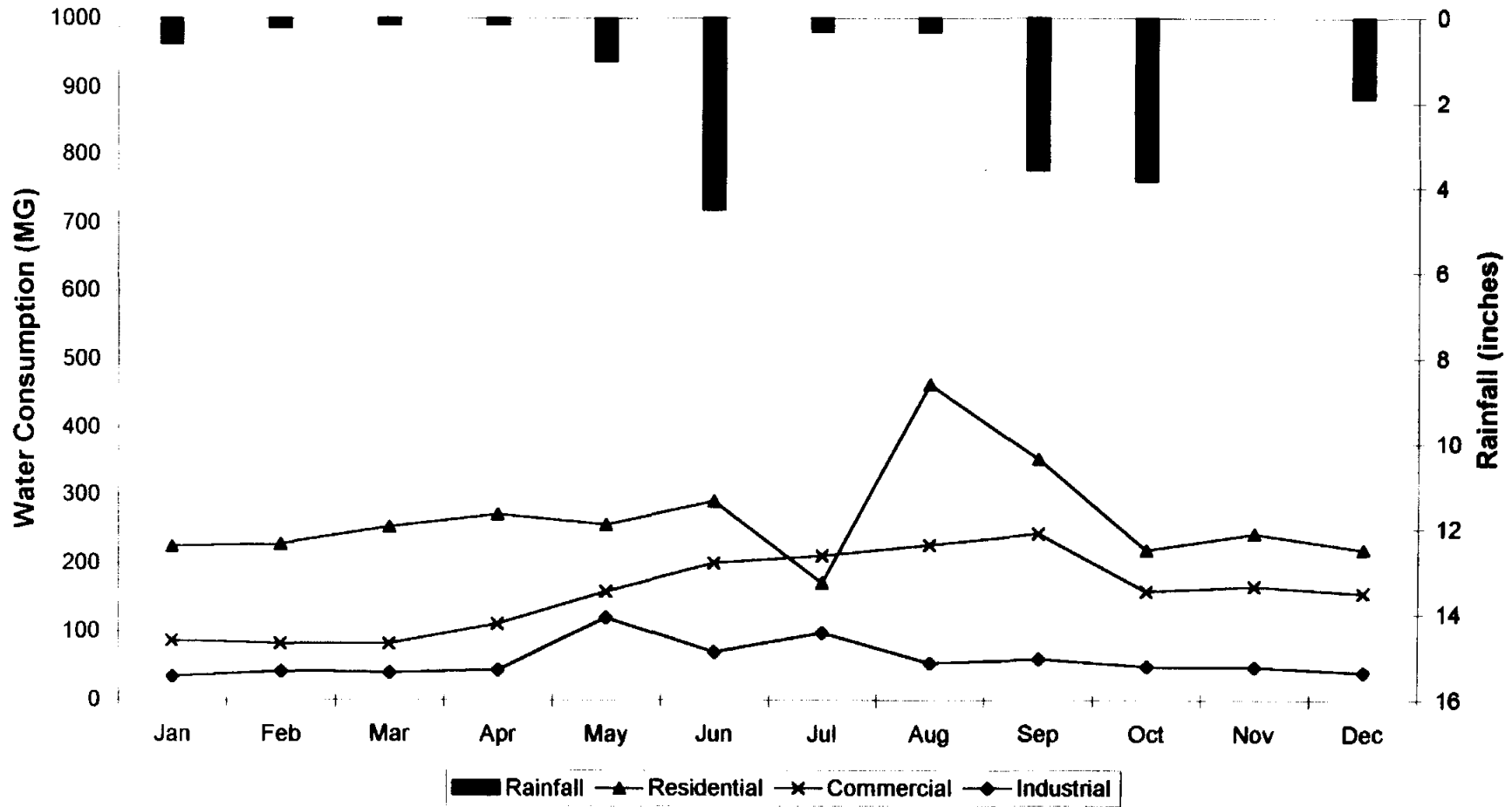
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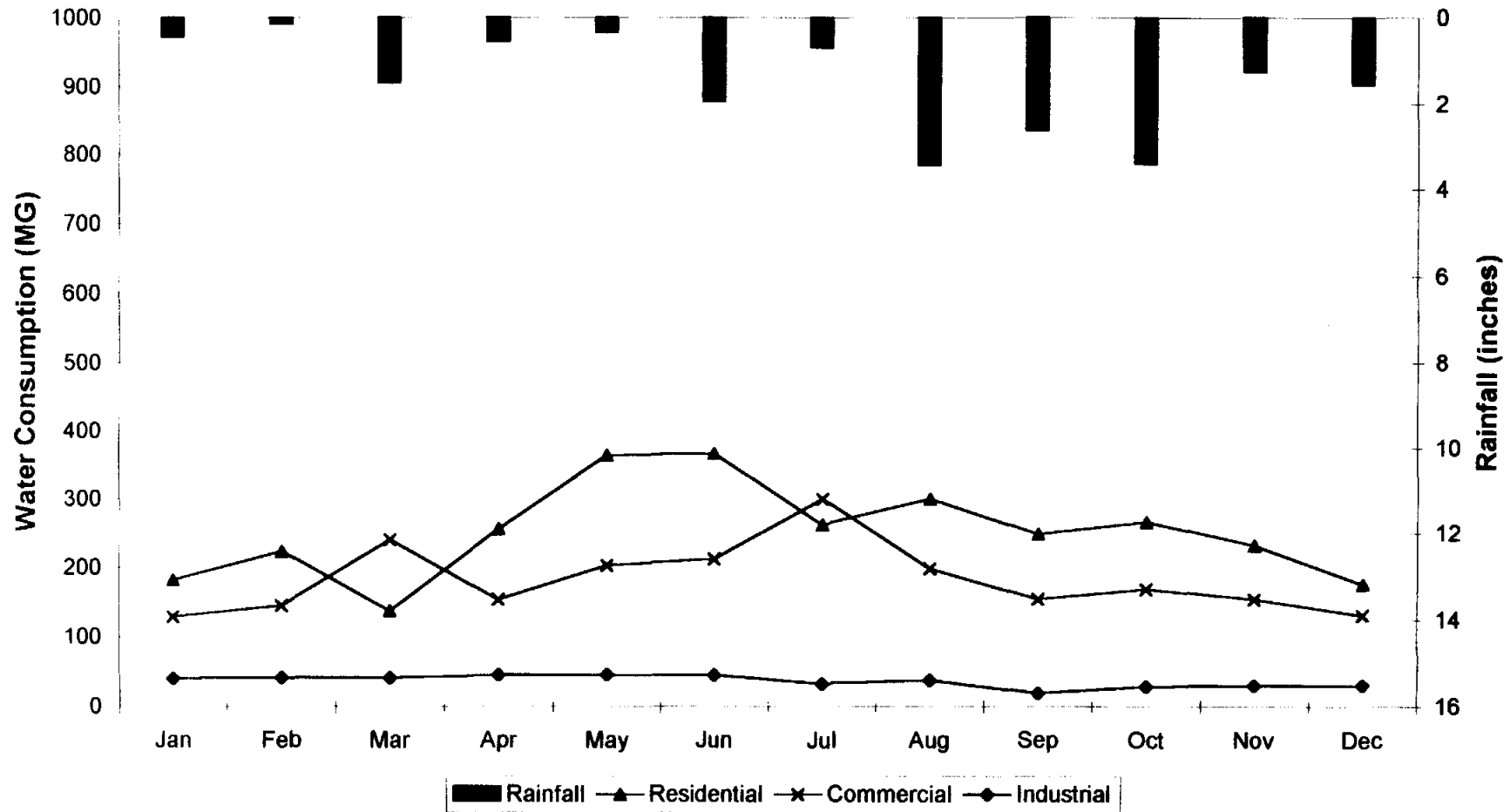
-  HIDALGO CITY LIMITS
-  HIDALGO ETJ
-  McALLEN CITY LIMITS



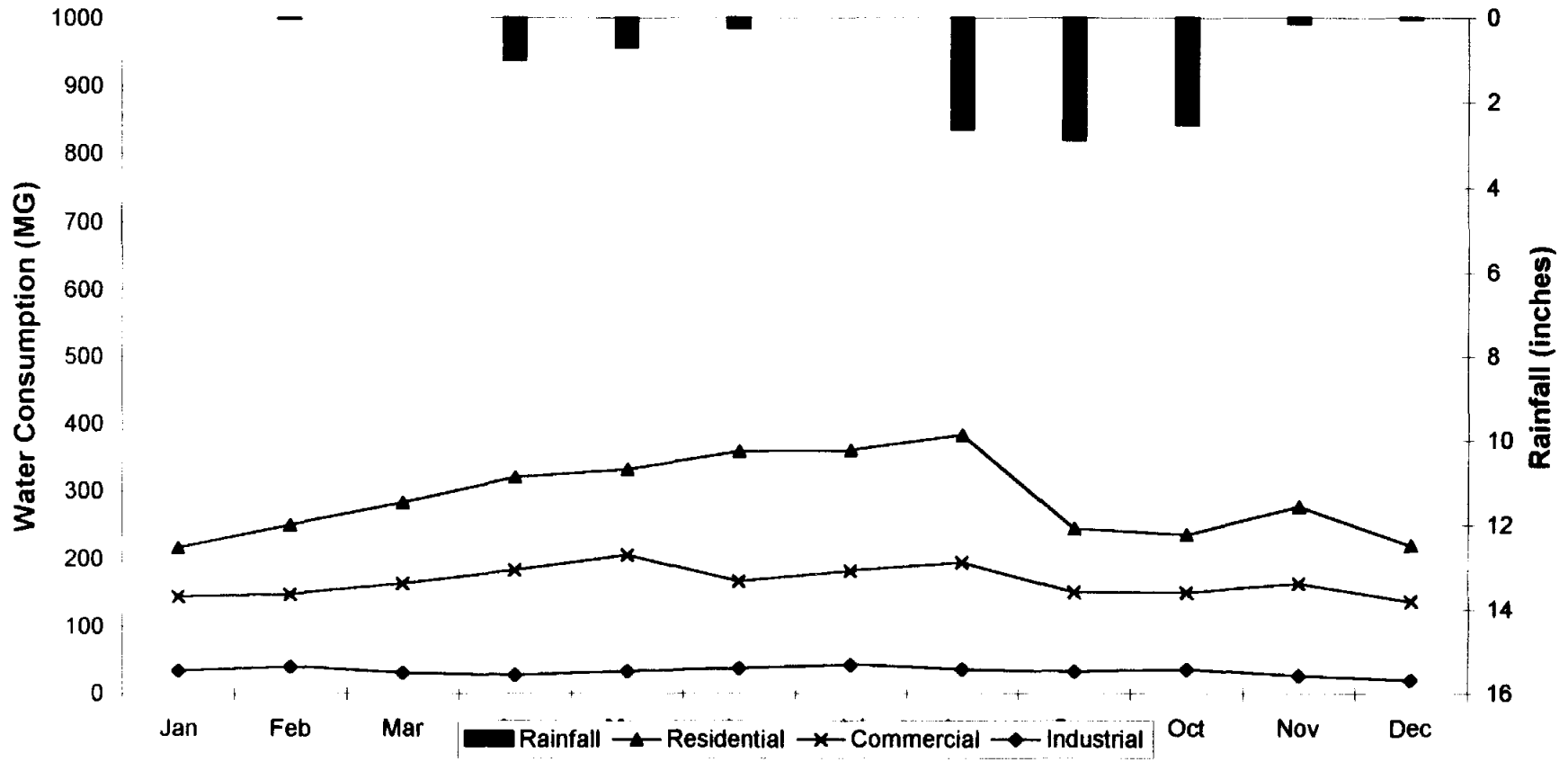
**FIGURE 3-5 A**  
**1994 MONTHLY WATER DEMANDS AND RAINFALL**  
**CITY OF MCALLEN**



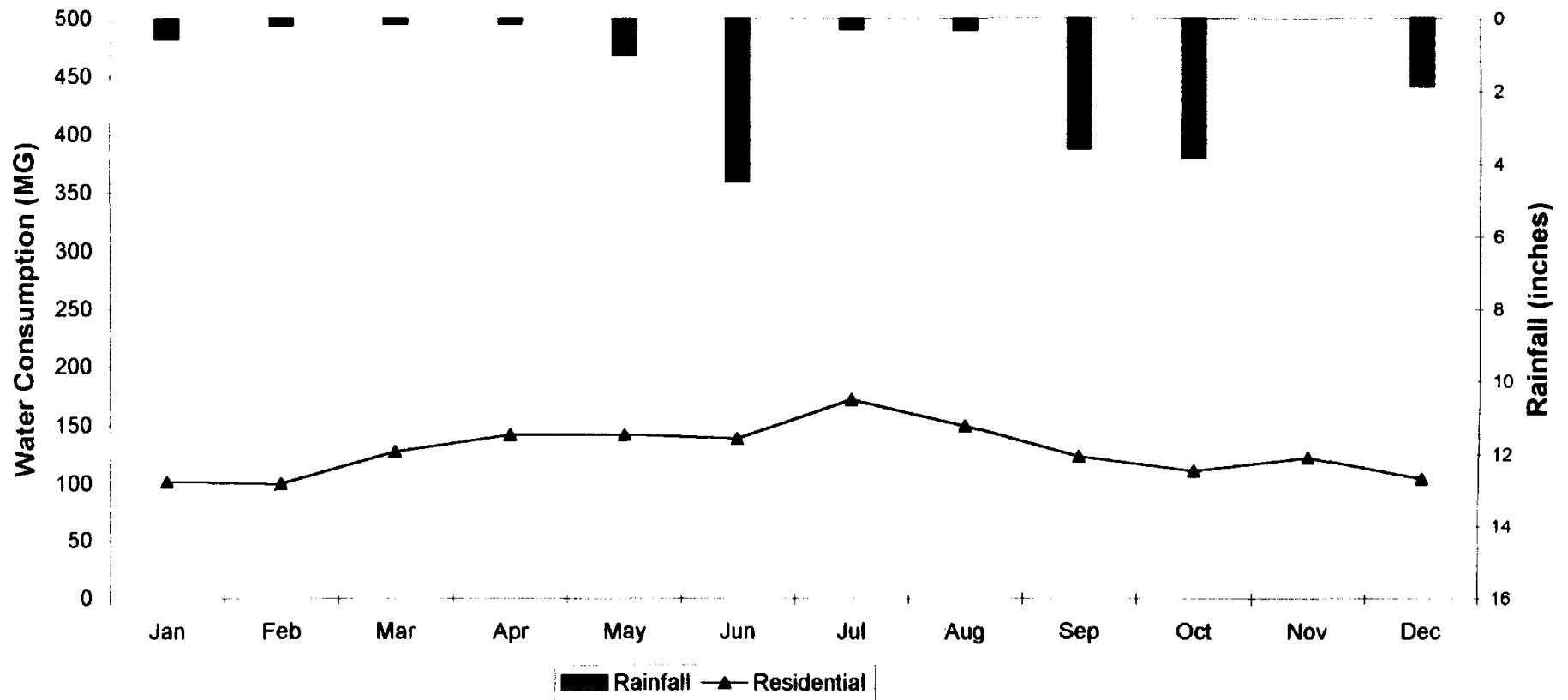
**FIGURE 3-5 B**  
**1995 MONTHLY WATER DEMANDS AND RAINFALL**  
**CITY OF MCALLEN**



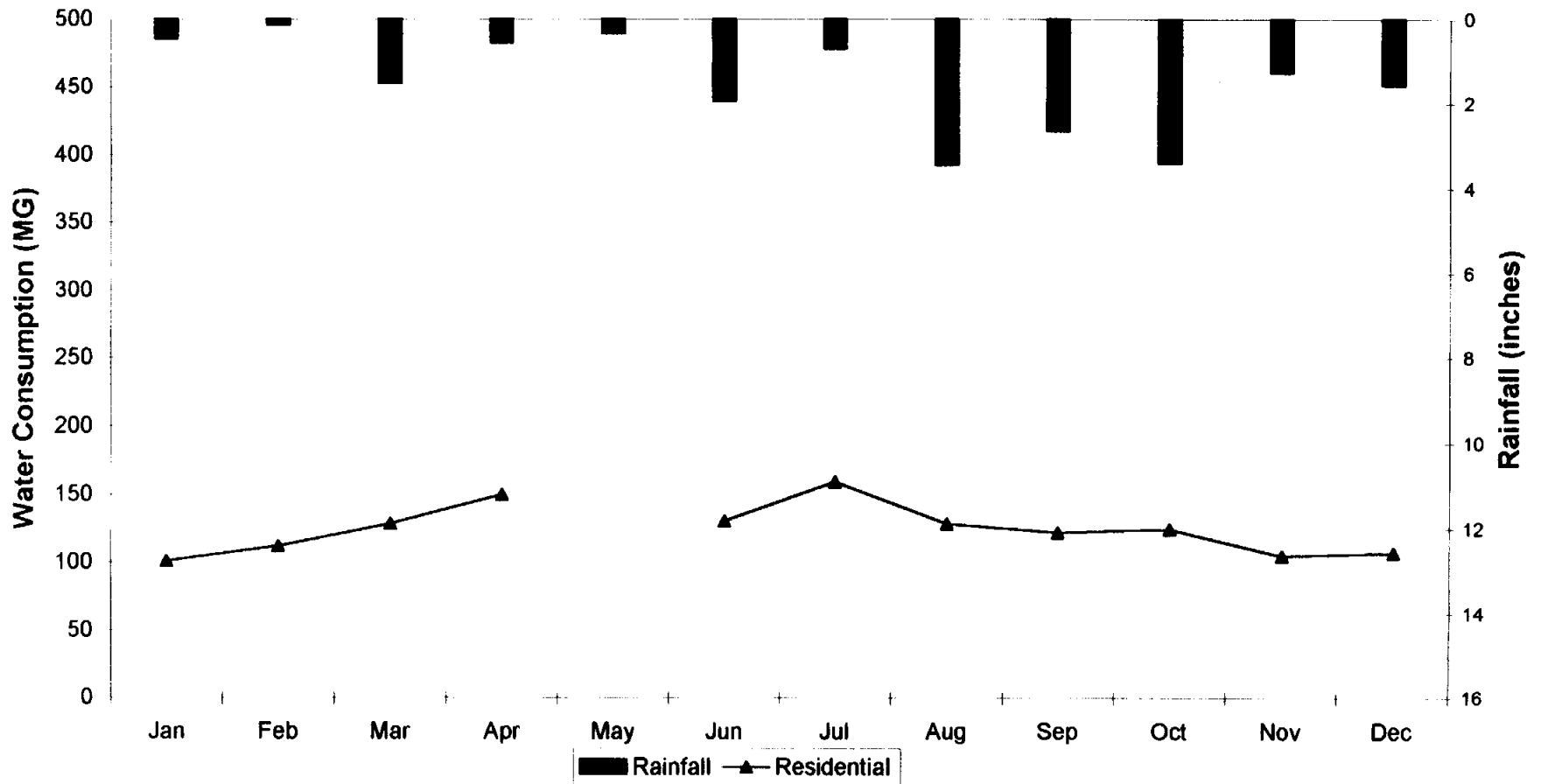
**FIGURE 3-5 C**  
**1996 MONTHLY WATER DEMANDS AND RAINFALL**  
**CITY OF MCALLEN**



**FIGURE 3-6 A**  
**1994 MONTHLY WATER DEMANDS AND RAINFALL**  
**SHARYLAND WATER SUPPLY CORPORATION**

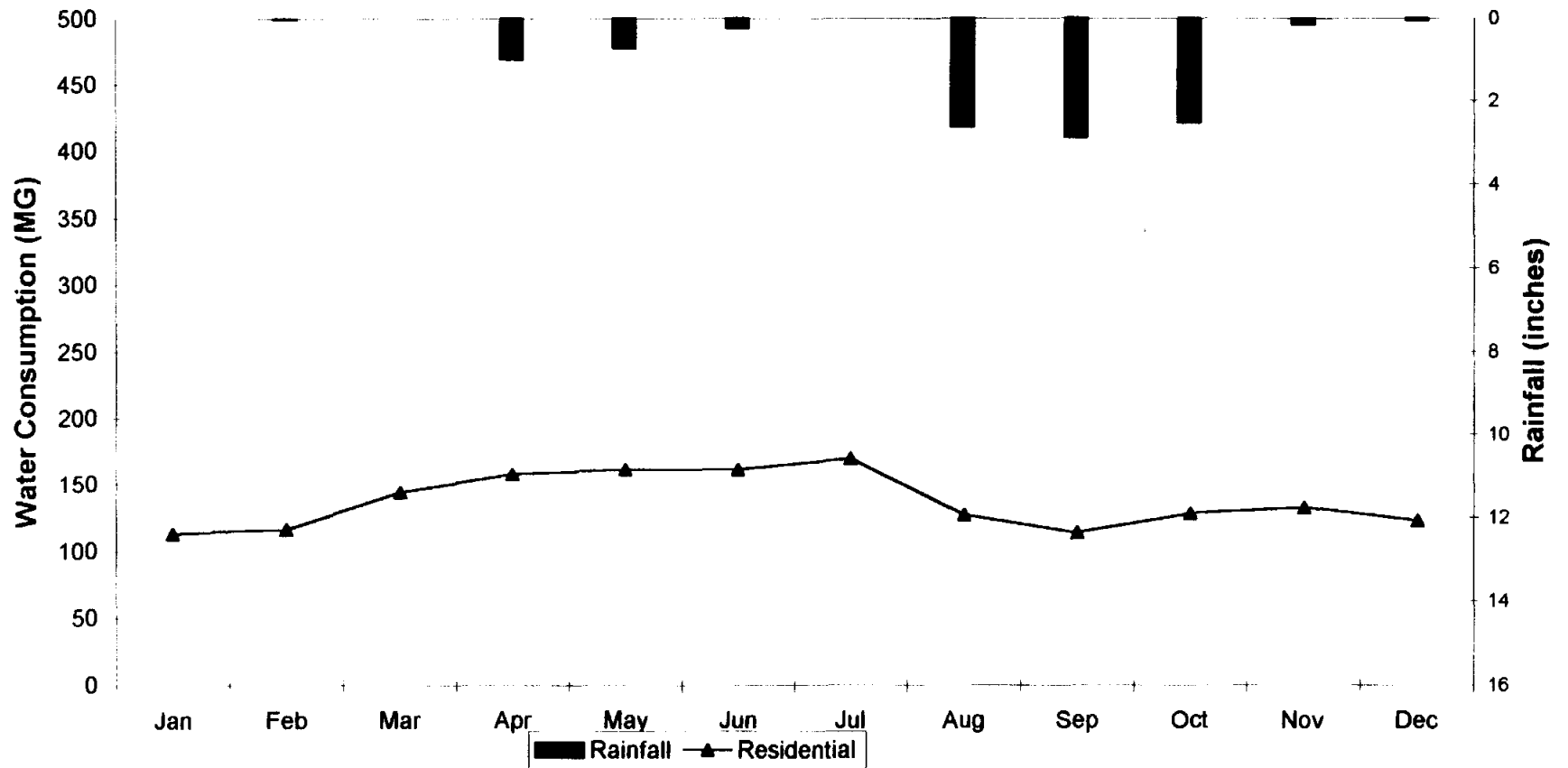


**FIGURE 3-6 B**  
**1995 MONTHLY WATER DEMANDS AND RAINFALL**  
**SHARYLAND WATER SUPPLY CORPORATION**



Note: No data available for May 1995.

**FIGURE 3-6 C**  
**1996 MONTHLY WATER DEMANDS AND RAINFALL**  
**SHARYLAND WATER SUPPLY CORPORATION**



## **4.0 REGIONAL WATER SUPPLY MASTER PLAN**

### **4.1 SECTION INTRODUCTION**

- A. This section presents the 30-year water supply master plan. 5-year, 20-year, and 30-year population and water demand projections are included.
- B. The planning area includes the Cities of McAllen and Hidalgo as well as the service area of the Sharyland Water Supply Corporation. The boundaries of the regional water supply planning area are illustrated in Figure 2-1.
- C. The proposed water supply master plan is a technical plan and is subject to the studies recommended in this section.
- D. The water supply recommendations have not yet been approved by the affected entities.

### **4.2 PROJECTED REGIONAL POPULATION**

- A. Five-year, 20-year and 30-year population projections for the water supply planning area, excluding Reynosa, are presented in Figure 4-1. The projections for Reynosa are compared with the rest of the water supply planning area in Figure 4-2. As that figure indicates, current and projected populations for Reynosa alone are slightly larger than projections for the rest of the water supply planning area combined. Population projections for Reynosa vary depending on the source. The highest projections were used in this plan to be conservative and those projections came from the McAllen Economic Development Corporation (MEDC). A separate report prepared by the Monterey office of Rust is based on census data obtained from the Instituto Nacional de Estadística, Geografía e Informática (INEGI). Projections obtained from the Border Environment Cooperation Commission (BECC) and the University of Texas-Pan American were consistent with those obtained from INEGI. According to the MEDC the 1997 Reynosa is 750,000 while INEGI reports 338,493. Also, the MECA also estimates that the rate of growth is approximately 10% per year while INEGI projects 3.42%
- B. Population projections for the water supply planning region were obtained from the 1995 Transportation Update sponsored by the Hidalgo County Metropolitan Planning Organization. The City of McAllen Planning Division did revise the Traffic Analysis Zone (TAZ) data for associated TAZ's in the McAllen Distribution Planning area. The Division also did extrapolations for remote parts of the planning area that were outside the TAZ coverage.
- C. The Transportation Plan Update (TPU) projections are higher than the TWDB high scenario projections. The TPU projections for the City of McAllen are compared with the TWDB



projections in Figure 4-3. Similarly, the TPU projections for Hidalgo are compared with the TWDB projections in Figure 4-4. The differences between the TWDB and TPU projections is acknowledged in the TPU report, and can be attributed to TWDB assumptions concerning inward migration to the area. It was necessary to use the TPU projections because the TWDB projections cover whole cities and counties. Since the TPU projections are broken down by the TAZ's, they are utilized as a source more in this type of regional planning work. More information on the population projections is presented in Appendix A.

- D. Although the TAZ based projections exceed those of the TWDB, the rate of growth used for the McAllen distribution planning area, the most densely populated part of the planning area, is consistent with actual growth rates in recent years, i.e. approximately 3.25%.

### **4.3 PROJECTED REGIONAL WATER AND TREATMENT CAPACITY NEEDS**

#### **4.3.1 Finished Water and Treatment Capacity**

- A. Projected annual average finished water needs are presented in Figure 4-5. For the region as a whole, the projected increase in annual consumption is 100% over 20 years and 159% over 30 years.
- B. The finished water demand projections for McAllen are based on 150 gpcd. That is a typical recent demand figure with a 10% allowance for unaccounted for water. See discussion of demands in Section 3.4.
- C. The finished water demand projections for Hidalgo is based on 103 gpcd for 2001, and 150 gpcd for 2016 and 2026. 103 gpcd is a typical recent demand figure with a 10% allowance for unaccounted for water. The demands for 2016 and 2026 are based on the same demand as that used for McAllen since the population density in Hidalgo will increase substantially and begin to approach that of present day McAllen as shown in Table 4-1.
- D. The finished water demand projections for SWSC are based on 127 gpcd which is a typical recent demand with a 10% allowance for unaccounted for water. Use of the lower demand for SWSC seems justifiable since the average population density will remain low (1.64 persons per acre) at the end of the 30-year planning period. See Table 4-1.
- E. Finished water demands of the planning area are compared with those of Reynosa in Figure 4-6. Reynosa needs range from 104% to 114% of those for the planning area.
- F. Projected maximum day demands which determine required treatment plant capacity are presented in Figure 4-7. A 59% increase in treatment plant capacity is needed over 20 years and 105% increase is needed over 30 years. The treatment capacity deficit is illustrated in Figure 4-8.

### **4.3.2 Raw Water**

- A. Projected 5-year, 20-year and 30-year raw water needs for the planning area are presented in Figure 4-9A. The projected raw water deficit is illustrated in Figure 4-10A. The graph is based on projected needs in Figure 4-9A less the amounts of raw water currently available as discussed in Section 3.0. These projections include a 30% allowance for canal system losses, evaporation, and plant losses. 30% is a typical current figure for McAllen and SWSC.
- B. Projected 5-year, 20-year and 30-year raw water needs and deficits can be reduced approximately 16% through conservation. That figure was extracted from the Texas Water Plan and includes water savings from advanced plumbing fixtures and more frugal outdoor residential use. Raw water needs and deficits with maximum conservation are shown in Figures 4-9B and 4-10B.
- C. The Texas Water Plan projects raw water demands for McAllen and Hidalgo that range from 222 gpcd to 190 gpcd. The projected raw water demand for McAllen is 195 gpcd while demand for the whole planning region is 185 gpcd. The lower historical demand for the SWSC service area is the basis for the lower figure.

## **4.4 REGIONAL WATER SUPPLY MASTER PLAN**

### **4.4.1 Raw Water**

#### **A. Wastewater Reuse**

- 1. It is recommended that maximum use be made of reclaimed wastewater consistent with the January 1997 Reuse Feasibility Study.
- 2. The North McAllen and South McAllen reuse projects have been included in the McAllen capital improvements program which is presented in Section 6.0.
- 3. The McAllen-Edinburg reuse project should be included in the McAllen-Edinburg finished water project which is discussed in Section 4.4.2 below.

#### **B. Ground Water**

- 1. It is recommended that ground water be used as a supplement source of water if it proves feasible to do so. This question will be addressed by the Integrated Water Plan, now being prepared by the Lower Rio Grande Development Council (LRGDC).
- 2. Based on the data presented in TWDB Bulletin 316, the ground water in the McAllen area is not fresh. That is, the total dissolved solids concentration in the water

generally exceeds 1,000 ppm (slightly saline) and sometimes exceeds 3,000 ppm (moderately saline). Chloride and sulfate concentrations often exceed secondary drinking water standards. Sodium and boron concentrations can be high also. Thus, the water would probably have to be treated to reduce the concentrations of the foregoing dissolved constituents. Membrane technology with appropriate pretreatment would be most probable. The feasibility and cost of treating ground water will be further examined as part of the LRGDC study.

3. Safe yield is the other main concern. Existing wells in southern Hidalgo County are generally small, i.e. less than 500 gpm. A substantial test well program would be required to establish the design yields of future wells. However, the test wells could be converted to production wells if the tests prove successful. If the LRGDC study suggests that ground water can be treated economically, a test well program should follow.

#### C. Surface Water

1. Inevitably, some agricultural water rights will have to be converted to municipal use since the projected demands exceed than the amounts of reclaimed wastewater and ground water that can be used reliably, safely and economically. At the present time, only 11% of Rio Grande water is used for municipal supply. Conversion of agricultural land to residential, commercial and industrial development will increase existing supply.
2. It is recommended that a new municipal raw water conveyance system be studied. Such a system would employ dual pipelines rather than canals and would save 10 to 25% of the raw water that is now lost due to leakage from the canal systems. This system would convey raw water from the river to a large reservoir into that could serve McAllen, Edinburg and Sharyland Water Supply Corporation. The project would include a new pump station at the Rio Grande. Development and evaluation of this concept is beyond the scope of this planning effort.

#### 4.4.2 Finished Water

##### A. City of McAllen

The McAllen Water Master Plan described in Section 6.0 provides a plan for supplying water to the so called McAllen Distribution Planning Area. That area represents over 27% of the region and extends well beyond the City's current city limits. Thus, it qualifies as an initial step toward regionalization of the water system. The City is moving into this expanded service area by buying out parts of the Sharyland system. See Figure 3-2.

B. City of Hidalgo

It is recommended that the City of Hidalgo eventually convert to surface water supplied by the City of McAllen. Such an arrangement would be safer than the shallow well supply now being used by Hidalgo. Also, Hidalgo may not be able to meet its needs with ground water over the 20 to 30-year planning period. Providing service to Hidalgo would not have a major impact on the McAllen system. At minimum, it would require additional raw water, but Hidalgo has additional water rights.

In addition, the timing of some water plant projects in the McAllen Master Plan would need slight modification.

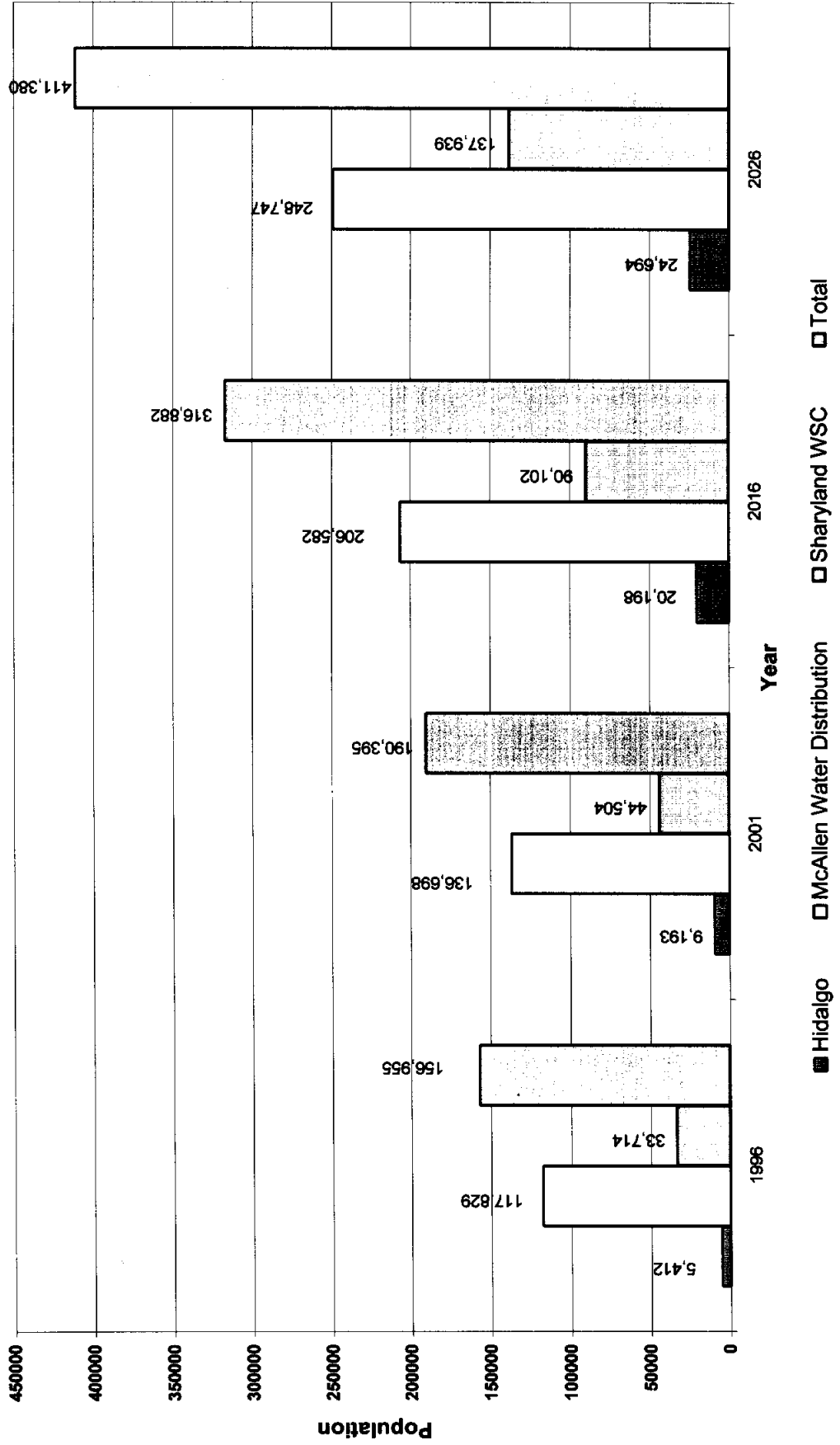
C. City of Edinburg

It is recommended that consideration be given to supplying finished water to the west side of Edinburg from McAllen's proposed Plant No. 3. Edinburg needs additional water there and plans to enter into an interim agreement with SWSC to obtain water from the new Ware Rd plant. Over the 30-year planning period, SWSC will need all of its Mile 5 plant capacity and most of its Ware Rd capacity to serve its own customers. McAllen could provide the additional finished water needed by Edinburg over the planning period by increasing the capacities of the Plant No. 3 modules from 16 to 20 mgd. This would be a very economical approach because it would be quite cost effective to scale up the size of Plant No. 3 and the plant site is not far from the west side of Edinburg. However, additional raw water would have to be supplied to support the concept. The Edinburg-McAllen's reuse project could provide at least 3 mgd of the additional raw water required.

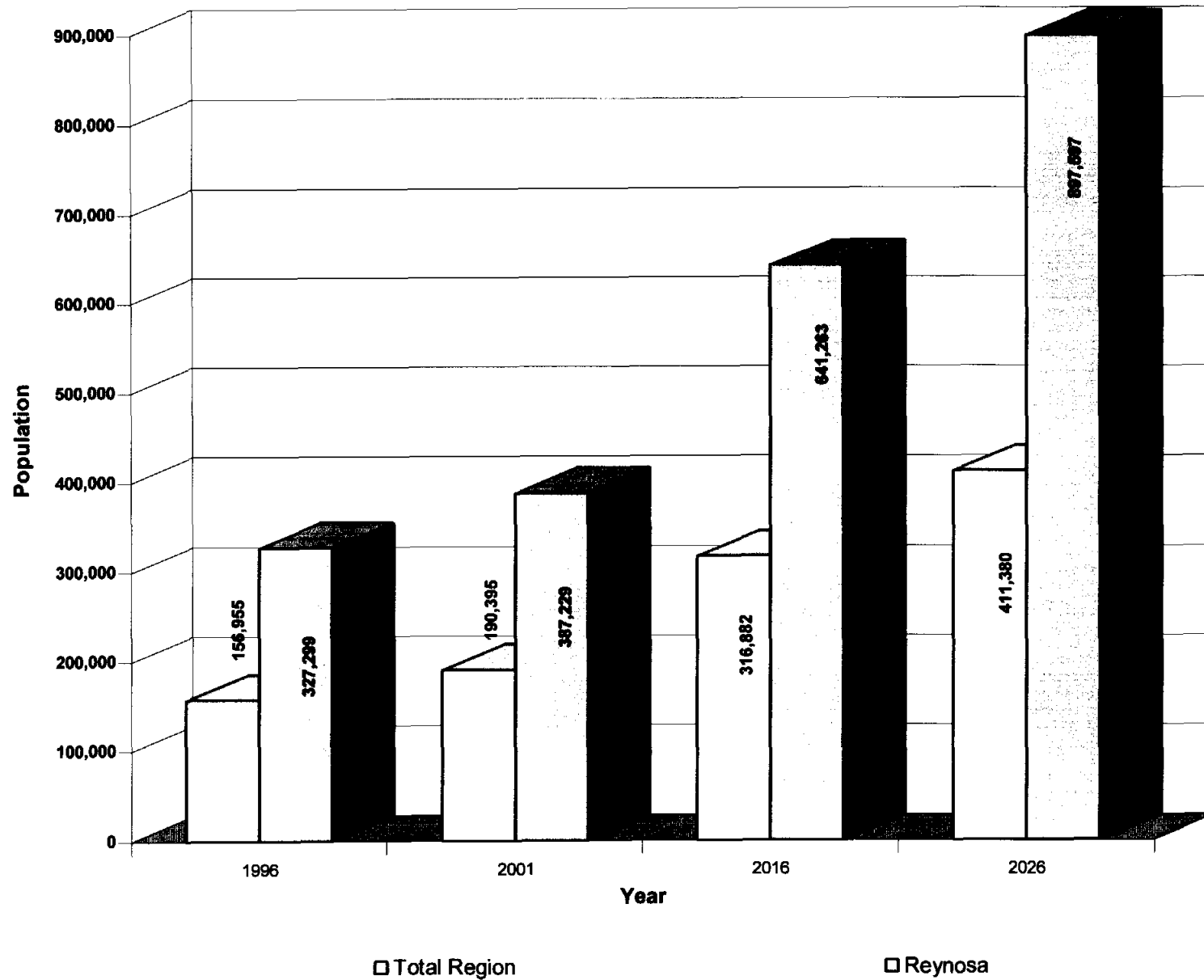
**TABLE 4-1  
PROJECTED POPULATION DENSITIES**

<b>Entities/Parameters</b>	<b>1996</b>	<b>2001</b>	<b>2016</b>	<b>2026</b>
<b>McAllen</b>				
Area (sq. mile)	61.3	61.3	61.3	61.3
Population	117,829	136,698	206,582	248,747
Density (people per acre)	3.0	3.48	5.26	6.33
<b>Sharyland Water Supply Corporation</b>				
Area (sq. mile)	131.2	131.2	131.2	131.2
Population	35,668	44,504	90,102	137,939
Density (people per acre)	0.42	0.53	1.07	1.64
<b>Hidalgo</b>				
Area (sq. mile)	13.8	13.8	13.8	13.8
Population	5,679	9,193	20,198	24,694
Density (people per acre)	0.64	1.04	2.29	2.80

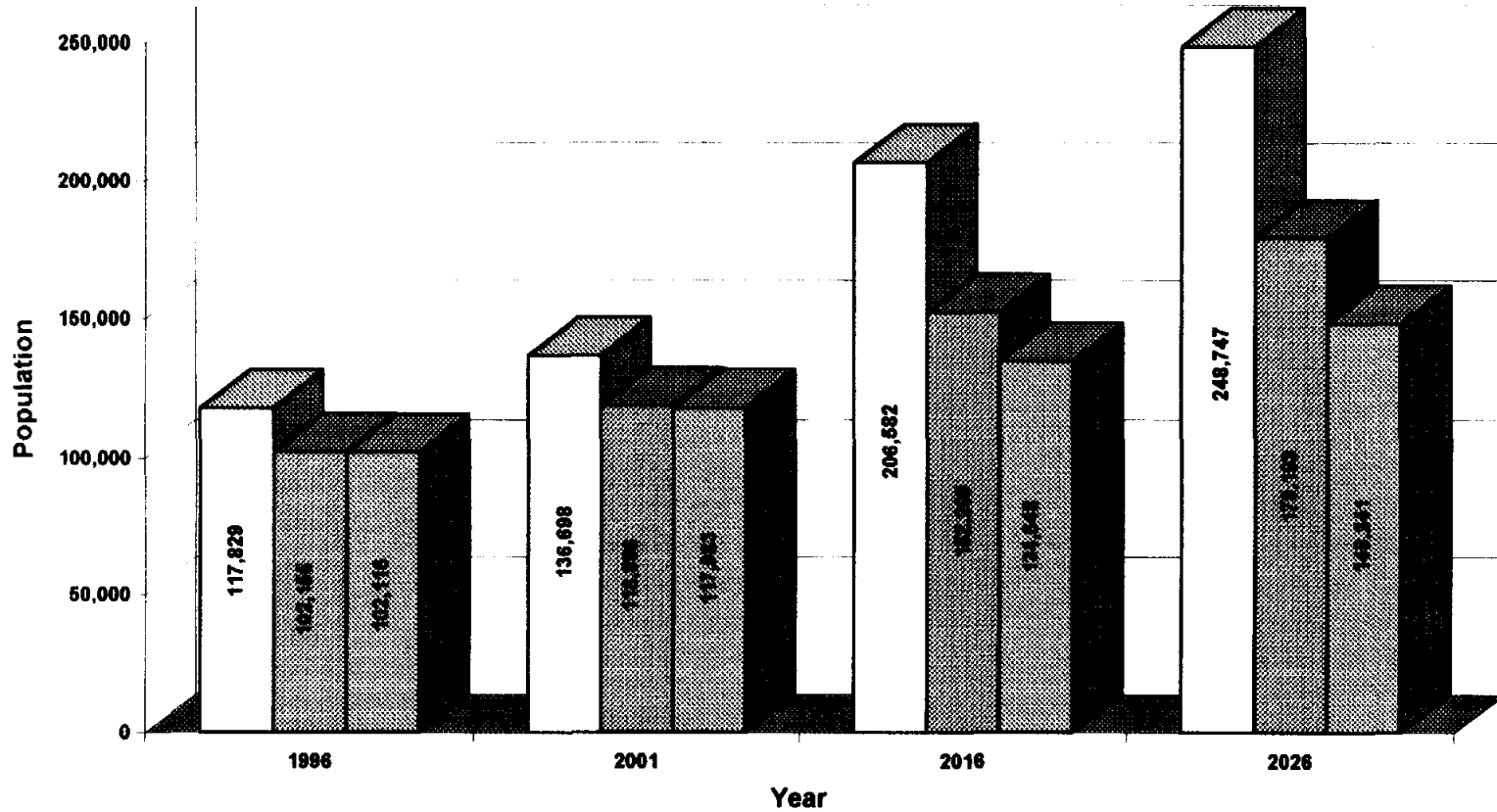
**FIGURE 4-1  
PROJECTED REGIONAL POPULATION**



**FIGURE 4-2  
COMPARISON OF REGIONAL AND REYNOSA  
POPULATION PROJECTIONS**



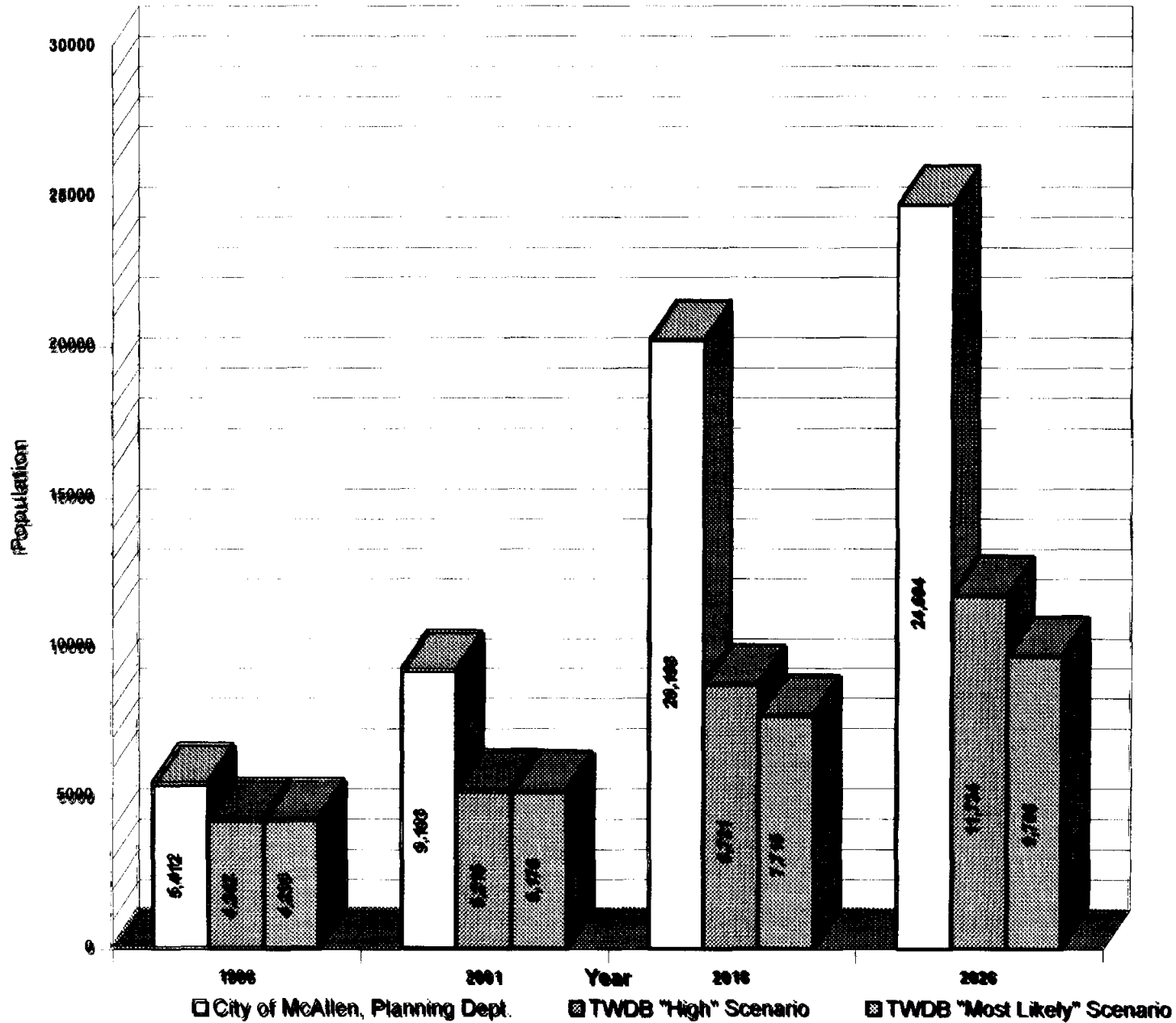
**FIGURE 4-3  
COMPARISON OF TWDB AND TPU POPULATION PROJECTIONS  
FOR McALLEN**



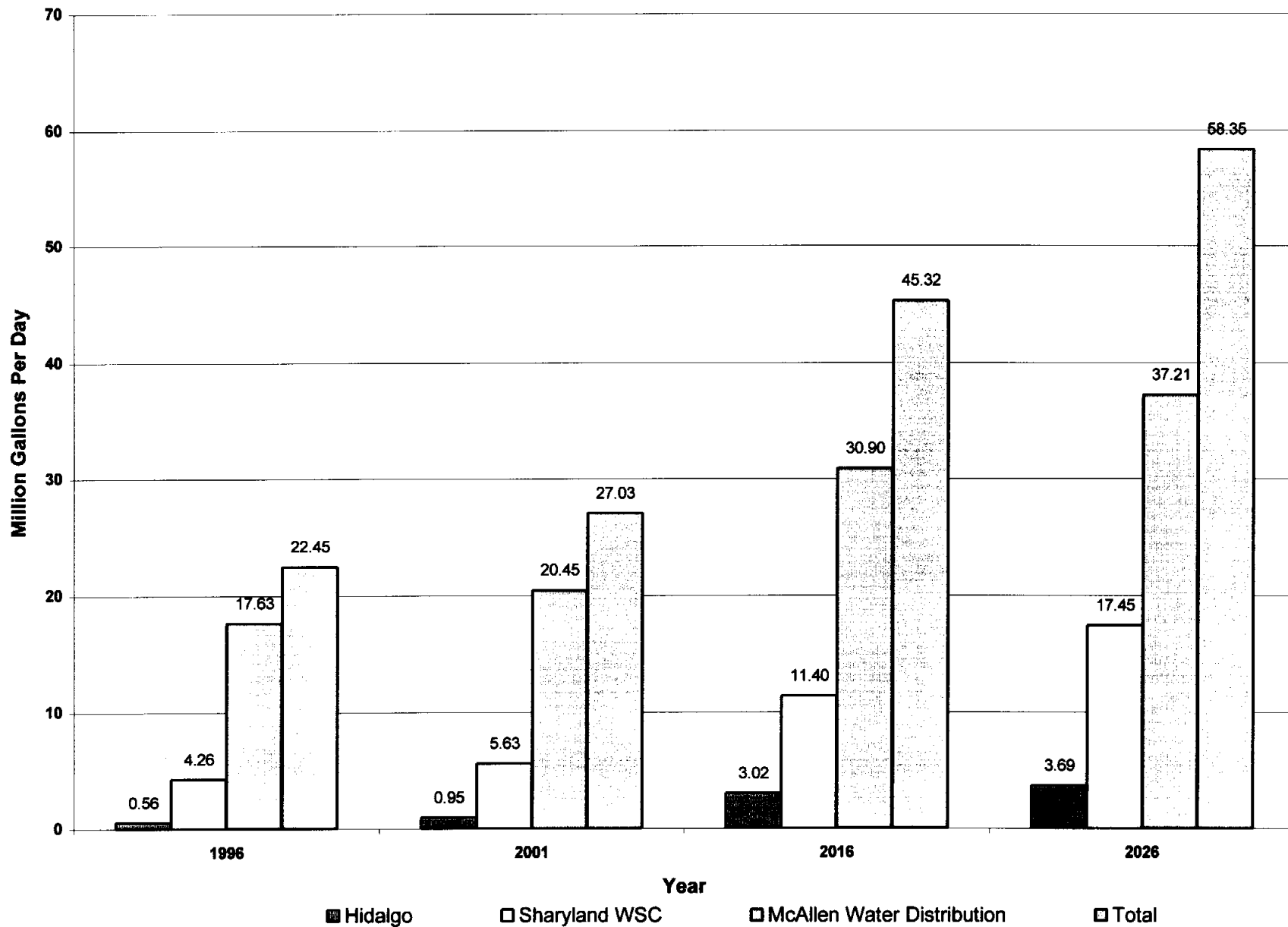
□ City of McAllen, Planning Dept.    ■ TWDB "High" Scenario    ■ TWDB "Most Likely" Scenario



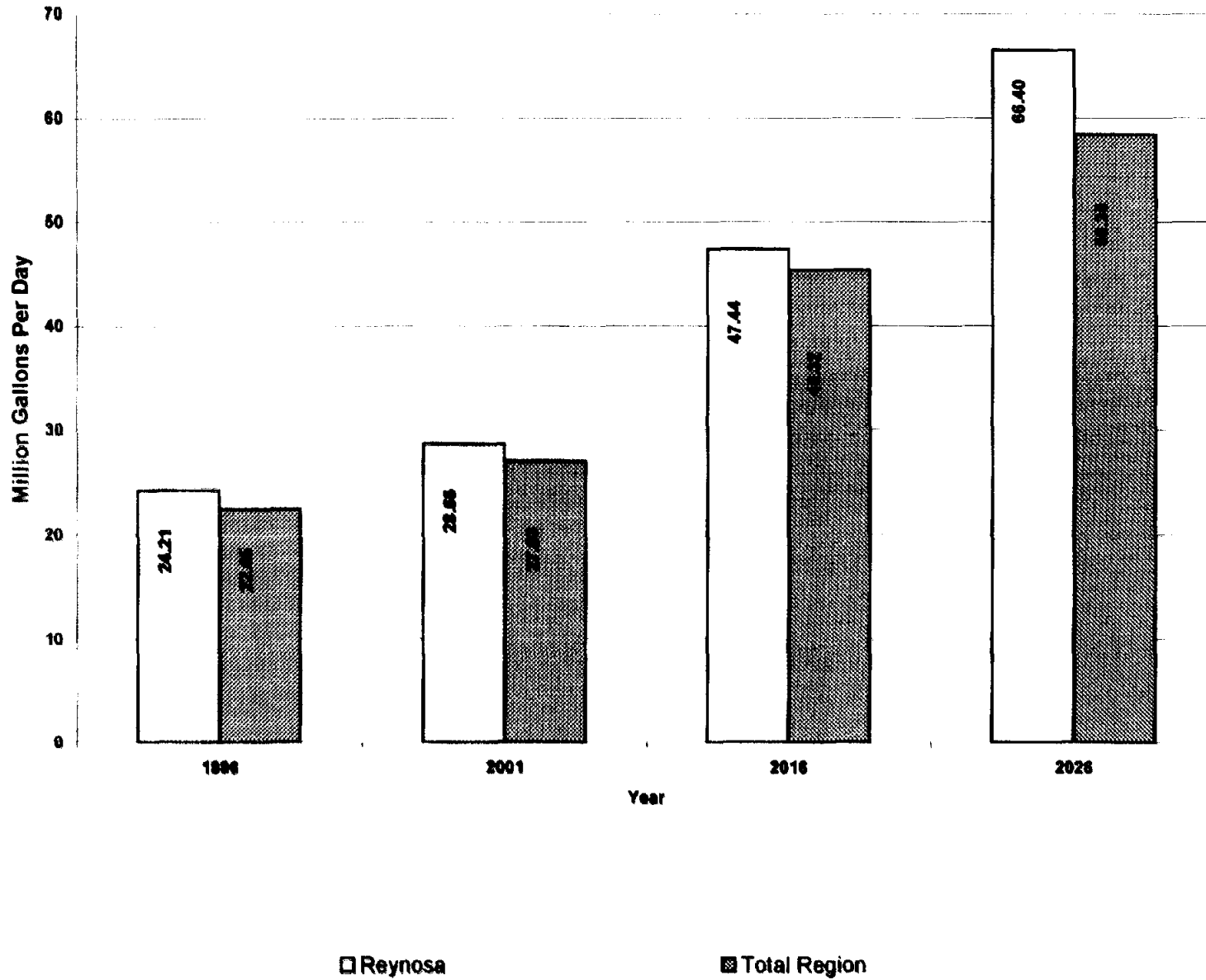
**FIGURE 4-4  
COMPARISON OF TWDB AND TPU POPULATION PROJECTIONS  
FOR HIDALGO**



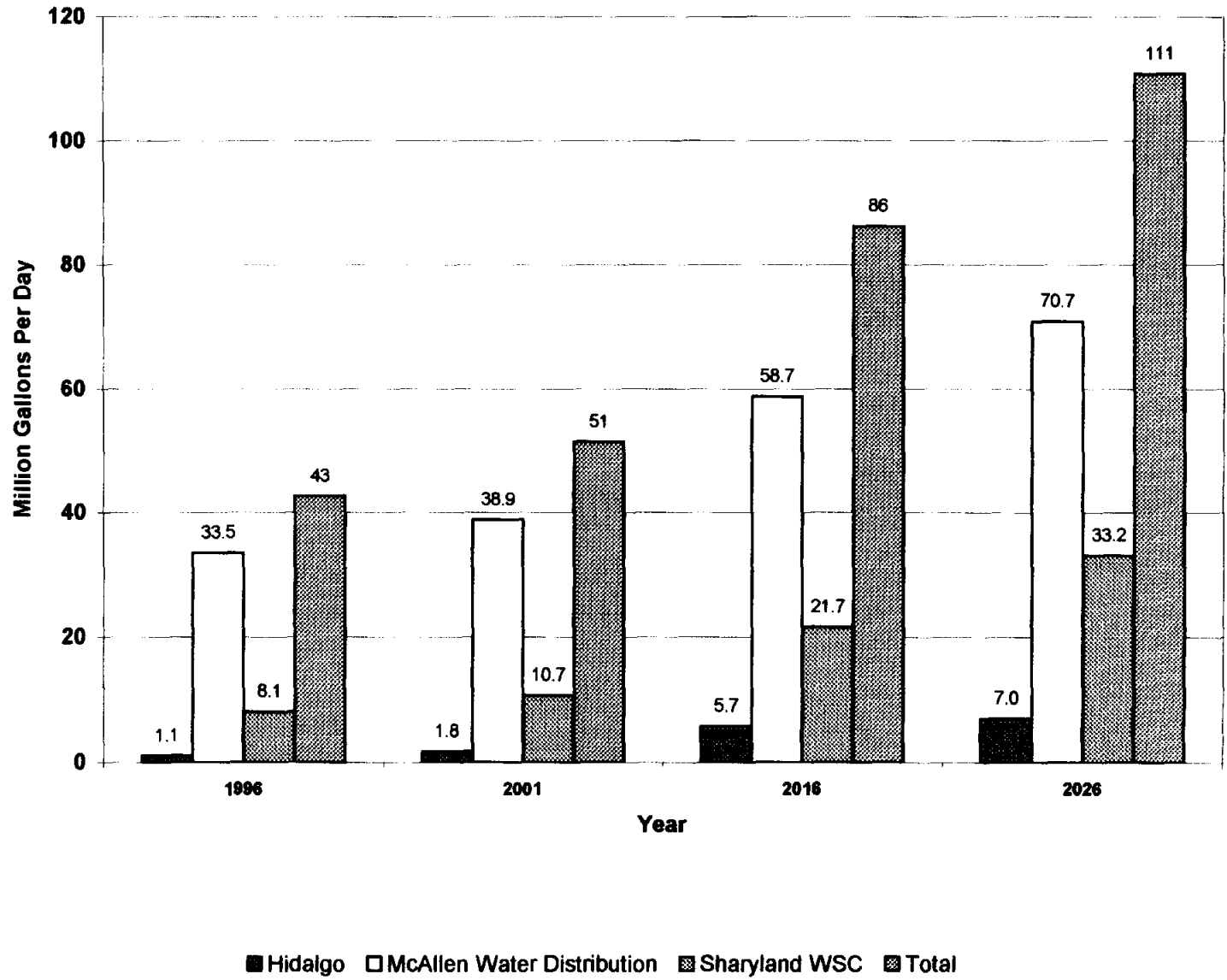
**FIGURE 4-5  
PROJECTED REGIONAL ANNUAL AVERAGE  
FINISHED WATER DEMANDS**



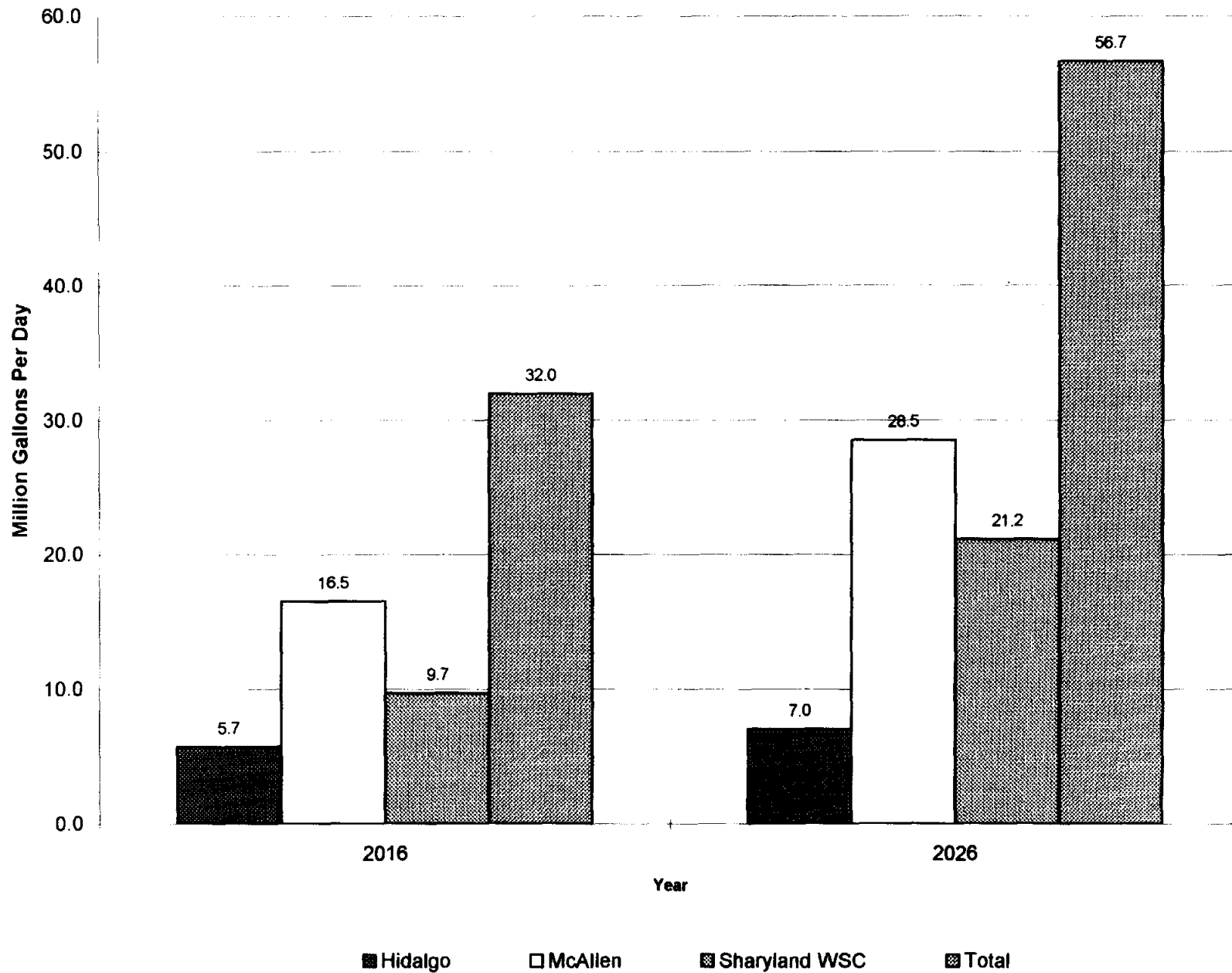
**FIGURE 4-6  
COMPARISON OF REGIONAL AND REYNOSA  
FINISHED WATER DEMAND PROJECTIONS**



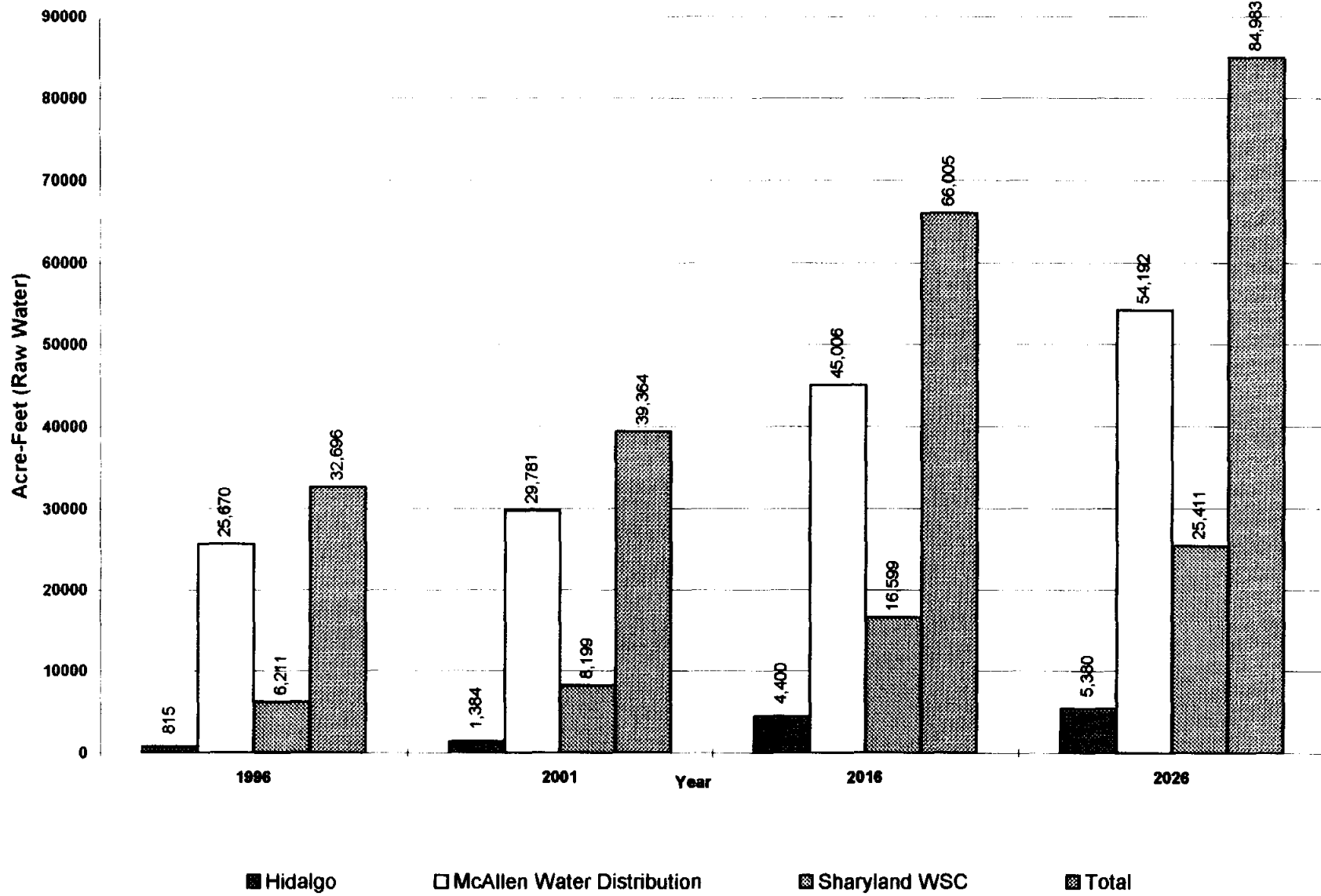
**FIGURE 4-7  
PROJECTED REGIONAL MAXIMUM DAILY  
FINISHED WATER DEMANDS**



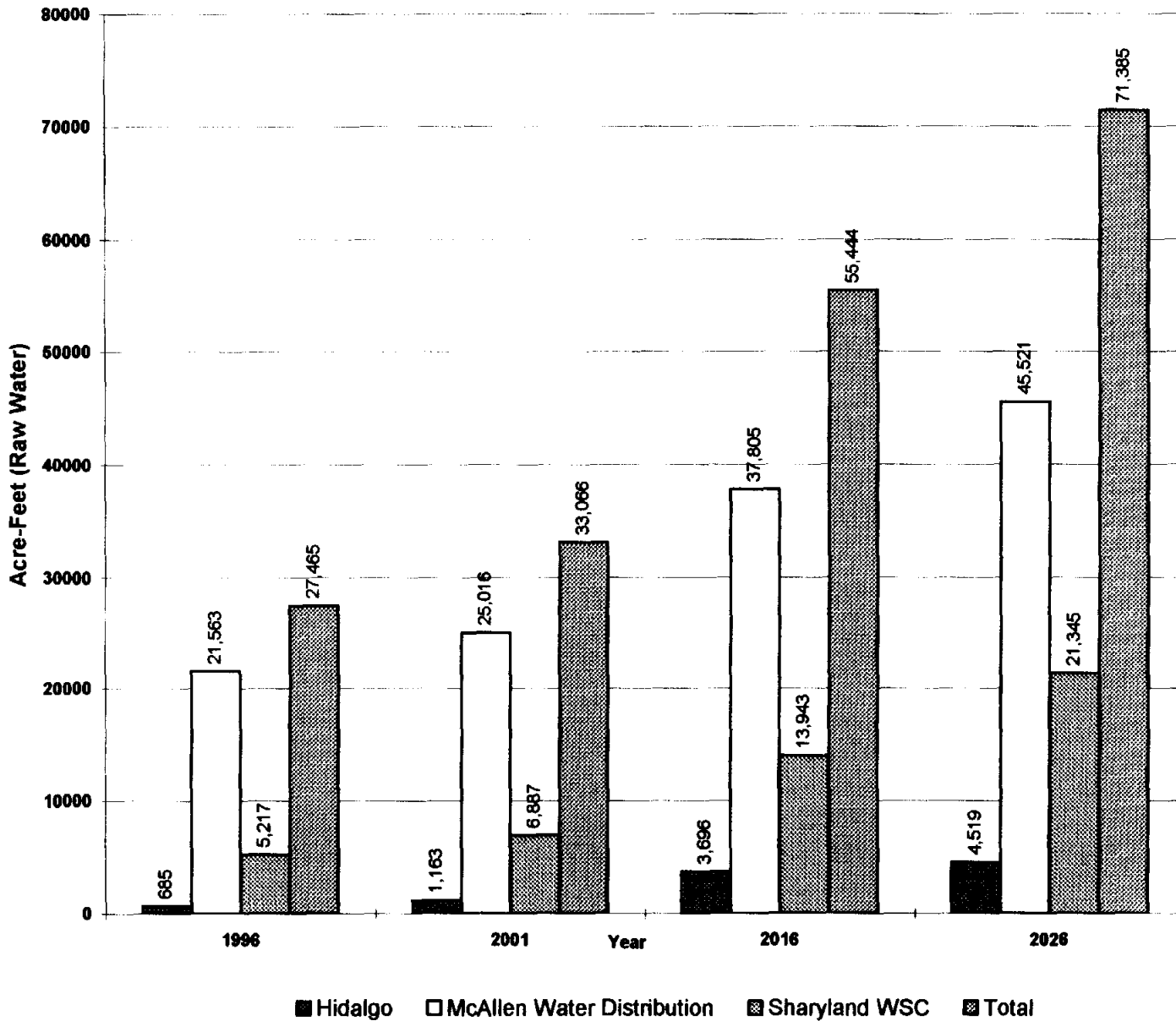
**FIGURE 4-8**  
**PROJECTED REGIONAL TREATMENT PLANT CAPACITY DEFICIT**



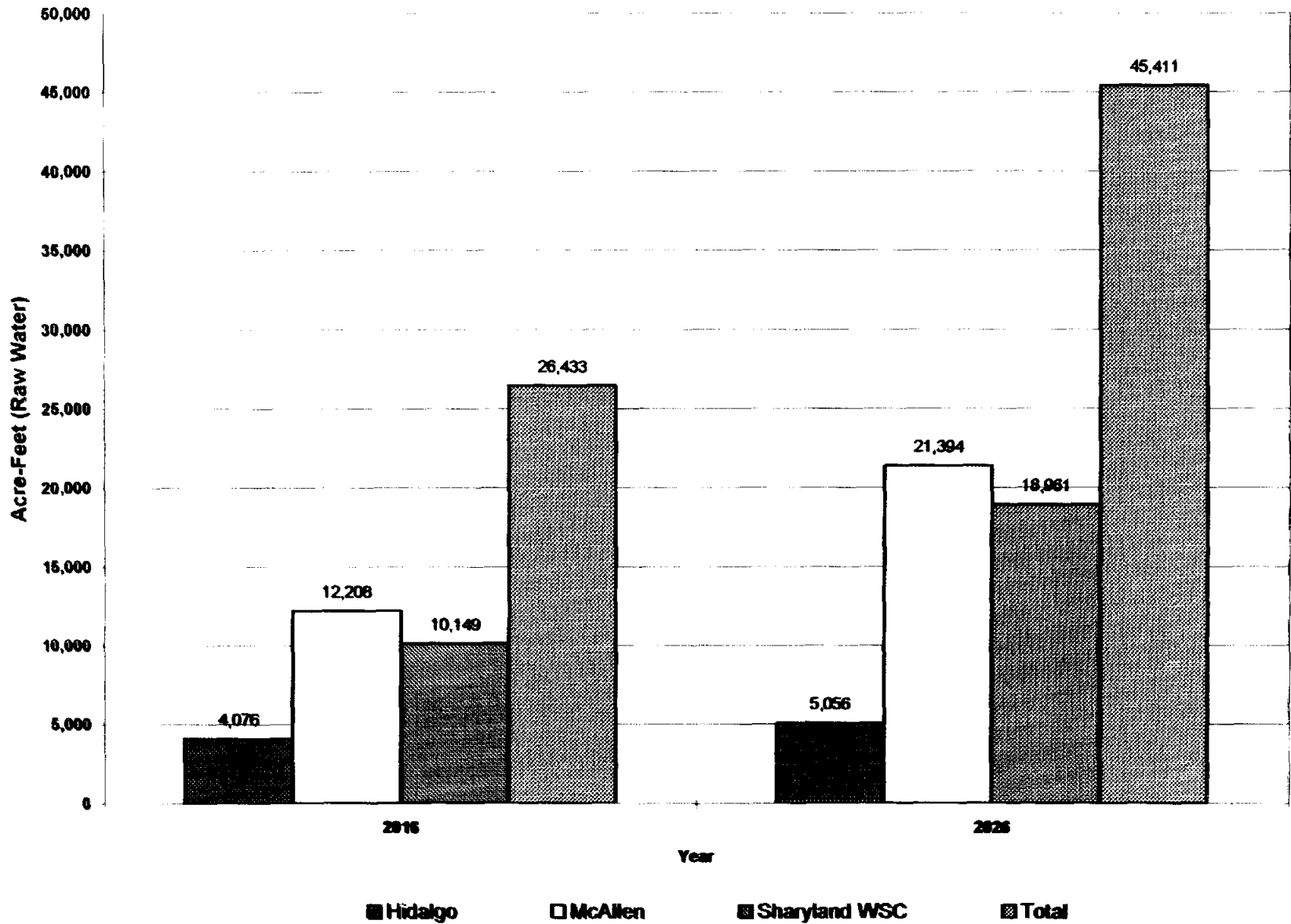
**FIGURE 4-9A**  
**PROJECTED REGIONAL ANNUAL RAW WATER DEMANDS**



**FIGURE 4-9B  
PROJECTED REGIONAL ANNUAL RAW WATER DEMANDS  
WITH CONSERVATION**

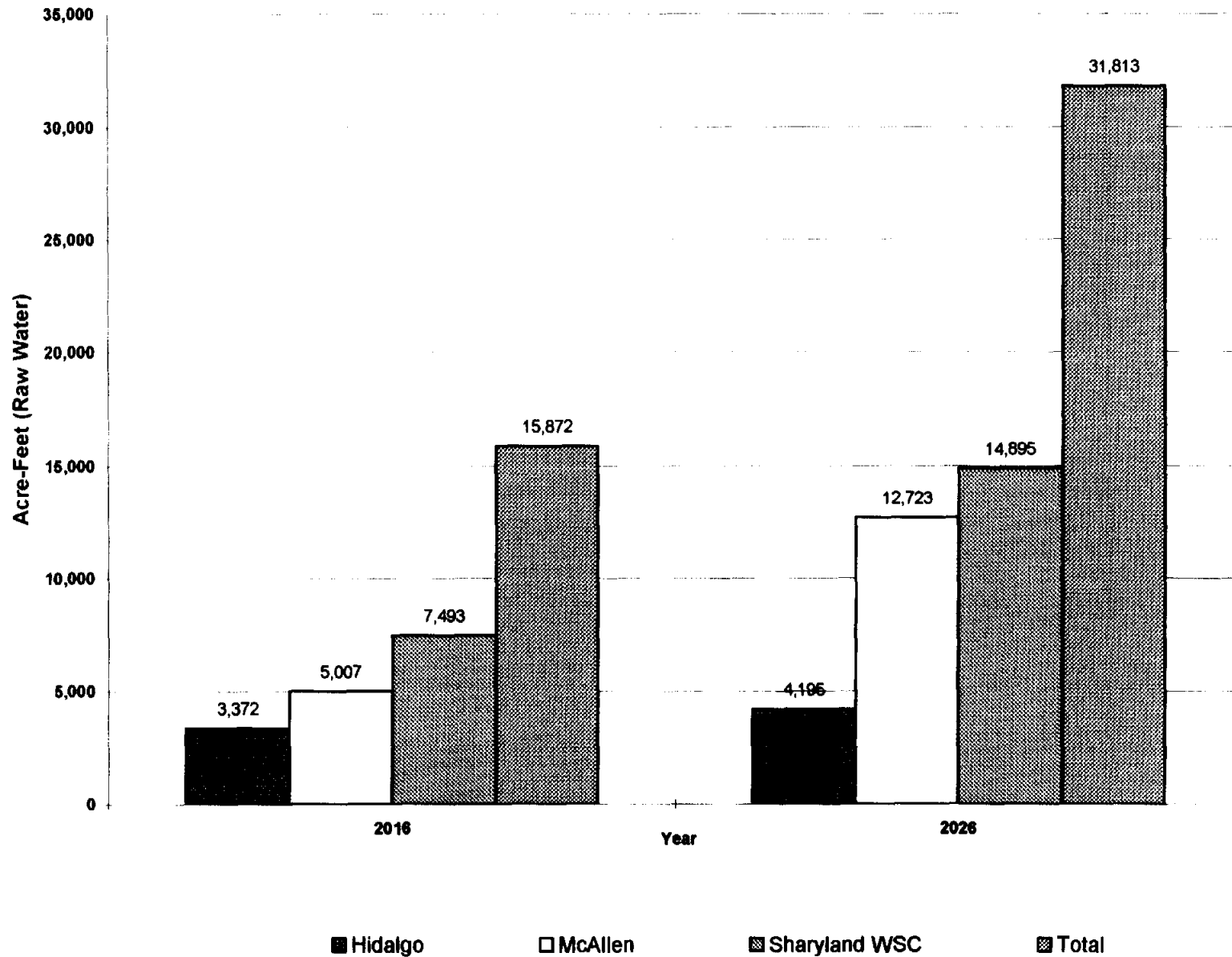


**FIGURE 4-10A**  
**PROJECTED REGIONAL RAW WATER DEFICIT**





**FIGURE 4-10B**  
**PROJECTED REGIONAL RAW WATER DEFICIT**  
**WITH CONSERVATION**



## **5.0 EXISTING MCALLEN WATER SYSTEM**

### **5.1 SECTION INTRODUCTION**

This section explains the analyses that were performed to provide an understanding of the existing (1996) McAllen water system and to identify potential deficiencies. These analyses included a review of the existing system to determine compliance with state regulations. They also included computer based hydraulic modeling of the distribution system. The model was utilized to identify pressure deficiencies and fire flow deficiencies.

As explained in Section 2.3, this master planning effort addressed two separate objectives most importantly for water supply, and secondly for water distribution planning. This section of the report deals only with the McAllen water distribution planning boundary as depicted in Figure 3-2.

### **5.2 DESCRIPTION OF SYSTEM**

The locations of the facilities described below are shown in Figure 5-1 which is a folded map located in Volume 2.

#### **5.2.1 Treatment Plant No. 1**

##### **A. General**

Plant No. 1 has a capacity of 4.2 mgd and is located at the intersection of Col Rowe Rd. and Business 83.

##### **B. Condition**

Plant No. 1 is used only during periods of peak demand. The facility is approximately 50 years old and the deficiencies listed below reflect its condition:

1. The aerators are badly corroded and need to be replaced or at least removed.
2. The basin gates and operators are badly corroded and need replacement.
3. The wooden baffles in the basins need replacing.
4. Most valves in the filter gallery are badly corroded and need replacing.
5. The low pressure and gravity piping has lead joints and would have to be replaced.
6. The filter underdrains are damaged and are leaking media into the clearwell. Thus, the underdrains and media would have to be replaced.
7. Mercury leaked from broken manometers and must be removed from the sump pump sumps.
8. The filter instrumentation and controls are not operable and need replacing.
9. Coping, doors and windows in each building need repair or replacement.

C. Raw Water Reservoir

The raw water reservoir is small and holds less than a two-day supply at the maximum production rate.

**5.2.2 Treatment Plant No. 2**

A. General

Plant No. 2 has a capacity of 38 mgd and is located along the south side of Highway 83 at 26th Street.

B. Raw Water Reservoir

Boeye Reservoir located adjacent to the plant has a capacity of 190 mgd.

C. Raw Water Pumping

There are six raw water pumps with capacities from 2,300 gpm to 7,639 gpm. The firm capacity of the raw water pump station is 22,708 gpm.

D. Water Treatment Facilities

1. The treatment facilities are divided into two trains.
2. Each train has a flocculation basin and a sedimentation basin with detention times of 30 minutes and 145 minutes, respectively.
3. There are 8 filters equipped with dual media. The design filter rate is 5 gpm/sq. ft.
4. Potassium permanganate and activated carbon are used for taste and odor control. Chlorine dioxide is used for pre-disinfection, alum is used for coagulation, and chloramines are used for post disinfection.

E. Transfer Pumping

There are four transfer pumps, two rated at 5,500 gpm and two rated at 7,000 gpm. Treated water is transferred from the clearwells to the above ground storage tanks via these four transfer pumps.

F. Finished Water/Clearwell Storage

There are currently two separate clearwells beneath the filters and three above ground storage tanks at Water Plant No. 2. The clearwells have a combined capacity of 2,117,827 gallons. The above ground storage tanks have a combined capacity of 6,000,000 gallons.

## G. High Service Pumping

There are a total of seven high service pumps at Water Plant No. 2. Three units pump from the two clearwells servicing Units 1 and 2, and the remaining four units pump from the ground storage tanks associated with Unit 3. Details specific to each high service pump are presented in Table 5-1.

## H. Sludge Facilities

Sludge from the settling basins and wash water from the filters is drained to a lagoon. After allowing time for settling of solids, the supernatant is pumped back to the raw water reservoir. The solids are removed periodically and hauled to a landfill for final disposal.

### 5.2.3 Elevated Storage

- A. The City has six elevated water tanks with a combined capacity of 4.75 mg. All the elevated storage tanks are equipped with altitude valves except for the Nolana Tower. Additional details concerning each tank are presented in Table 5-2.

### 5.2.4 Distribution Mains

- A. An overview of the entire existing distribution system is shown in Figure 5-1. That figure is drawn at a scale of 1" = 2000'. It shows lines 12" and larger as they existed in 1996. Figure 5-2 presents the index and legend for the 1' = 400' scale water system maps. The system maps are identified as Figure 5-3. All of the foregoing figures are folded maps located in Volume 2.
- B. Total lengths of water mains by size are listed in Table 5-1.

## 5.3 SERVICE CONNECTIONS

- A. The City had 26,671 water accounts at the beginning of 1996 and 27,701 at the end of the year. The average number of accounts for the year was therefore 27,186. In order to determine the actual number of connections, one would have to make adjustments for multi-family dwellings which are served by a single meter, and for irrigation meters which operate in parallel with the main meter of many McAllen residents.
- B. For the purpose of regulatory analysis, state regulations allow the number of connections to be determined by dividing the estimated population by three. The estimated 1996 population within the city limits was 103,961; within the distribution planning it was 117,829. Dividing these numbers by three yields connection counts of 34,654 within the city limits and 39,276 in the planning area. Given the fact that part of the distribution planning area was still served by Sharyland Water Supply Corporation in 1996, the lower number or 34,654 is used in the regulatory analysis.

## **5.4 REGULATORY ANALYSIS OF EXISTING SYSTEM**

State of Texas Rules and Regulations for Public Water Systems in 30 TAC 290 establish minimum capacity requirements for water supply and distribution systems. Each of the capacity requirements and a corresponding analysis of the existing system are presented in Table 5-2. Results of the regulatory analysis are illustrated in Figure 5-4.

## **5.5 HYDRAULIC AND FIRE FIGHTING ANALYSIS**

### **5.5.1 Hydraulic Analysis**

Hydraulic analysis of the existing system was performed using Haestad Method's Cybernet<sup>®</sup>. Pipes 12-in. and larger were included in the model. Where necessary, smaller pipes were included to complete loops, connect to served areas, etc. Demands used in the model are discussed in Section 3.0. Other details about the existing system model are presented in Appendix C.

### **5.5.2 Fire Fighting Analysis**

The fire fighting analysis was based on the 6-80 edition of the Insurance Services Office (ISO) Fire Suppression Rating Schedule which the Texas State Board of Insurance is phasing into statewide. Available fire flows were determined at each node given a residual pressure of 20 psi and simultaneous delivery of water to meet the maximum day demand.

## **5.6 SUMMARY OF DEFICIENCIES IDENTIFIED**

Summarized below are the deficiencies discovered when the 1996 water system was analyzed. Each of these deficiencies are addressed in the master plan presented in Section 6.0.

### **5.6.1 Inadequately Sized Distribution Mains**

The most significant deficiency in the existing system is inadequately sized piping in the vicinity Plant No. 2. As illustrated in Figure 5-5A, there is a considerable loss of distribution pressure as water leaves the plant. The existing distribution system is so constrictive that it limits the rate at which water that can be pumped from the plant to about 29 mgd which is less than the maximum treatment rate of 38 mgd. The existing system curve is steep as shown in Figure 5-6 and causes the pumps to operate inefficiently.

### **5.6.2 Inadequate Fire Flows**

Figure 5-5B shows the fire flows which are available throughout the system given a residual pressure of 20 psi while simultaneously meeting maximum day demands. As can be seen, there are a few areas where available fire flows are below 3,500 gpm which is a recommended goal based on the state approved ISO criteria. Implementation of the master plan will elevate available fire flows

above 3,500 gpm throughout the distribution planning area, except on 23<sup>rd</sup> Street between the expressway and Business 83. The utility staff advised against running a new 12" line through that area because that area is already congested in terms of existing utilities. The alternative is for the utility maintenance staff to install some short runs of 8" lines in that area as a part of their regular maintenance work. For that reason, the 23<sup>rd</sup> Street work is not included in the master plan.

### **5.6.3 Inadequate Transfer Pumping Capacity**

The capacity of the transfer pumps at Plant No. 2 do not meet the minimum capacity requirements established by 30 TAC 290. The existing transfer pumps provide 0.52 gpm/connection against a requirement of 0.6 gpm/connection. The master plan includes additional transfer pumping capacity.

### **5.6.4 Different Suction Conditions Between High Service Pump Stations Nos. 1 and 2**

The existing high service pumps at Plant No. 2 are rated as shown in Table 5-3. However, High Service Pump Station No. 1 pumps lift finished water from the filter clearwells while High Service Pump Station No. 2 pumps pump from the above ground storage tanks. This effectively lowers the rating of each of the High Service Pump Station No. 1 pumps. Thus, the actual high service pumping capacity at Plant No. 2 is less than the sum of the pump ratings or less than it appears to be on paper.

### **5.6.5 Houston Tower Too Low**

The overflow elevation of the Houston tower is below the hydraulic grade line of the distribution system at all times. Therefore, the utility staff has taken it out of service. If it were left in service, the tank would remain full and the water in it would become stagnant. The tower is too short for its location which is close to Plant No. 2. The Houston tower is the oldest one owned by the City and has riveted construction. Given the foregoing, the tank should be decommissioned.

### **5.6.6 Trade Zone Tower Too Low**

The overflow elevation of Trade Zone tower is the lowest in the City (See Table 5-4). Consequently, the tower tends to stay full and does not cycle regularly. For this reason, the utility staff has taken the tower out of service. The master plan presents some options for dealing with this tank.

**TABLE 5-1  
EXISTING DISTRIBUTION MAINS  
1996**

<b>Size (in)</b>	<b>Total Length (ft)</b>	<b>Total Length (miles)</b>
4	573,352	108.59
6	277,223	52.5
8	954,111	180.7
10	19,057	3.61
12	219,667	41.6
16	41,985	7.95
18	23,621	4.47
20	4,487	0.85
24	46,801	8.86
30	685	0.13
<b>Totals</b>	<b>2,160,989</b>	<b>409.27</b>

**TABLE 5-2  
REGULATORY ANALYSIS  
WATER SYSTEM OF 1996 MCALLEN**

<b>Criteria</b>	<b>Regulatory Requirement</b>	<b>1996 System</b>	<b>Comments</b>
Raw water pumping capacity	0.6 gpm/connection with largest pump out of service	Plant No. 2: 3 - 9 mgd pumps 1 - 6 mgd pumps 1 - 5.4 mgd pump 1 - 3.3 mgd pump Firm: 32.7 mgd (22,708 gpm) or 0.65 gpm/connection	Minor shortfall
Treatment plant capacity	0.6 gpm/connection	Plants No. 1 & 2: 0.85	Okay
Transfer pumping capacity	0.6 gpm/connection with largest pump out of service	Plant No. 2: 0.52	Shortfall
Clearwell storage	5% of plant capacity	Plant No. 2: 21% (8.1 mg)	Okay
Elevated storage	Minimum: 100 gal/connection	3.25 mg or 93.8 gal/connection	Shortfall when Houston and Trade Zone Towers are excluded
Total storage capacity	200 gal/connection	Clearwells: 8.10 mg (Plant No. 2) Elevated: 3.25 Total: 11.35 mg or 328 gal/connection	Okay
High service pumping capacity	2 gpm/connection total and the ability to meet peak hour demands with the largest pump out of service, whichever is less	29,400 gpm firm or 0.85 gpm/connection  Peak Hour : 32,400 gpm	Shortfall. Based on computer model, peak hour demands were not met.



**TABLE 5-3  
EXISTING HIGH SERVICE PUMPS\*  
1996**

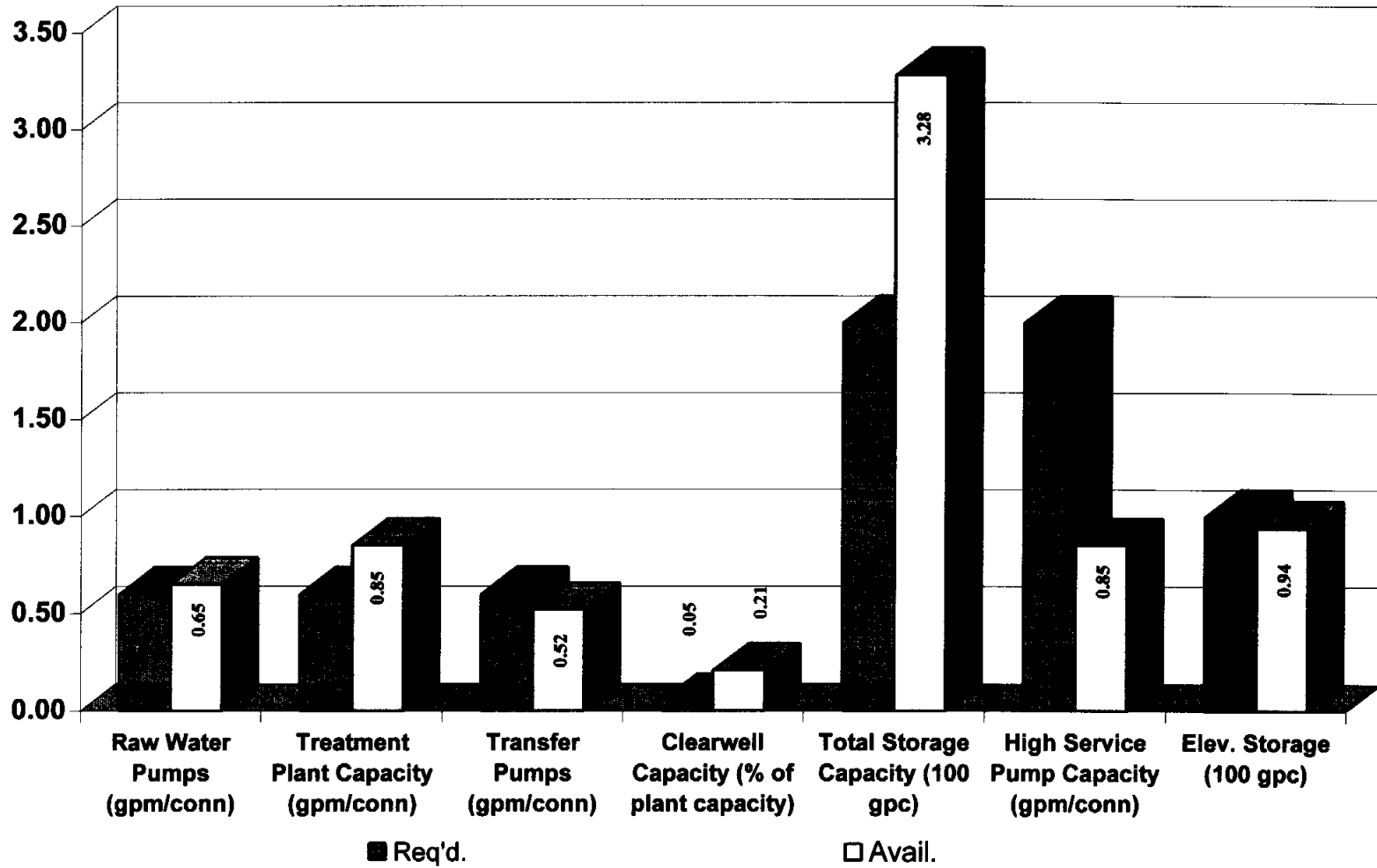
Description	Type	Manufacturer	Capacity at Design Point (gpm)	Head at Design Point (ft / psi)	Motor HP
High Serv. 1	Horizontal Split Case	Peerless Pump	2100	185 / 80	150
High Serv. 2	Split Case Centrifugal	PACO Pumps	4200	200 / 87	250
High Serv. 3	Horizontal Split Case	Colt Industries	6300	188 / 82	400
High Serv. 4	Horizontal Split Case	Colt Industries	6300	187 / 81	400
High Serv. 5	Horizontal Split Case	Peerless Pump	6300	194 / 84	400
High Serv. 6	Horizontal Split Case	Peerless Pump	4200	190 / 83	250
High Serv. 7	Horizontal Split Case	Worthington Pump	6300	197 / 86	400

\* All pumps listed are located at Plant No. 2.

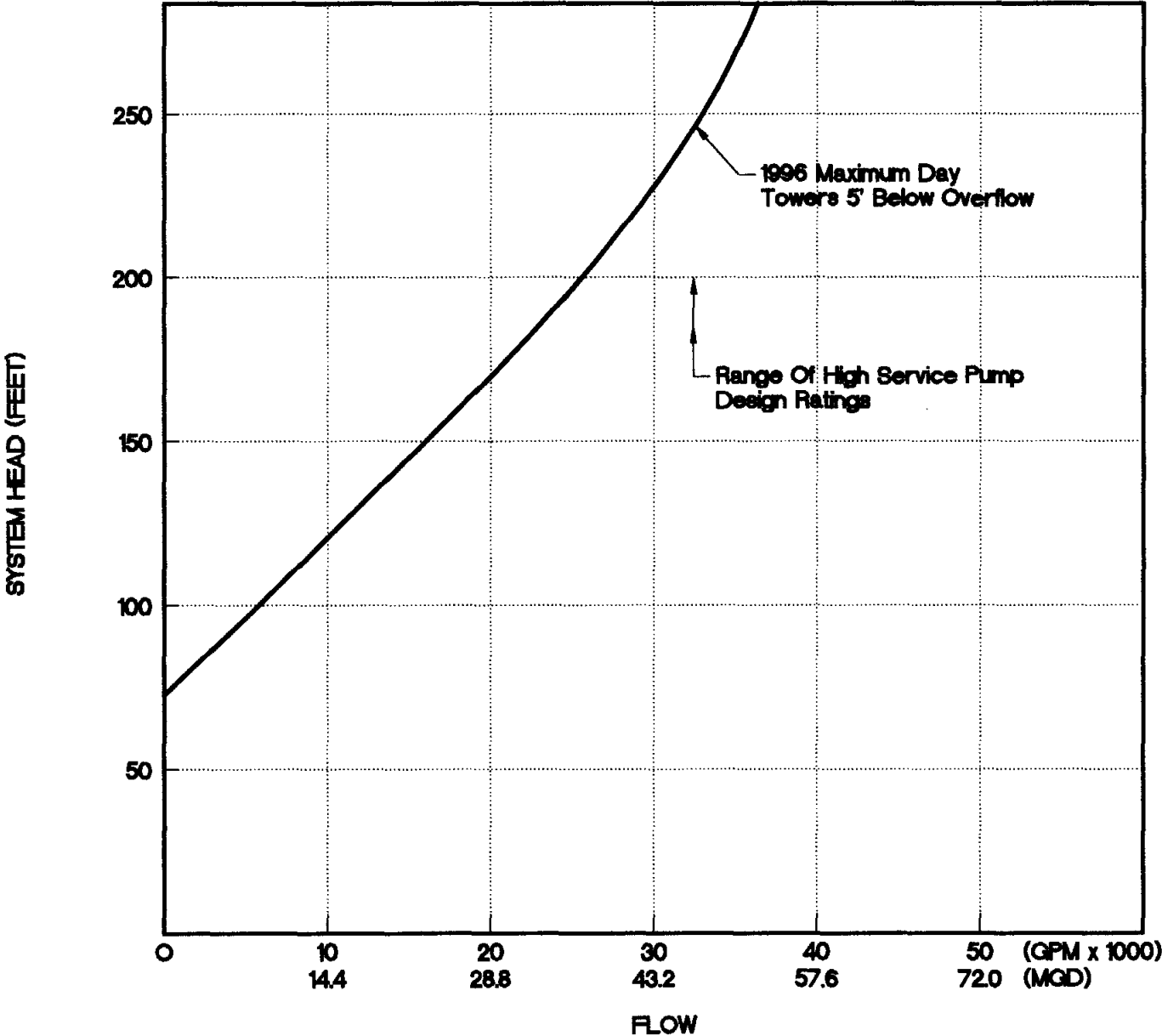
**TABLE 5-4  
EXISTING WATER TOWERS  
1996**

Name	Capacity (mg)	Type Design	Head Range (ft)	Top Elev.	Overflow Elev	Year Last Coated	Year Constructed
Trade Zone	0.5	Multi-Leg	24.4	246.8	234.7	1985	1985
Houston	1	Multi-Leg	24.9	255.5	243	1986	1945
Nolana	1	Multi-Leg	28.9	255.4	241	1996	1971
Dove	1	Multi-Leg	26.1	250.3	237.3	1989	1989
High School	1	Multi-Leg	25.5	253.6	240.8	1995	1956
Cedar	0.25	Multi-Leg	18	250.4	241.4	1994	1955

**FIGURE 5-4  
REGULATORY ANALYSIS OF 1996 SYSTEM**



**FIGURE 5-6**  
**1996 DISTRIBUTION SYSTEM CURVE AT PLANT NO. 2**



## **6.0 MCALLEN WATER SYSTEM MASTER PLAN**

### **6.1 SECTION INTRODUCTION**

#### **6.1.1 Scope of Section**

- A. This section presents the capital improvement projects included in the 5-year and 20-year master plan for the McAllen Distribution Planning Area. This section also includes recommendations for non structural initiatives which can be performed by the Utility staff or consulting engineers under contract with the City.
- B. Although implementation of the master plan is primarily covered in Section 7.0, this section does prioritize recommended projects within facility categories. A project's priority is indicated by its CIP number. The lower the number within a category, the higher the priority. The different categories are explained below.

#### **6.1.2 Recommended Capital Improvements**

The capital improvements recommended in the master plan have been organized into categories as indicated in Table 6-1. Each category has been assigned a block of identification numbers which are used to distinguish between projects in that series. The 2001 and 2016 water system maps (Figures 6-1 and 6-4, respectively) show the location and project identification number of each proposed project.

#### **6.1.3 Use of Master Plan Recommendations**

- A. The master plan is conceptual in nature and is intended to serve as a framework and guide for planning future improvements to the City's water system. Each project recommended in the plan should be further developed by performing preliminary engineering prior to design and construction.
- B. The following specific guidance on use of the master plan is offered:
  - 1. The locations of all facilities included in the master plan may also be influenced by environmental contamination such as leaking petroleum storage tanks or lines, old dumps sites, and abandoned petroleum processing facilities. Environmental contamination was not considered in preparing the master plan and new contamination may develop following the issuance of the plan. Therefore, an environmental records review is recommended during the preliminary engineering phase of each project.

2. The locations shown for water towers are approximate. The final locations of such facilities should be in the vicinity of the locations shown on the water system maps (Figures 6-1 and 6-4), but should be based on the following: availability and cost of land, access to power, water mains, storm sewers and sanitary sewers at the time a project is initiated.
3. The master plan recommends the capacity of each proposed water tower, but does not give its height. A water system model was prepared to support development of the master plan. That model should be updated during the preliminary engineering phase of a project to reflect the final location of the tower, the ground elevation around it and the piping system in its area of influence. The final height of each tower should be based on the updated model results.
4. Similarly, the master plan recommends the capacity of proposed high service pumping stations. The system model should be updated during the preliminary engineering phase of a project to reflect the current distribution system facilities (lines and elevated storage). The final capacity of the pump station and the pump heads should be based on the updated model results.
5. The plan indicates the size of each proposed water line and the street on which it should be located. The final location of each water main, in terms of which side of the street it is located and whether it will be located in the existing right-of-way, a new right-of-way, or an easement should be determined during the preliminary engineering phase.
6. The master plan assumes that proposed water lines will have 4 feet of cover unless otherwise noted in the project descriptions. The final depth of each line will depend on the depths of other existing utilities and will be determined during the preliminary engineering phase. The master plan assumes that proposed water lines are PVC DR 18 for 24" and smaller. Steel cylinder concrete pressure pipe (SCCPP) with a working pressure of 150 psi is planned for lines 30" and larger. The class or strength of pipe should be reviewed during the preliminary engineering phase and adjusted appropriately.

#### **6.1.4 Capital Cost Estimates**

- A. The capital cost estimates presented in this section include engineering, land acquisition and construction costs plus a 20 percent contingency. The engineering costs include estimated costs for surveying, geotechnical investigations, preliminary engineering, and design. Estimated land acquisition costs were assumed to be \$10,000 per acre. Construction costs were developed using bid tabulations for similar projects, computer software for estimating water treatment costs, and by conceptual estimating based on unit prices obtained from R.S. Means, 1997.

- B. All capital cost estimates presented in this plan are expressed in terms of 1997 dollars.

## **6.2 BASIS OF PLANNING**

### **6.2.1 Planning and Service Areas**

The master plan presented in this section deals with the McAllen Distribution Planning Area. The boundaries of that area are identified by a green line in Figure 3-2. Generally speaking, the distribution planning area for McAllen's water master planning area extends from the Trade Zone to Hwy. 107 in a north-south direction and from the Pharr-Edinburg city limits to Taylor Rd. in an east-west direction. This planning area includes the various buyout areas purchased from the Sharyland Water Supply Corporation during the period 1994 through 1996. Those buyout areas are shown in Figure A-1 in Appendix A. The planning area covers approximately 61 square miles.

### **6.2.2 Projected Population and Connections**

- A. Population projections for the years 2001 and 2016 are shown in Table 6-2. These are projections for the planning area including areas beyond McAllen's city limits. The source and development of these projections are discussed in Appendix A.
- B. Since compliance with state minimum capacity regulations are based on connections, the number of connections has been provided in Table 6-2. As allowed by state regulations, the number of connections was calculated by dividing the population projections by a factor of 3.

### **6.2.3 Water Demands**

- A. An average annual demand of 150 gpcd was used for projecting finished water demands. This is based on a average annual customer demand of 136 gpcd and includes a 10% allowance for losses or unaccounted for water.
- B. This customer demand figure was determined using City of McAllen's billing records for 1996 as previously discussed in Section 3.0. The 136 gpcd figure is slightly less than the average over the period 1994-1996 (138 gpcd), but was considered an appropriate figure to use. There was less rainfall in 1996 than there was in 1994 and 1995. Also, a relatively high average to maximum day peaking factor (1.9) was assumed as discussed below.
- C. The average day to maximum day peaking factor could not be determined for the years just preceding the preparation of this plan (1994-1996) because of high service metering problems. The meter problems were corrected in mid 1997 and data produced by the SCADA system indicated that the peaking factor was 1.9 on August 27, 1997. That number is in the range normally seen and so it was used to complete the master plan.

- D. The maximum day demands were used to select the proposed treatment plant capacity.
- E. Peak hour demands were estimated to be three times average daily demand. That is a very commonly used peaking factor. Historical data could not be used because of the previously mentioned metering problems. The model calibration process supported the estimated value.
- F. Projected water demands for the McAllen distribution planning area are shown in Table 6-3.

#### **6.2.4 Fire Demands**

- A. Fire demands were based on the Edition 6-80 of the Insurance Services Office (ISO) Fire Suppression Rating Schedule which the Texas State Board of Insurance is phasing into use statewide. Future available fire flows were determined using the 2001 and 2016 hydraulic models and are illustrated in Figures 6-3B and 6-5B. The available fire flows are based on maintaining a residual system pressure of 20 psi during a maximum day demand condition.
- B. Proposed distribution mains were sized to simultaneously carry the maximum day demand plus a fire flow of at least 3,500 gpm while providing a minimum residual pressure of 20 psi. This criterion also gives the system the capacity to carry peak hour flows with a minimum residual pressure of 35 psi. Existing and proposed water towers help to further elevate pressures during peak hour conditions.

### **6.3 RAW WATER**

#### **6.3.1 General**

- A. Projected raw water needs are shown in Table 6-4. No additional raw water is needed until approximately 2015.
- B. The master plan calls for raw water needs to be met by acquisition of additional Rio Grande water rights and by reuse of wastewater effluent.
- C. Project descriptions and capital costs for acquisitions of raw water are presented in Table 6-5.

#### **6.3.2 Reuse of Wastewater Effluent**

- A. Based on the limited amount of raw water available from the Rio Grande, the master plan recommends the reuse of wastewater effluent from Plants No. 2 and No. 3. Approximately, 6 mgd from Wastewater Treatment Plant No. 2 will be used at Water Plant No. 2 and approximately 4 mgd from Wastewater Treatment Plant No. 3 will be used at the proposed Water Plant No.3. These available flows and implementation costs were obtained from a report entitled "McAllen/Edinburg Reuse Feasibility Study", dated January 1997, and

prepared for the Lower Rio Grande Development Council by Perez/Freese and Nichols in association with CH2M Hill and Freese and Nichols.

- B. The treatment schemes at the wastewater treatment plants will be as recommended in the aforementioned reuse study. The cost of providing the extra level of treatment at the wastewater plants is included under raw water costs, as shown in Table 6-5.
- C. The reuse study recommended addition of ozonation at WTP No. 2 and WTP No.3 to ensure that virus and cryptosporidium kills are adequate. Therefore, the CIP includes those projects. The TNRCC has indicated a preference for use of chlorine dioxide in lieu of ozone. A final decision on that matter is left to the preliminary design phase of each project.

### **6.3.3 Acquisition of Additional Surface Water**

- A. The acquisition of additional Rio Grande water rights will require conversion of agricultural water rights to municipal.
- B. The budget for additional Rio Grande water is based on a price of \$800 per acre-foot. Upon adding a 20% contingency, the effective unit price is \$960.
- C. The City already has a contract pending for an additional 5,000 acre-feet of raw water and could obtain an additional 2,000 acre-feet from District 2.

### **6.3.4 Probable Difficulties with Use of Ground Water**

- A. Based on the data presented in TWDB Bulletin 316, the ground water in the McAllen area is not fresh. That is, the total dissolved solids concentration in the water generally exceeds 1,000 ppm (slightly saline) and sometimes exceeds 3,000 ppm (moderately saline). Chloride and sulfate concentrations often exceed secondary drinking water standards. Also, sodium and boron concentrations can be high. Thus, the water would have to be treated to reduce the concentrations of those constituents. Membrane technology with appropriate pretreatment would probably be used.
- B. Safe yield is the other primary concern. Existing wells in southern Hidalgo County are generally small, i.e. 250-300 gpm. A substantial test well program would be required to establish the design yields of future wells. However, the test wells could be converted to production wells if the tests prove successful.
- C. Because of the foregoing potential problems it is recommended that the development of ground water resources approached consistent with the recommendations of the Integrated Water Plan.



## **6.4 RAW WATER FACILITIES**

### **6.4.1 Conveyance Facilities**

- A. The City has begun planning for a third water treatment plant (Plant No. 3) that will be constructed in phased modules. The capital cost estimate for Plant No. 3 is based on pipelines rather than a branch canal for conveyance of water from the United Irrigation branch canal between Sharyland Road and Glasscock Roads to the plant. The pipeline approach provides a conservative estimate for the CIP and minimizes water losses and algae growth. The estimate includes a separate 30" pipeline for each treatment module. The distance from the canal to the proposed plant reservoir is approximately 3000 ft. The option of building a branch canal to the plant might be possible and would depend primarily on the availability of right-of-way. The feasibility of that option could be studied at the preliminary engineering stage.
- B. The concept of replacing the existing canal systems with pipelines was considered, but not developed. Pipelines would provide savings in raw water. Raw water is now lost to leakage and evaporation in the canal systems of the irrigation districts supplying water to the City. Furthermore, it would also reduce algae concentrations in the raw water supplied to the treatment plant. However, replacement of the canal system would represent a large capital outlay at a time when other major capital spending is required for distribution system improvements, Plant No. 3, and wastewater reuse facilities.
- C. Conveyance facility capital costs are included in the treatment plant projects in Table 6-6.

### **6.4.2 Storage Facilities**

- A. No additional raw water storage has been recommended for Water Plant No. 2 since Boeye Reservoir provides approximately 10 days of storage at average flow (19 mgd) and 5 days at peak flow (38 mgd). The capacity of that reservoir is 190 mg.
- B. Separate reservoirs are proposed for each of the two modules at Plant No. 3. Each will have a separate storage capacity of 60 mg or 9.5 days at average flow and 5 days at peak flow. Each of these reservoirs will require approximately 16 acres of land. The rationale is to layout the 90+ acre site so that it can eventually accommodate three 12 mgd modules. With three such modules, the reservoirs would cover about half the site, leaving the other half for process, administrative and maintenance facilities.
- C. Storage facility capital costs are included in the treatment plant projects in Table 6-6.

## **6.5 TREATMENT FACILITIES**

### **6.5.1 General**

- A. Proposed project descriptions and capital cost estimates for water treatment facilities are presented in Table 6-6.

### **6.5.2 Decommissioning of Plant No. 1**

- A. Decommissioning of Plant No. 1 is recommended for the following reasons:
  - 1. The plant needs a major overhaul and that work would probably cost in excess of half what a new plant would cost. The condition of the plant is discussed in Section 5.0.
  - 2. The plant has a capacity of 4.2 mgd and cannot easily be expanded given the size of the site and the associated reservoir.
  - 3. It would be more cost effective to staff one larger plant , i.e. proposed Plant No. 3, than to tie up staff at this small plant.
  - 4. The low pressures reported in the area around Plant No.1 will be eliminated by the distribution system improvements included in the master plan.
- B. Decommissioning of Plant No. 1 is included in the 20 year plan and should follow the completion of Module A at WTP No. 3. The plan recommends that Water Tower No. 3 be constructed at the Plant No. 1 site.

### **6.5.3 Improvements to Plant No. 2**

- A. Pre or post ozonation at Plant No. 2 has been included in the master plan. This is consistent with the January 1997 reuse study prepared for the LRGDC. Also, the addition of ozonation is likely to be needed to comply with the Enhanced Surface Water Treatment Rule and the Disinfectant/Disinfection By-Products Rule when they are promulgated sometime after the year 2000. The actual timing will depend on the completion of the Information Collection Rule process.
- B. Improvements to the high service, finished water transfer, and raw water pumping systems at Plant No. 2 are discussed later in this section.

### **6.5.4 Plant No. 3**

- A. The City has already purchased land for constructing a Plant No 3. The site is located on both sides of Bentsen Road just above Mile 6-1/2 North Road. The land on the west side of

Bentsen will probably be used for the plant reservoirs since most of the raw water will come from the United Irrigation canal which lies to the west of the site. The land on the east of Bentsen will probably be used for treatment, storage and pumping facilities.

- B. It is recommended that the plant be laid out for at least three modules or treatment trains rated at 12 mgd each. All three modules are included in the 20 year plan. It would be desirable to provide for a fourth module or for upgrading the 12 mgd modules to 16 mgd so that service could be provided to other entities such as Edinburg and Hidalgo as discussed in Section 4.0.
- C. The first module is needed by 2000 and the second by 2009. This scheduling is discussed further in Section 7.0.
- D. Arrangements for sludge processing and disposal are proposed to be the same as at Plant No. 2, i.e., the sludge and filter washwater would be drained to lagoons. Supernatant would be returned to the raw water reservoir. The solids would be removed periodically and hauled to a landfill for final disposal.

## **6.6 GROUND STORAGE FACILITIES FOR FINISHED WATER**

### **6.6.1 General**

- A. Descriptions and estimated capital costs of the recommended ground water storage projects are included with the treatment plant projects in Table 6-6.
- B. Above ground post tensioned reinforced concrete tanks are recommended because they are less expensive than below ground cast-in-place concrete tanks. Above ground tanks are also easier to maintain, that is, settled solids are easier to remove. Finally, above ground tanks facilitate the use of horizontal split case high service pumps which are easier to maintain than vertical pumps that are often used with below ground tanks.
- C. The state minimum capacity requirements for clearwell capacity at treatment plants is 5% of plant capacity. The master plan recommends a total storage capacity at each plant equivalent to approximately 20% of plant capacity. The additional storage capacity enables the plant to operate at a constant rate on any given day which is desirable from an operations standpoint.. It also enhances fire fighting capability.

### **6.6.2 Aquifer Storage and Recovery**

- A. Aquifer storage and recovery (ASR) facilities are not included in the master plan because of uncertainties relating to their cost and effectiveness. ASR facilities could be used to meet maximum day demands during the summer months and that would reduce the amount of

treatment capacity needed. However, geophysical studies are required to determine if ASR would be appropriate for McAllen.

## **6.7 FINISHED WATER PUMPING FACILITIES**

### **6.7.1 General**

- A. The capacities of proposed finished water or high service pumping facilities is based on meeting peak hour demands. This also means that these facilities can meet maximum day plus fire flow demands.
- B. Descriptions and estimated capital costs of the recommended high service pumping projects are included with the treatment plant projects shown in Table 6-6.

### **6.7.2 High Service, Transfer and Raw Water Pumping Projects at Plant No. 2**

- A. A new High Service Pump Station is proposed for Plant No. 2. This station would replace High Service Pump Station No. 1 and would be designed to take suction from the ground storage tanks.
- B. Replacement of the pumps in High Service Pump Station No. 2 is also included in the master plan. Those pumps would be replaced only if it is cost effective to do so. The existing pumps may not be able to operate at peak efficiency after the distribution system improvements and the new high service pump station are in place.
- C. A system curve reflecting effects of the proposed distribution system improvements on high service pumping at Plant No. 2 is shown in Figure 6-2.
- D. Additional finished water transfer and raw water pumping capacity commensurate with the new high service pumping station improvements is also planned.
- E. The foregoing projects are recommended even though we recognize that the City has already initiated a project which will add booster pumps ahead of the pumps in High Service Pump Station No. 2.

### **6.7.3 Southwest Booster Station**

- A. A 3.0 mgd booster station is recommended to serve new development in the Anzalduas bridge area. Since that area is over 5 miles from Plant No. 2, a booster station is more economical than increasing the capacity of the distribution system between those two points.

#### **6.7.4 High Service Pumping Projects at Plant No. 3**

- A. A separate high service pump station is recommended for each module or treatment train at the new plant.
- B. An ultimate complement of 5 horizontal split case pumps is recommended for each proposed pump station.
- C. The pumps would be housed in a reinforced concrete frame building with a concrete slab roof and concrete masonry unit walls.

### **6.8 ELEVATED STORAGE TANKS FOR FINISHED WATER**

#### **6.8.1 General**

- A. The total amount of elevated storage capacity is based on the TNRCC requirement of providing 100 gallons of storage per connection.
- B. Cost estimates for the elevated storage tanks included in the master plan are based on leg type towers. A unit price of \$1.00 per gallon was used. Sitework and connecting piping were added to these unit costs.
- C. Descriptions and estimated capital costs of the recommended elevated tank projects are included in Table 6-7.

#### **6.8.2 5-Year Plan**

- A. It is recommended that land required for the proposed water towers be purchased immediately, thereby minimizing land acquisition costs and securing the site before being developed. The recommended site size should be 300 ft. x 300 ft., which will facilitate construction. That would make each site approximately 2 acres.
- B. A 2.0 mg tower is recommended to serve new development in the north part of the distribution planning area. The proposed location of this tower is shown in Figure 6-1. The north tower or Proposed Water Tower No. 1 would be located along Trenton Rd. just east of N. Col Rowe Rd. The existing distribution system will not be able to fill this tank. Distribution projects 4101 through 4103 must be in place to make this tank useful. Even with 5-year distribution projects in place, it will not be possible to completely fill this tank until Plant No. 3 is on line.
- C. Decommissioning of Cedar Tower is recommended as part of the 5-year plan. Like the Houston Tower, the Cedar overflow elevation will fall below the hydraulic grade line after the proposed 5-year distribution system projects are in place.

- D. The High School Tower may also have trouble cycling with the 5-year distribution system improvements in place. No action is recommended until it is known how it will perform. If necessary, the tower could be raised or the towers included in the 20-year plan could be increased in size to compensate for the lost of the High School Tower.

### **6.8.3 20-Year Plan**

- A. Two additional water towers are proposed for the 20-year master plan. Both should have a capacity of 2.0 mg . The proposed locations of these towers are shown in Figure 6-4.
- B. A 0.5 mg tower is recommended to serve the Anzalduas bridge area. With this tower in place, it would be possible to decommission the Trade Zone Tower. Construction of the the Anzalduas tower would be a better than raising the Trade Zone Tower or defining a separate pressure zone around it.

## **6.9 DISTRIBUTION MAINS**

### **6.9.1 General**

- A. The distribution main projects included in the master plan are 12" and larger. The mains are sized to meet the planning criteria as presented in Section 6.2.
- B. Although small main (10" and smaller) projects have not been included in the master plan, they will probably be needed to:
  - 1. Replace substandard piping in buyout areas;
  - 2. Provide additional capacity for enhanced fire fighting supply and pressure within developed areas; and
  - 3. Eliminate dead end mains.

Identification of specific small main projects was beyond the scope of this planning effort.

- D. Cost estimates for distribution mains are based on AWWA C900 or C905 PVC DR 18 piping in sizes 24" and smaller and SCCPP with a working pressure of 150 psi for mains larger than 24". The costs include 4 feet of cover and with pavement cutting and replacement.
- E. A summary of the distribution main inventory before and after implementation of the projects recommended in the 5-year and 20-year plans is presented in Table 6-9.

## **6.9.2 5-Year Plan**

- A. The proposed water main projects included in the 5-year plan are illustrated in Figure 6-1. Proposed mains are shown with dashed lines; existing mains are shown as solid lines. Brief descriptions and justifications for each proposed project are provided in Table 6-8. The CIP numbers shown in the table are also shown on the system map.
- B. The most important projects in the 5-year plan are those which are intended to carry more water away from Plant No. 2 and those which are intended to carry water to proposed Water Tower No. 1. These projects are identified as CIP No. 4101 through 4103 in Figure 6-1.

## **6.9.3 20-Year Plan**

- A. Proposed water main projects included in the 20-year plan are illustrated in Figure 6-4. Proposed mains are shown with dashed lines; existing mains are shown as solid lines. Brief descriptions and justifications for each proposed project are provided in Table 6-8. The CIP numbers shown in the table are also shown on the system map.

## **6.10 OTHER NON STRUCTURAL RECOMMENDATIONS**

### **6.10.1 Water Conservation Measures**

- A. The capacities of proposed CIP projects are based on projected water demands without any dependence on conservation. The sizing of water towers and water main projects will not be significantly affected by conservation. However, future water supply and treatment projects could be deferred or downsized if conservation initiatives are successful.
- B. To reduce the future water demand, the following conservation initiatives are recommended:
  - 1. A study of methods to reduce residential lawn irrigation. This would potentially save 7 to 20% of the incremental seasonal demand.
  - 2. An ordinance that would require the use of 1.6 gallon/flush toilets in all new construction. This would save approximately 15% of the average daily demand.
  - 3. Public funded retrofit of toilets in existing homes and buildings.
- C. Costs which would be incurred in connection with the foregoing conservation measures are not included in the CIP.

### **6.10.2 Water GIS Improvements**

- A. It is recommended that the background map (the street and parcel map) for the Water GIS and for other future GIS applications be converted to a geocoordinate system such as the Texas Plane Coordinate System. This initiative would help the City as follows:
  - 1. Allow more accurate measurement of lengths and areas when using the GIS system.
  - 2. Provide coordinates for use in various types of permits.
  - 3. Make the system compatible with the use of global positioning system (GPS) instruments which will likely be used in the future by City field crews, as well as surveyors and engineers doing work for the City.
- B. It is recommended that the City develop its parcel data base which would include tax IDs and physical addresses of each parcel. This is an essential step in linking the Water GIS to the utility customer database and maximizing the capabilities of the GIS system.
- C. It is recommended that work order information be posted in the GIS. Such information could be very helpful in managing the City's utility maintenance operations . It could lead to improved specifications for materials and equipment, more effective preventative maintenance, and better use of the maintenance staff.
- D. Finally, it is recommended that the City upgrade AutoCAD R13 to R14 as soon as the GIS software is developed to work with R14. The City may also want to upgrade to ARC INFO GIS software as use of GIS increases.
- E. The costs of the foregoing GIS improvements are not included in the CIP.

### **6.10.3 Future Updating of Master Plan**

- A. It is recommended that this master plan be updated again in 2001 for the period of 2002-2017. We recommend a budget of \$100,000 for that effort.

### **6.11 REGULATORY ANALYSIS**

- A. A summary of the status of the improved water system compared to the TNRCC regulations for the years 2001 and 2016 is presented in Table 6-10.

### **6.12 PROVIDING FINISHED WATER TO NEARBY COMMUNITIES**

In addition to establishing the distribution requirements for the McAllen planning areas, future connections to Edinburg, Pharr, Hidalgo, and Mission were also reviewed as part of



this master planning effort. Using the system computer model, several connection options were evaluated. The results for planning years 2001 and 2016 are presented below.

#### **6.12.1 Year 2001 Supply Capability**

- A. Analyses were performed to determine the amount of water that McAllen can supply to each of the communities simultaneously and individually under Year 2001 maximum day demands. Water tower levels were assumed to be ten feet down from full, all the pumps at WTP No. 2 and WTP No. 3 were assumed to be operating, and the connections to the communities were assumed to be 12" water mains. The amount of water McAllen can serve to each community was determined at supply pressures of 20 psi and 35 psi, except at Edinburg where it is known a supply pressure of 20 psi is adequate to fill the West Booster Station reservoir. The results are summarized in Tables 6-11 and 6-12.
- B. In addition to the steady state analyses, an extended time period simulation was run for 72 hours under maximum day demands. A 2001 target demand for each community was assumed to be 2.0 mgd. The pumps in WTP No. 2 were controlled by the water level in the Mustang Tower and the pumps in WTP No. 3 were controlled by the water level in Proposed Tower No. 1. Proposed Tower No. 1, Dove, Nolana, and High School towers turned over during this simulation and filled during non-peak hours. However, the Trade Zone Tower drained during peak hour and did not fill during non-peak hours. Edinburg, Pharr, and Mission could be supplied 2 mgd at 35 psi, however Hidalgo cannot be supplied 2 mgd at 35 psi under the 2001 system configuration.
- C. To adequately fill and deplete the Trade Zone Tower during maximum day demand conditions and improve the supply pressure to Hidalgo, the proposed 16" mains in the southeast service area proposed in the 20-year plan (CIP 4202C) would be moved into the 5-year plan. With the 16" mains, the Trade Zone Tower did not empty and came within 10 feet of filling. Based on the analysis, Hidalgo can be supplied 2 mgd at a minimum pressure of 30 psi with the addition of the 16" mains completing the loop near Hidalgo. The 16" mains should be added to the system at the time the Hidalgo interconnection is made.

#### **6.12.2 Year 2016 Supply Capability**

- A. Steady-state analyses were also performed to determine the amount of water that McAllen can supply to each of the communities simultaneously and individually under year 2016 maximum day demands. Water tower levels were assumed to be ten feet down from full, all the pumps at WTP No. 2 and WTP No. 3 were assumed to be operating, and the connections to the communities were assumed to be 12" water mains. The amount of water McAllen can serve to each community was determined at supply pressures of 20 psi and 35 psi, except at Edinburg where it is known a supply pressure of 20 psi is adequate to fill the West Booster Station reservoir. The results are summarized in Tables 6-13 and 6-14.

- B. In addition to the steady state analyses, an extended time period simulation was run for 72 hours under maximum day demands. The 2016 target demand for each community was assumed to be 4.0 mgd. The pumps in WTP No. 2 were controlled by the water level in the Mustang Tower and the pumps in WTP No. 3 were controlled by the water level in Proposed Tower No. 1. The assumed 4.0 mgd demand was supplied to Pharr and Mission at 35 psi under these conditions. For Edinburg to be supplied with 4 mgd at a minimum pressure of 20 psi, the main connecting the McAllen system to Edinburg would need to be increased from a 12" main to a 16" main. The analysis also concluded that Hidalgo cannot be served with 4 mgd at a minimum pressure of 35 psi under the planned 2016 system configuration due to the additional demand at the Anzalduas Bridge, the inability to fill the Trade Zone Tower, and the system configuration from WTP No. 2 to the southern part of McAllen. The planned distribution system in the south service area would require improvement for Hidalgo to be served with 4 mgd at 35 psi.

### **6.13 SUMMARY OF CAPITAL COSTS**

- A. The total capital costs of the 5-year plan by category are shown in Table 6-15. The total capital costs of the 20-year plan by category are shown in Table 6-16. Both Tables 6-15 and 6-16 are cumulative, i.e. the cost figures in them include the costs shown in the preceding tables, 6-5, 6-6, 6-7, and 6-8.

**TABLE 6-1  
CAPITAL IMPROVEMENTS CATEGORIES AND NUMBERING SYSTEM**

<b>STARTING PROJECT NUMBER</b>	<b>CATEGORY</b>
1100	Raw water acquisitions/projects needed by the Year 2001
1200	Raw water acquisitions/projects needed by the Year 2016
2100	Water treatment/high service pumping projects needed by the Year 2001
2200	Water treatment/high service pumping projects needed by the Year 2016
3100	Elevated storage projects needed by the Year 2001
3200	Elevated storage projects needed by the Year 2016
4100	Water main projects needed by the Year 2001
4200	Water main projects needed by the Year 2016

**TABLE 6-2  
PROJECTED POPULATION AND CONNECTIONS**

<b>PARAMETER</b>	<b>2001</b>	<b>2016</b>
Projected Population	136,698	206,582
Projected Connections	45,566	68,861
Percent Increase Over 1995	19.8	80.7

Notes:

1. The projections shown in the table are for the planning area, not the City of McAllen as defined by the current city limits.
2. See Appendix A for an explanation of the population projections.
3. The number of connections was calculated by dividing the population by 3 as allowed by state drinking water regulations.

**TABLE 6-3  
PROJECTED WATER DEMANDS - MCALLEN WATER SYSTEM**

<b>DEMAND TYPE</b>	<b>2001</b>	<b>2016</b>
Average Annual	20.5	31.0
Maximum Day	38.9	58.9
Peak Hour	61.5	93.0

Notes:

1. Demands are expressed in mgd.
2. Peak day demands are 1.90 times average day. See Section 3.0 for explanation.
3. Peak hour demands are 3.0 times average day. See Section 6.2 for explanation.
4. Demands are for McAllen distribution planning area, not the entire regional planning area.

**TABLE 6-4  
RAW WATER NEEDS - MCALLEN WATER SYSTEM**

<b>DESCRIPTION</b>	<b>1996</b>	<b>2001</b>	<b>2026</b>
Available Surface Water (1)	25,798	32,798	32,798
Reclaimed Wastewater	None	None	11,200
Total Available	25,798	32,798	43,998
Actual or Projected Need	25,798	29,781	54,192
Additional Amount Needed	None	None	<b>10,194</b>

Notes:

1. All quantities are in acre-feet.
2. Needs are for McAllen distribution planning area, not the entire regional planning area.
3. Additional raw water needed in 2015. Total amount required for 2026 is 10,194 acre-feet.

**TABLE 6-5  
RECOMMENDED RAW WATER ACQUISITIONS/PROJECTS**

<b>CIP NO.</b>	<b>PROJECT TITLE</b>	<b>PROJECT DESCRIPTION</b>	<b>CAPITAL COST 1997 DOLLARS (X 1000)</b>
1201	Reuse Upgrade Wastewater Plant No. 2	Addition of biological nutrient removal, microfiltration, reverse osmosis and ultraviolet disinfection as well as conveyance facilities from WWTP No. 2 to WTP No. 2.	\$17,676
1202	Reuse Upgrade Wastewater Plant No. 3	Addition of biological nutrient removal, microfiltration, reverse osmosis and ultraviolet disinfection as well as conveyance facilities from WWTP No. 3 to WTP No. 3.	\$18,828
1203	Year 2015 Water Rights Acquisition	Purchase 10,194 acre-feet of raw water.	\$9,786

**TABLE 6-6  
RECOMMENDED WATER TREATMENT PLANT PROJECTS**

<b>CIP NO.</b>	<b>PROJECT TITLE</b>	<b>PROJECT DESCRIPTION/JUSTIFICATION</b>	<b>CAPITAL COST 1997 DOLLARS (x 1000)</b>
2101A	WTP No. 2 Raw Water Pump Station Improvements	Improvements are needed to the raw water pump station to increase pumpage and meet TNRCC regulatory requirements.	\$500
2101B	WTP No. 2 HSPS and Transfer Pump Station Improvements	Improvements are needed to both WTP No. 2 high service pump stations and the finished water transfer pump station to improve efficiency of operation and meet TNRCC regulatory requirements. The high service pump station improvements will allow increased distribution pumping with lower operating costs because of the distribution system improvements (CIP No. 4101,4102). High Service Pump Station (HSPS) No. 1 is planned to be replaced and HSPS No. 2 pumping units will be upgraded. Pump upgrades are also planned for the Transfer Pump Station to meet TNRCC regulations.	\$2,000

**TABLE 6-6**  
**RECOMMENDED WATER TREATMENT PLANT PROJECTS**  
**(continued)**

<b>CIP NO.</b>	<b>PROJECT TITLE</b>	<b>PROJECT DESCRIPTION/JUSTIFICATION</b>	<b>CAPITAL COST 1997 DOLLARS (x 1000)</b>
2102	Module A, Plant No. 3	Module A is needed to meet the projected water demands for the distribution planning area. The recommended capacity is 12 mgd. Principal facilities will include a 60 mg raw water reservoir, a 12 mgd raw water pump station, flocculation basins, sedimentation basins, conventional filters, two 1 mg above ground storage tanks, a high service pump station with 5 pumps and a firm capacity of 10,000 gpm. The proposed plant includes chemical systems for taste and odor control, pre-disinfection, coagulation, post-disinfection, and pH adjustment. The project includes approximately 3000' of 30" pipe to convey raw water from United Irrigation's nearest main canal on Sharyland Rd. to the proposed raw water reservoir on the west side of Bentsen. Module A also includes an 3,000 SF Administration/Laboratory Building and a 3,000 SF Maintenance Building.	\$28,453
2201	Ozonation for WTP No. 2	This project involves addition of an ozonation system for pre-disinfection of the total 38 mgd raw water stream.	\$5,368

**TABLE 6-6**  
**RECOMMENDED WATER TREATMENT PLANT PROJECTS**  
**(continued)**

<b>CIP NO.</b>	<b>PROJECT TITLE</b>	<b>PROJECT DESCRIPTION/JUSTIFICATION</b>	<b>CAPITAL COST 1997 DOLLARS (x 1000)</b>
2202	Razing of Plant No. 1	Razing of Plant No. 1 is recommended because it would not be economical to renovate it, nor would it be economical to operate and maintain the plant. See text for more detail. This project can be spread over time. However, the clearwells should be removed to make room for Proposed Water Tower No 3, Project 3201.	\$521
2203	Module B, Plant No. 3	Module B is needed to meet the projected water demands for the distribution planning area. Module B should have a capacity of 12 mgd and should be a replica of Module A. Module B includes a second raw water line from United Irrigation. It does not include any additional administrative or maintenance space.	\$27,649
2204	Module C, Plant No. 3	Module C is needed to meet the projected water demands for the distribution planning area. Module C should have a capacity of 12 mgd and should be a replica of Modules A and B. Module C includes a third raw water line from United Irrigation. It does not include any additional administrative or maintenance space.	\$27,649
2205	Southwest Booster Station	A booster station is needed at the southwest edge of the service area to provide service to the Anzalduas bridge area. A 500,000 gal ground storage tank would be included. Sizing of the station components should be confirmed during the preliminary design phase.	\$1,500



**TABLE 6-7  
RECOMMENDED ELEVATED STORAGE PROJECTS**

<b>CIP NO.</b>	<b>PROJECT TITLE</b>	<b>PROJECT DESCRIPTION/JUSTIFICATION</b>	<b>CAPITAL COST 1997 DOLLARS (x 1000)</b>
3101	Future Water Tower Sites	This project involves purchase of land for two future water towers identified below as Projects 3201 and 3203. It is recommended that the sites be purchased as soon as possible to minimize land costs and secure the sites before development occurs. It is recommended that approximately 2 acres (300 ft x 300 ft) plus an access road be purchased for each site.	\$58
3102	Proposed Water Tower No. 1	2.0 mg tower on Trenton Rd. at Col Rowe Blvd. This tower is needed to improve peak hour pressures and enhance fire projection in the northern part of the service area.	\$3,073
3201	Proposed Water Tower No. 2	2.0 mg tower located in the vicinity of the intersection of Bentsen Road and Nolana Loop. Needed to meet regulatory storage requirements and to improve peak hour pressures and enhance fire protection.	\$3,073
3202	Proposed Water Tower No. 3	2.0 mg tower located on the site of Water Plant No. 1. This tower is needed to improve fire protection in the central business district.	\$3,073
3203	Anzalduas Water Tower	0.5 mg tower at the southwest edge of the service area to serve the Anzalduas bridge area.	\$772

**TABLE 6-8  
RECOMMENDED DISTRIBUTION MAIN PROJECTS**

<b>CIP NO.</b>	<b>PROJECT TITLE</b>	<b>PROJECT DESCRIPTION/JUSTIFICATION</b>	<b>CAPITAL COST 1997 DOLLARS (x 1000)</b>
4101	WTP No. 2 High Service Header	<p>Project involves construction of 36" and 30" high service headers on the south and west sides of the plant site. The project includes two components which are shown on Figure 6-1 and listed by component in Section 7.</p> <p>This project will reduce pressure losses which are occurring at the plant, save energy, provide additional operating alternatives for use when there is a piping or valve problem at the plant, and increase pressure in the northern portion of the service area.</p>	\$334
4102	WTP No. 2 Distribution Mains	<p>Project involves the construction of 36", 30", 24", and 16" mains to connect the high service headers (CIP No. 4101) to the distribution system. The lines are located along 23rd Street, Highway 83, Bicentennial, and Business 83. The project includes 8 components which are shown on Figure 6-1 and listed by component in Section 7.</p> <p>The purpose of the project is to make it possible to pump more water away from WTP No. 2.</p>	\$2,023

**TABLE 6-8**  
**RECOMMENDED DISTRIBUTION MAIN PROJECTS**  
**(continued)**

<b>CIP NO.</b>	<b>PROJECT TITLE</b>	<b>PROJECT DESCRIPTION/JUSTIFICATION</b>	<b>CAPITAL COST 1997 DOLLARS (x 1000)</b>
4103	Central Service Area Distribution Mains	<p>Project involves construction of 24", 20", 16", and 12" mains located through the central and north central portions of the service area from Business 83 to Trenton Rd. The project consists of 10 components which are shown on Figure 6-1 and listed by component in Section 7.</p> <p>These lines are required to increase system pressures in the central and north central portions of the service area and improve the initial operation of proposed Tower No. 1.</p>	\$2,295
4104	WTP No.3 Distribution Mains	<p>Project involves construction of 30", 24", 20", and 16" mains to connect WTP No. 3 to the distribution system and provide the main lines for servicing the northern portion of the service area. The project consists of 14 components which are shown on Figure 6-1 and listed by component in Section 7.</p> <p>The purpose of the project is to connect WTP No. 3 to the system and provide the main service lines for the northern portion of the service area which will increase pressures in this area.</p>	\$4,373

**TABLE 6-8  
RECOMMENDED DISTRIBUTION MAIN PROJECTS  
(continued)**

<b>CIP NO.</b>	<b>PROJECT TITLE</b>	<b>PROJECT DESCRIPTION/JUSTIFICATION</b>	<b>CAPITAL COST 1997 DOLLARS (x 1000)</b>
4105	South Service Area Distribution Mains	<p>Project involves construction of 16" and 12" mains located through the south and south east portions of the service area from Business 83 to Trade Zone Water Tower. The project consists of 11 components which are shown on Figure 6-1 and listed by component in Section 7.</p> <p>These lines are required to increase system pressures in the south and south east portions of the service area.</p>	\$1,686
4106	Interconnections with Hidalgo / Pharr / Edinburg / north Sharyland / west Sharyland / Mission	<p>Project involves construction of approximately 35,000 LF of main to connect the McAllen system with the other surrounding communities. The main size for each interconnection should be addressed during the preliminary design phase of each project. For cost estimating purposes, the line sizes are assumed to be 12". The project consists of 6 components which are shown on Figure 6-1 and listed by component in Section 7.</p>	\$1,903

**TABLE 6-9  
SUMMARY OF DISTRIBUTION MAIN INVENTORY**

<b>SIZE (in)</b>	<b>1996 TOTAL LENGTHS EXISTING (ft)</b>	<b>LENGTHS OF 5-YEAR PROJECTS (ft)</b>	<b>TOTALS WITH 5-YEAR PROJECTS (ft)</b>	<b>LENGTHS OF 20-YEAR PROJECTS (ft)</b>	<b>TOTALS WITH 20-YEAR PROJECTS (ft)</b>
4	573,352	0	573,352	0	573,352
6	277,223	0	277,223	0	277,223
8	954,111	0	954,111	0	954,111
10	19,057	0	19,057	0	19,057
12	219,667	63,275	282,942	35,220	318,162
16	41,985	71,068	115,070	74,260	187,313
18	23,621	0	23,621	0	23,621
20	4,487	6,145	10,632	6,870	17,502
24	46,801	17,747	62,531	10,855	75,403
30	685	8,570	9,255	0	9,255
36	0	5,470	5,470	0	5,470
<b>Totals</b>	<b>2,160,989</b>	<b>172,275</b>	<b>2,333,264</b>	<b>127,205</b>	<b>2,460,469</b>

**TABLE 6-10  
REGULATORY ANALYSIS  
MCALLEN WATER SYSTEM**

<b>CRITERIA</b>	<b>REGULATORY REQUIREMENT</b>	<b>2001 SYSTEM</b>	<b>2016 SYSTEM</b>	<b>COMMENTS</b>
Raw water pumping capacity	0.6 gpm/connection with largest pump out of service	Plant No. 1: Not Counted Plant No. 2: 22,708 gpm firm Plant No.2: Add 5,000 gpm Plant No. 3: 0 Total: 27,708 gpm or 0.6 gpm/conn	Plant No. 2: 27,708 gpm firm Plant No. 3: 16,600 Total: 44,308 gpm firm or 0.64 gpm/conn	Okay with planned increase in capacity at WTP No. 2 (CIP No. 2101A).
Treatment plant capacity	0.6 gpm/connection	Plant No. 1: Not Counted Plant No. 2: 0.58 Plant No. 3: 0 Total: 0.58	Plant No. 2: 0.38 Plant No. 3: 0.24 Total: 0.62	2001 shortfall okay as soon as WTP No. 3, Module A is completed.
Transfer pumping capacity	0.6 gpm/connection with largest pump out of service	Plant No. 1: Not Counted Plant No. 2: 18,000 gpm firm Plant No. 2: Add 9,200 gpm Plant No. 3: 0 Total: 27,200 gpm firm or 0.60 gpm/conn	Plant No. 2: 27,200 gpm firm Plant No. 3: 16,600 Total: 43,800 gpm or 0.64 gpm/conn	Okay with planned increase in capacity at WTP No. 2 (CIP No. 2101B).
Clearwell storage	5% of plant capacity	Plant No. 1: Not Counted Plant No. 2: 21% (8.1 mg) Plant No. 3: 0	Plant No. 2: 21% (8.1 mg) Plant No. 3: 17% (4 mg)	Okay

**TABLE 6-10  
REGULATORY ANALYSIS  
MCALLEN WATER SYSTEM  
(continued)**

<b>CRITERIA</b>	<b>REGULATORY REQUIREMENT</b>	<b>2001 SYSTEM</b>		<b>2016 SYSTEM</b>		<b>COMMENTS</b>
Elevated storage	Minimum: 100 gal/connection	Existing: 3.0 mg Proposed: 2.0 mg Total: 5.0 mg or 110 gal/conn.		Existing: 5.0 mg Proposed: 4.5 mg Total: 9.5 mg or 138 gal/conn.		Okay, without the Houston (0.25 mg), Cedar (1.0 mg) and Trade Zone (.5 mg) towers.
Total storage capacity	200 gal/connection	Plant No. 1: Not Counted Plant No. 2: 8.1 mg Plant No. 3: 0 Elevated: 5.0 mg Total: 13.1 mg or 287 gal/conn		Plant No. 2: 8.1 mg Plant No. 3: 4.0 Elevated: 9.5 Total: 21.6 mg or 314 gal/conn		Okay
High service pumping capacity	2 gpm/connection total and the ability to meet peak hour demands with the largest pump out of service, whichever is less	Plant No. 1: Not Counted Plant No. 2: 29,400 gpm firm Plant No. 2: Add 4,600 gpm Plant No. 3: 0 Total: 34,000 gpm firm or 0.75 gpm/conn Peak Hour: 42,604 gpm		Plant No. 2: 34,000 gpm firm Plant No. 3: 20,000 gpm Total: 54,000 gpm firm or 0.78 gpm/conn Peak Hour: 64,390 gpm		Okay. Based on computer model, peak hour demands are met with minimum 35 psi with planned distribution system, high service pump station, and elevated storage improvements. Peak hour demands are met with combination of flow from the high service pumps and elevated storage.

**TABLE 6-11  
2001 SIMULTANEOUS SUPPLY CAPABILITY**

<b>Community</b>	<b>Flows That Can Be Provided Simultaneously at 20 psi</b>	<b>Flows That Can Be Provided Simultaneously at 35 psi</b>
Edinburg	3.7 mgd	3.7 mgd at 20 psi
Pharr	11.0 mgd	7.3 mgd
Hidalgo	2.5 mgd	1.8 mgd
Mission	7.1 mgd	4.9 mgd

**TABLE 6-12  
2001 INDIVIDUAL SUPPLY CAPABILITY**

<b>Community</b>	<b>Flows That Can Be Provided Individually at 20 psi</b>	<b>Flows That Can Be Provided Individually at 35 psi</b>
Edinburg	3.8 mgd	-----
Pharr	11.3 mgd	7.5 mgd
Hidalgo	2.6 mgd	1.9 mgd
Mission	8.3 mgd	5.1 mgd

**TABLE 6-13  
2016 SIMULTANEOUS SUPPLY CAPABILITY**

<b>Community</b>	<b>Flows That Can Be Provided Simultaneously at 20 psi</b>	<b>Flows That Can Be Provided Simultaneously at 35 psi</b>
Edinburg	4.5 mgd	4.6 mgd at 20 psi
Pharr	11.5 mgd	10.0 mgd
Hidalgo	3.2 mgd	2.7 mgd
Mission	8.5 mgd	7.4 mgd



**TABLE 6-14  
2016 INDIVIDUAL SUPPLY CAPABILITY**

<b>Community</b>	<b>Flows That Can Be Provided Individually at 20 psi</b>	<b>Flows That Can Be Provided Individually at 35 psi</b>
Edinburg	4.9 mgd	-----
Pharr	12.8 mgd	11.1 mgd
Hidalgo	3.9 mgd	3.5 mgd
Mission	9.2 mgd	8.0 mgd

**TABLE 6-15  
SUMMARY OF CAPITAL COSTS FOR 5-YEAR PROGRAM**

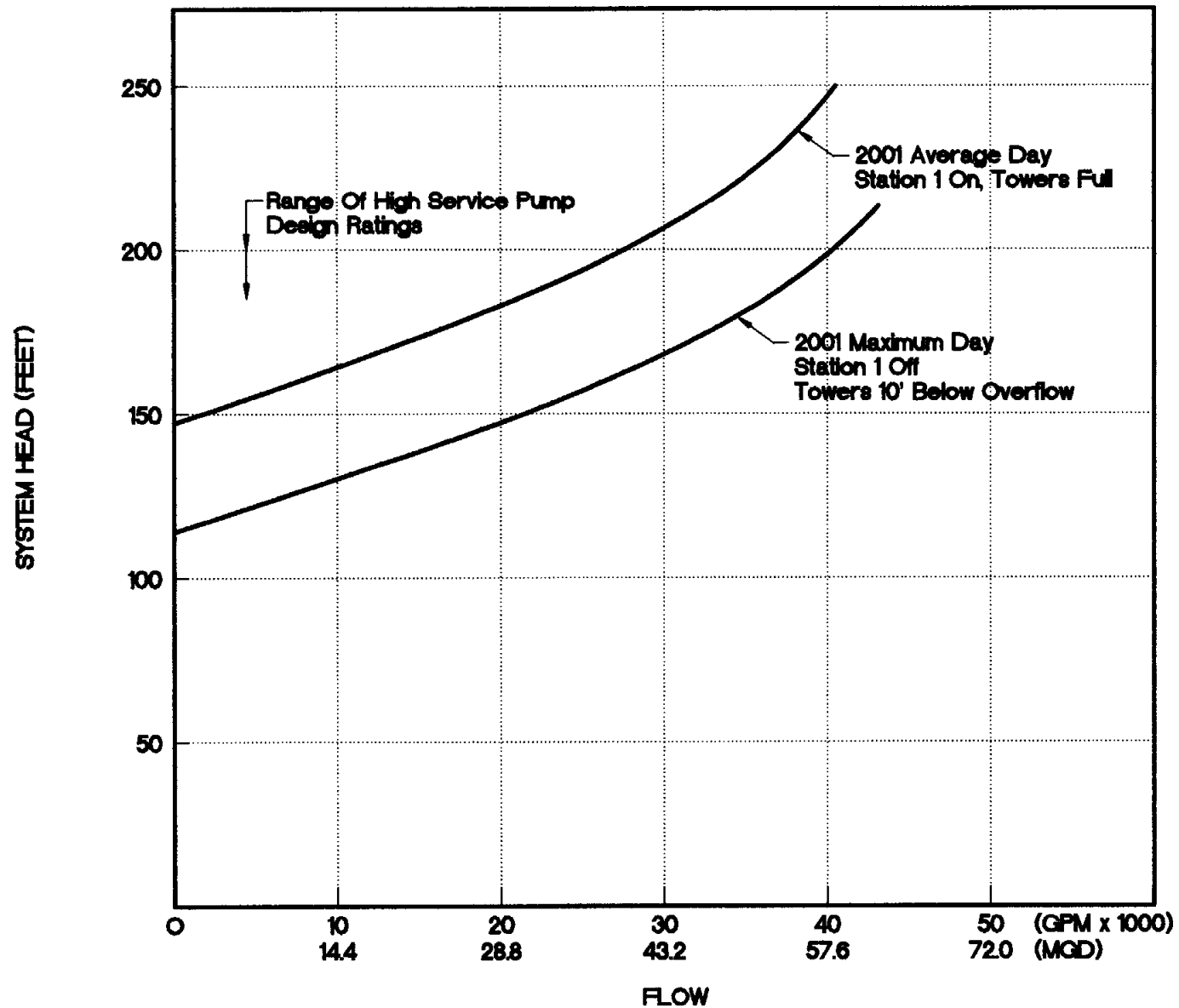
<b>PROJECT CATEGORIES</b>	<b>ESTIMATED CAPITAL COSTS IN 1997 DOLLARS (millions)</b>
Raw Water Supply	\$0
Treatment Plants/High Service Pumping	\$30.953
Elevated Storage of Finished Water	\$3.131
Water Distribution Mains Proposed for McAllen Distribution Planning Area (CIP 4101 - 4105)	\$10.711
<b>Subtotal</b>	<b>\$44.795</b>
Water Distribution Mains Required for Delivery of Purchased Water to Surrounding Communities (CIP 4106)	\$1.903
<b>Total</b>	<b>\$46.698</b>

**TABLE 6-16**  
**SUMMARY OF CAPITAL COSTS FOR 20-YEAR PROGRAM**

<b>PROJECT CATEGORIES</b>	<b>ESTIMATED CAPITAL COSTS IN 1997 DOLLARS (millions)</b>
Raw Water Supply	\$46.290
Treatment Plants/High Service Pumping	\$93.641
Elevated Storage of Finished Water	\$10.049
Water Distribution Mains Proposed for McAllen Distribution Planning Area	\$19.495
<b>Subtotal</b>	<b>\$169.475</b>
Water Distribution Mains Required for Delivery of Purchased Water to Surrounding Communities (CIP 4106)	\$1.903
<b>Total</b>	<b>\$171.378</b>

Note: Above figures include 5-year costs in Table 6-15.

**FIGURE 6-2**  
**2001 DISTRIBUTION SYSTEM CURVE AT PLANT NO. 2**



## **7.0 IMPLEMENTATION PLAN**

### **7.1 SECTION INTRODUCTION**

- A. This section presents an Implementation Plan for the capital improvement projects included in the 5-year and 20-year master plan for the McAllen Distribution Planning Area. All of the projects included in the Implementation Plan can be unilaterally undertaken by the City of McAllen.
- B. Implementation recommendations for the regional water supply master plan are discussed in Section 4.0.
- C. The following information is presented in the McAllen Water Capital Improvements Program Implementation Plan:
  - 1. The recommended year of initiation for projects included in the 5-year plan;
  - 2. The recommended five-year time frame of initiation for the projects included in the 20-year plan; and
  - 3. A funding plan.

### **7.2 5-YEAR CAPITAL IMPROVEMENTS PLAN**

- A. Table 7-1 summarizes the funding requirements for the 5-year CIP projects. The project capital costs are presented in 1997 dollars.
- B. Tables 7-3 through 7-6 show estimated capital costs for the 5-year CIP projects for each 1 year from FY1998 through FY2001. No projects have been assigned to FY 1997 since the master plan was being finalized during that year.
- C. An implementation schedule for the 5-year program is shown in Figure 7-1. This schedule includes time for all engineering and construction processes beginning with the engineer selection process and ending with the completion of construction and startup.
- D. The details of the 5-year program are discussed in Section 6.0.

### **7.3 20-YEAR CAPITAL IMPROVEMENTS PLAN**

- A. Table 7-2 summarizes the funding requirements for implementing all of the 20-year CIP projects. The starting dates of capital improvement projects by year has not been determined for projects beyond FY 2001, therefore, all capital costs are in 1997 dollars.

- B. Tables 7-7 through 7-9 show estimated capital costs for the 20-year CIP projects in five year periods for FY 2002 through FY 2016.
- C. An implementation schedule for the 20-year program is shown in Figure 7-2. This schedule includes time for all engineering and construction processes beginning with the engineer selection process and ending with the completion of construction and startup.
- D. A comparison of proposed construction increments at WTP No. 3 with projected maximum day demands is presented in Figure 7-3. Although WTP No. 1 can be used during peak demand periods until WTP No. 3 is on line, Figure 7-3 does not include WTP No. 1.
- E. Given the 7,000 acre-feet of raw water for which the City can acquire or use, more raw water will not be needed until 2004 as shown in Figure 7-4. In that year, implementation of the McAllen South water reuse project is recommended. That project will satisfy raw water supply needs until the year 2010 when the North water reuse project should be implemented. An additional 10,194 acre-feet of raw water will be needed in 2015 to provide sufficient water for the balance of the 30-year water supply planning period. A modified raw water demand curve is shown in Figure 7-4 to illustrate the potential savings which could result from conservation.

## **7.4 FUNDING PLAN**

### **7.4.1 General**

- A. The amounts of capital needed over time are provided in Tables 7-1 and 7-2.
- B. It is anticipated that most projects included in the Water CIP will be financed using revenue bonds.
- C. Use of impacts fees seems inappropriate since the proposed improvements are located through virtually all parts of the City as can clearly be seen in Figures 6-1 and 6-4. When these improvements are in place, all water customers will benefit from improved pressures, higher available fire flows and greater system wide reliability.
- D. The new State Water Revolving Fund (WSRF) will focus on distressed areas first. Thus, it does not seem likely the WSRF loans will be available for any of the projects in the 5-year program. However, WSRF loans may be an option for projects in the 20-year program. The WSRF program is briefly discussed later in this section.
- E. It is possible that some projects may be eligible for Economically Distressed Area Program grants. The EDAP program is briefly discussed later in this section.

#### **7.4.2 SRF Funding**

- A. The Safe Drinking Water Act Amendments (SDWA) of 1996 authorized a Drinking Water State Revolving Fund (DWSRF) to assist public water systems to finance the cost of infrastructure needed to achieve or maintain compliance with SDWA requirements and to protect public health objectives of the Act. Under this program, the USEPA awards capitalization grants to States, which in turn provide low cost loans and other types of assistance to eligible water systems. Contingent upon approval of the 1998 proposed Federal budget, the USEPA has allocated \$70.1 million in fiscal year 1997 and \$54 million in fiscal year 1998 to the state of Texas for the DWSRF.
- B. The TWDB is implementing the DWSRF in Texas. The first round of funding under this program is anticipated during the 1998 federal fiscal year, with money being made available to public water systems in 1999.
- C. It is anticipated that the first round of projects funded by the DWSRF will be for small, under-capitalized public water systems where public health is most threatened. Loans to well maintained and financially sound public water systems, such as McAllen's, would likely be made after 1999.

#### **7.4.3 EDAP Funding**

- A. In 1989, the 71st Texas Legislature established the Economically Distressed Areas Program (EDAP) to be administered by the TWDB. The program provides financial assistance to bring water and wastewater services to economically distressed areas where the present water facilities are inadequate to meet minimal needs of residents. The program also includes measures to prevent future substandard development. The EDAP will fund design and construction costs, acquisition fees, or improvements to water supply and wastewater collection and treatment facilities. The program does not fund operation and maintenance expenses.
- B. All political subdivisions, including cities, counties, water districts, and non-profit water supply corporations are eligible to apply for funds. The applicant must have or be applying for the Certificate of Public Convenience and Necessity required for the project area.
- C. To qualify for EDAP funding, 80 percent of the dwellings in the project area must have been occupied on June 1, 1989 and per capita income must be less than \$10,000.

**TABLE 7-1  
FUNDING REQUIRED FOR WATER CIP PROJECTS  
FISCAL YEARS 1998 THROUGH 2001**

Fiscal Year	Amounts (thousands)
<b>Estimated Capital Costs in 1997 Dollars</b>	
1998	\$3,465
1999	\$32,976
2000	\$2,295
2001	\$7,962
Total	\$46,698

**TABLE 7-2  
FUNDING REQUIRED FOR WATER CIP PROJECTS  
FISCAL YEARS 1998 THROUGH 2016**

Fiscal Year	Water Capital Improvement Fund (thousands)
<b>Estimated Capital Costs in 1997 Dollars</b>	
1998 to 2001	\$46,698
2002 to 2006	\$29,968
2007 to 2011	\$49,426
2012 to 2016	\$45,286
Total	\$171,378

**TABLE 7-3  
WATER CIP IMPLEMENTATION PLAN  
FISCAL YEAR 1998**

Project Number	Project Categories and Titles	Estimated Capital Costs (thousands)
<b>Raw Water Acquisitions/Projects</b>		
None Planned		
<b>Water Treatment/High Service Pumping Projects</b>		
None Planned		
<b>Elevated Storage Projects</b>		
3101	Future Water Tower Sites	\$58
3102	Proposed Water Tower No. 1	\$3,073
<b>Water Main Projects</b>		
4101-A	WTP No. 2 - 1525 LF of 30" High Service Header	\$208
4101-B	WTP No. 2 - 805 LF of 36" High Service Header	\$126
<b>Total 1998 Fiscal Year Projects</b>		<b>\$3,465</b>



**TABLE 7-4  
WATER CIP IMPLEMENTATION PLAN  
FISCAL YEAR 1999**

Project Number	Project Categories and Titles	Estimated Capital Costs (thousands)
<b>Raw Water Acquisitions/Projects</b>		
None Planned		
<b>Water Treatment/High Service Pumping Projects</b>		
2101A	WTP No. 2 Raw Water Pump Station Improvements	\$500
2101B	WTP No. 2 High Service Pump Station and Transfer Pump Station Improvements	\$2,000
2102	Module A, Plant No. 3 (12 mgd)	\$28,453
<b>Elevated Storage Projects</b>		
None Planned		
<b>Water Main Projects</b>		
4102-A	WTP No. 2 - 1495 LF of 24" Main South Along 23rd Street	\$147
4102-B1	WTP No. 2 - 1420 LF of 24" Main Along Hwy 83 and Connecting to Proposed 36"	\$139
4102-B2	WTP No. 2 - 2550 LF of 36" Main From WTP Along North Side of Reservoir to Hwy 83	\$399
4102-C	Bicentennial - 2590 LF of 30" Main From WTP No. 2 to Houston	\$353
4102-D1	Bicentennial - 2905 LF of 30" Main From Houston to Business 83	\$396
4102-D2	Bicentennial - 1370 LF of 24" Main From Business 83 to Ebony	\$134

**TABLE 7-4  
WATER CIP IMPLEMENTATION PLAN  
FISCAL YEAR 1999  
(continued)**

<b>Project Number</b>	<b>Project Categories and Titles</b>	<b>Estimated Capital Costs (thousands)</b>
4102-D3	Business 83 - 2775 LF of 20" Main West to Existing 16" Main	\$246
4102-D4	Business 83 - 2970 LF of 16" Main East to Existing 12" Main	\$209
<b>Total 1999 Fiscal Year Projects</b>		<b>\$32,976</b>

**TABLE 7-5  
WATER CIP IMPLEMENTATION PLAN  
FISCAL YEAR 2000**

Project Number	Project Categories and Titles	Estimated Capital Costs (thousands)
<b>Raw Water Acquisitions/Projects</b>		
None Planned		
<b>Water Treatment/High Service Pumping Projects</b>		
None Planned		
<b>Elevated Storage Projects</b>		
None Planned		
<b>Water Main Projects</b>		
4103-A	Bicentennial - 5210 LF of 16" Main From Nolana Loop to Dove Ave.	\$366
4103-B	Bicentennial - 5410 LF of 16" Main From Dove Ave. to Trenton Rd.	\$380
4103-C	Trenton Road - 5980 LF of 16" Main From Bicentennial to N. Col Rowe Rd.	\$420
4103-D	Nolana Water Tower - 300 LF of 20" Main From Water Tower to Nolana Loop. Existing Altitude Valve Replaced Also.	\$27
4103-E	Dove Water Tower - 300 LF of 20" Main From Water Tower to Dove Ave.	\$27
4103-F	N. Ware - 3265 LF of 12" Main From Business 83 North to Existing 12" Main	\$176
4103-G1	Hackberry - 1715 LF of 16" Main From Existing 18" Main to McColl Rd.	\$120
4103-G2	McColl Rd - 3835 LF of 16" Main From Hackberry to Tamarack	\$269

**TABLE 7-5  
WATER CIP IMPLEMENTATION PLAN  
FISCAL YEAR 2000  
(continued)**

<b>Project Number</b>	<b>Project Categories and Titles</b>	<b>Estimated Capital Costs (thousands)</b>
4103-H	Nolana Loop - 2850 LF of 24" Main From N. Rooth Rd. To N. Ware Rd.	\$280
4103-I	N. Rooth Rd. - 2480 LF of 16" Main From Dove Ave. To Lark Ave.	\$174
4103-J	10th Street - 1035 LF of 12" Main From Houston to Erie	\$56
<b>Total 2000 Fiscal Year Projects</b>		<b>\$2,295</b>

**TABLE 7-6  
WATER CIP IMPLEMENTATION PLAN  
FISCAL YEAR 2001**

Project Number	Project Categories and Titles	Estimated Capital Costs (thousands)
<b>Raw Water Acquisitions/Projects</b>		
None Planned		
<b>Water Treatment/High Service Pumping Projects</b>		
None Planned		
<b>Elevated Storage Projects</b>		
None Planned		
<b>Water Main Projects</b>		
4104-A	Trenton Rd. - 4800 LF of 16" Main From Bicentennial to N. Rooth	\$337
4104-B1	Trenton Rd. - 2645 LF of 16" Main From N. Rooth to N. Ware Rd.	\$186
4104-B2	N. Ware Rd. - 2363 LF of 16" Main From Existing 12" Main to Trenton Rd.	\$166
4104-B3	Mile 5 North Rd. & Ware Rd. - 4692 LF of 24" Main From Trenton Rd. to Bentsen Rd.	\$460
4104-B4	Bentsen Rd. - 2115 LF of 36" Main From Mile 5 North Rd. to WTP No. 3	\$331
4104-C1	Water Plant No. 3 - 1550 LF of 30" Main From Water Plant No. 3 to Mile 6 North Rd.	\$211
4104-C2	Mile 6 North Rd. - 1315 LF of 24" Main From Bentsen Rd. to N. Ware Rd.	\$129
4104-C3	N. Ware Rd. - 5820 LF of 16" Main From Mile 6 North Rd. to Mile 5 North Rd.	\$409

**TABLE 7-6**  
**WATER CIP IMPLEMENTATION PLAN**  
**FISCAL YEAR 2001**  
**(continued)**

Project Number	Project Categories and Titles	Estimated Capital Costs (thousands)
4104-D1	Mile 6 North Rd. 4605 LF of 24" Main From N. Ware Rd. to N. Rooth Rd.	\$452
4104-D2	N. Rooth Rd. - 5760 LF of 16" Main From Canton Rd. to Existing 12" Main	\$404
4104-E1	Canton Rd. - 2770 LF of 20" Main From N. Rooth Rd. to N. 23rd St.	\$246
4104-E2	Canton Rd. - 4950 LF of 16" Main From N. 23rd St. to N. 10th St.	\$348
4104-E3	Canton Rd/N. Col Rowe Rd. - 9880 LF of 16" Main From N. 10th Street to Trenton Rd.	\$694
4105-A1	Col Rowe Rd. - 5330 LF of 12" Main From E. Ridge Rd. to El Rancho	\$287
4105-A2	Bales - 1310 LF of 12" Main From Col Rowe Rd. to Existing 16" Main	\$71
4105-A3	El Rancho and McColl Rd - 4020 LF of 16" Main From Col Rowe Rd. to McColl Rd.	\$196
4105-A4	McColl Rd. - 560 LF of 12" Main From El Rancho to Existing 12" Main	\$30
4105-B1	Burns - 2815 LF of 12" Main From McColl Rd. to Col Rowe Rd.	\$152
4105-B2	Col Rowe Rd. - 2670 LF of 16" Main From Burns to El Rancho	\$187
4105-C	Jackson Ave. - 2980 LF of 12" Main From McColl Rd. to Jackson Rd.	\$161
4105-D	E. Ridge Rd. - 2940 LF of 12" Main From McColl Rd. to Jackson Rd.	\$158

**TABLE 7-6**  
**WATER CIP IMPLEMENTATION PLAN**  
**FISCAL YEAR 2001**  
**(continued)**

<b>Project Number</b>	<b>Project Categories and Titles</b>	<b>Estimated Capital Costs (thousands)</b>
4105-E	Jackson Rd.- 2680 LF of 12" Main From Jackson Ave. to E. Ridge Rd.	\$144
4105-F	Toronto - 1075 LF of 12" Main From 11th St. to Main St.	\$58
4105-G	Trade Zone Water Tower - 4500 LF of 12" Main From FM 1016 to South and East Loop	\$242
4106-A	Hidalgo Interconnect - 7670 LF of 12" Main From FM 1016 South Service Area Line (line size to be confirmed during the preliminary design phase)	\$413
4106-B	East Edinburg Interconnect - 8715 LF of 12" Main From Canton Rd. East on Trenton Rd. (line size to be confirmed during the preliminary design phase)	\$469
4106-C	North Edinburg Interconnect - 5370 LF of 12" Main From Canton Rd. North on N. 10th St. (line size to be confirmed during the preliminary design phase)	\$289
4106-D	North Sharyland Interconnect - 7780 LF of 12" Main From Mile 6 North Rd. North on N. Ware Rd. (line size to be confirmed during the preliminary design phase)	\$419
4106-E	W. Sharyland Interconnect - 2925 LF of 12" Main From Bentsen Rd. West on Mile 5 North Rd. (line size to be confirmed during the preliminary design phase)	\$158

**TABLE 7-6  
 WATER CIP IMPLEMENTATION PLAN  
 FISCAL YEAR 2001  
 (continued)**

<b>Project Number</b>	<b>Project Categories and Titles</b>	<b>Estimated Capital Costs (thousands)</b>
4106-F	Mission Interconnect - 2885 LF of 12" Main From Bentsen Rd. West on Business 83 (line size to be confirmed during the preliminary design phase)	\$155
<b>Total 2001 Fiscal Year Projects</b>		<b>\$7,962</b>



**TABLE 7-7  
WATER CIP IMPLEMENTATION PLAN  
FISCAL YEAR 2002 THROUGH 2006**

Project Number	Project Categories and Titles	Estimated Capital Costs (thousands)
<b>Raw Water Acquisitions/Projects</b>		
1201	Reuse Upgrade - WWTP No. 2	\$17,676
<b>Water Treatment/High Service Pumping Projects</b>		
2201	Ozonation for WTP No. 2 (38 mgd)	\$5,369
2202	Razing of WTP No. 1	\$521
<b>Elevated Storage Projects</b>		
3201	Proposed Water Tower No. 2	\$3,073
<b>Water Main Projects</b>		
4201-A	Bentsen Rd. - 10555 LF of 24" Main From Mile 5 North Rd. to Tulip Ave.	\$1,035
4201-B	Bentsen Rd. - 8725 LF of 16" Main From Nolana Loop to Pecan Blvd.	\$613
4201-C	Bentsen Rd. - 4404 LF of 16" Main From Pecan Blvd. To Business 83	\$309
4201-D	Bentsen Rd. - 4750 LF of 16" Main From Business 83 to Hwy. 83	\$333
4201-E	N. McColl Rd. - 6685 LF of 16" Main From Tamarack to Nolana Loop	\$469
4201-F	N. McColl Rd. - 8120 LF of 16" Main From Nolana Loop to N. Col Rowe Rd.	\$570
<b>Total 2002 to 2006 Fiscal Year Projects</b>		<b>\$29,968</b>

**TABLE 7-8  
WATER CIP IMPLEMENTATION PLAN  
FISCAL YEAR 2007 THROUGH 2011**

Project Number	Project Categories and Titles	Estimated Capital Costs (thousands)
<b>Raw Water Acquisitions/Projects</b>		
1202	Reuse Upgrade - WWTP No. 3	\$18,828
<b>Water Treatment/High Service Pumping Projects</b>		
2203	Module B, Plant No. 3 (12 mgd)	\$27,649
<b>Elevated Storage Projects</b>		
None Planned		
<b>Water Main Projects</b>		
4202-A	23rd Street - 1800 LF of 20" Main From Jordan to Existing 24" Main South of WTP No. 2	\$160
4202-B	23rd Street - 4625 LF of 16" Main From Jordan to Elmira	\$325
4202-C	Col Rowe Rd. - 8075 LF of 16" Main From Burns Dr. to FM 1016	\$567
4203-A1	Mile 6 North Rd. and Taylor - 8100 LF of 12" Main From Bentsen Rd. to Mile 6 North Rd.	\$436
4203-A2	Taylor and Mile 7 N. Rd. - 9370 LF of 12" Main From Mile 6 North Rd. To N. Ware Rd.	\$505
4203-B1	Mile 7 N. Rd. - 13255 LF of 12" Main From N. Ware Rd. To Canton Rd.	\$714
4203-B2	Freddy Gonzalez Dr. - 4495 LF of 12" Main From 23rd Street to N. 10th Street	\$242
<b>Total 2007 to 2011 Fiscal Year Projects</b>		<b>\$49,426</b>

**TABLE 7-9  
WATER CIP IMPLEMENTATION PLAN  
FISCAL YEAR 2012 THROUGH 2016**

Project Number	Project Categories and Titles	Estimated Capital Costs (thousands)
<b>Raw Water Acquisitions/Projects</b>		
1203	Year 2015 Water Rights Acquisition	\$9,786
<b>Water Treatment/High Service Pumping Projects</b>		
2204	Module C, Plant No. 3 (12 mgd)	\$27,649
2205	Southwest Booster Station	\$1,500
<b>Elevated Storage Projects</b>		
3202	Proposed Water Tower No. 3	\$3,073
3203	Proposed Anzalduas Tower	\$772
<b>Water Main Projects</b>		
4204-A	Business 83 - 3580 LF of 16" Main From Existing 18" Main East of Tower to Existing 18" Main West of Tower	\$251
4204-B	Water Tower No. 3 - 300 LF of 24" Main From Water Tower to Business 83	\$29
4205-A	Bentsen Rd. - 5070 LF of 20" Main From Hwy. 83 to Neuhaus Dr.	\$450
4205-B	Bensten Rd. - 25300 LF of 16" Main From Neuhaus Dr. to Anzalduas Bridge	\$1,776
<b>Total 2012 to 2016 Fiscal Year Projects</b>		<b>\$45,286</b>

**FIGURE 7-1  
IMPLEMENTATION SCHEDULE  
MCALLEN 5-YEAR CIP**

ID	Task Name	Start	Finish	1998			1999				2000				2001				2002				2003						
				Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4			
1	Future Water Tower Sites (CIP 3101)	6/1/98	5/27/99	█																									
2	Elevated Water Tower No. 1 (CIP 3102)	6/1/98	9/30/00	█																									
3	WTP No. 2 Distribution Mains (CIP 4101)	6/2/98	6/1/99	█																									
4	WTP No. 2 High Service Dist. Mains (CIP 4102)	10/1/98	10/31/00				█																						
5	WTP No. 2 Pumping (CIP 2101)	1/1/99	6/30/03				█																						
6	WTP No. 3, Module A (CIP 2102)	1/1/99	12/25/02				█																						
7	Central Service Area Distribution Mains (CIP 4103)	10/1/99	3/28/01								█																		
8	South Service Area Distribution Mains (CIP 4105)	10/1/00	10/31/02												█														
9	Interconnect Distribution Mains (CIP 4106)	10/1/00	10/31/02																█										
10	WTP No. 3 Distribution Mains (CIP 4104)	10/1/01	10/31/03																█										

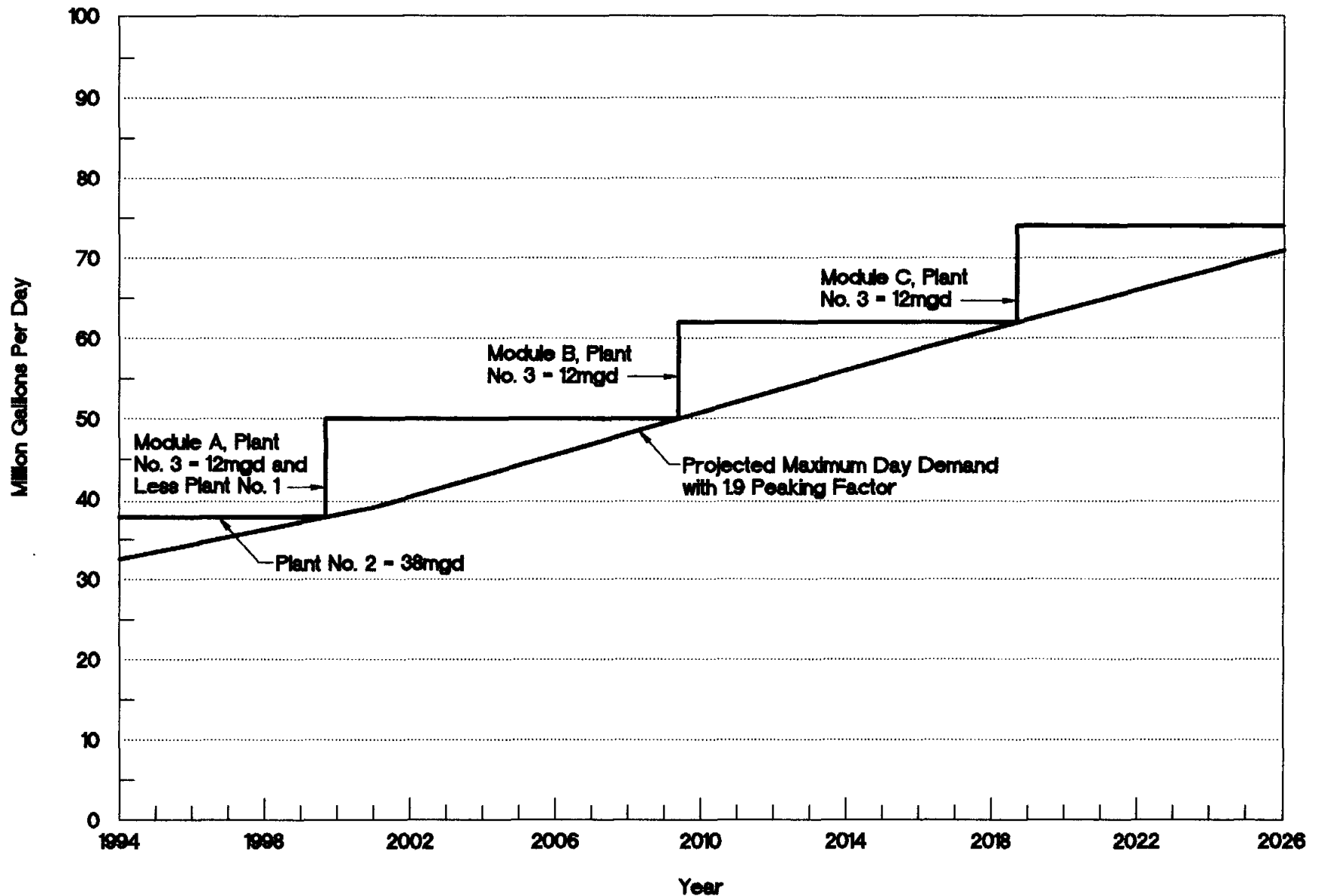
Project: McAllen Water Master Plan  
Date: 3/30/98

Task █ Milestone ◆

**FIGURE 7-2  
IMPLEMENTATION SCHEDULE  
MCALLEN 20-YEAR CIP**

ID	Task Name	Start	Finish	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	
1	WWTP No. 2 Reuse Upgrade (CIP 1201)	10/1/01	4/1/05	█																
2	WTP No. 2 Ozonation (CIP 2201)	10/1/01	4/1/05	█																
3	Razing WTP No. 1 (CIP 2202)	10/1/01	10/31/03	█																
4	Elevated Water Tower No. 2 (CIP 3201)	10/1/01	1/31/04	█																
5	WTP Nos. 2 & 3 Distribution Mains (CIP 4201)	10/1/01	10/31/03	█																
6	WWTP No. 3 Reuse Upgrade (CIP 1202)	10/1/06	4/1/10						█											
7	WTP No. 3, Module B (CIP 2203)	10/1/06	9/30/10						█											
8	South Service Area Distribution Mains (CIP 4202)	10/1/06	10/30/08						█											
9	WTP No. 3 Distribution Mains (CIP 4203)	10/1/06	10/30/08						█											
10	Year 2015 Water Rights Acquisition (CIP 1203)	10/1/11	10/1/12												█					
11	WTP No. 3, Module C (CIP 2204)	10/1/11	9/30/15											█						
12	Southwest Booster Pump Station (CIP 2205)	10/1/11	4/1/15											█						
13	Elevated Water Tower No. 3 (CIP 3202)	10/1/11	1/31/14											█						
14	Anzalduas Elevated Water Tower (CIP 3203)	10/1/11	1/31/14											█						
15	Water Tower No. 3 Distribution Main (CIP 4204)	10/1/11	10/31/13											█						
16	Anzalduas Bridge Distribution Main (CIP 4205)	10/1/11	10/31/13											█						

**FIGURE 7-3**  
**RECOMMENDED TREATMENT PLANT PROJECTS**  
**McALLEN WATER DISTRIBUTION PLANNING AREA**



**REGIONAL WATER MASTER PLAN**

**FOR THE**

**CITY OF MCALLEN, TEXAS**

**VOLUME 3 OF 3**

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Project No. 68719

December 1997

**TABLE OF CONTENTS  
APPENDIX A**

<b><u>Section</u></b>	<b><u>Page</u></b>
1.1 INTRODUCTION	A-1
1.2 DEVELOPMENT OF POPULATION PROJECTIONS	A-1
1.3 COMPARISON OF TPU AND TWDB PROJECTIONS	A-1
1.3.1 TPU Projections	A-1
1.3.2 Texas Water Development Board Projections	A-2
1.3.3 Comparison of Projections	A-3
1.3.4 Reasons for Not Using TWDB Projections	A-3
1.4 SHARYLAND WSC BUYOUT AREAS	A-3

**LIST OF TABLES**

<b><u>Table</u></b>	<b><u>Page</u></b>
A-1 Population Projections for McAllen Water Distribution Planning Area	A-5
A-2 Population Projections for McAllen City Limits	A-10
A-3 Population Projections for the City of Hidalgo	A-15
A-4 Population Projections for Sharyland Water Supply Corporation Service Area	A-16

**LIST OF FIGURES**

<b><u>Figure</u></b>	<b><u>Follows Page</u></b>
A-1 A&B TAZ Map	A-16



**HIDALGO HISTORICAL DATA**

## **APPENDIX A POPULATION PROJECTIONS**

### **1.1 INTRODUCTION**

This appendix explains how the population projections for the water supply and the water distribution planning areas were developed. The boundaries of these planning areas are shown in Figure 2-1.

Population projections for Reynosa are explained in a separate report.

This appendix compares the Metropolitan Planning Organization projections used in this master plan with the projections of the TWDB and explains why the TWDB projections were not used.

Finally, this appendix documents the projections associated with McAllen's buyouts of areas formerly served by Sharyland Water Supply Corporation (SWSC).

### **1.2 DEVELOPMENT OF POPULATION PROJECTIONS**

Population projections for the various parts of water supply/water distribution planning areas are shown in Tables A-1 through A-4 located at the end of this appendix.

The projections were developed by the McAllen Planning Division using traffic analysis zone (TAZ) data extracted from the Hidalgo County Metropolitan Organization's 1994 Transportation Plan Update (TPU). Projections for areas not included in TPU study area were synthesized using census tract/blocks information as a starting point and estimated growth rates.

For TAZs which lie only partially within a particular planning area boundary, the percentage of the TAZ area within the boundary was multiplied by the projected TAZ population, yielding the approximate population within the boundary.

### **1.3 COMPARISON OF TPU AND TWDB PROJECTIONS**

#### **1.3.1 TPU Projections**

The base year for the TPU population projections is 1994. Projections are made for the years 2005 and 2015.

The TPU projections were developed by multiplying the number of occupied households by the average number of persons per household. Field surveys were conducted in 1994 to determine the number of occupied households. The average number of persons per household is based on data from the 1990 census. The persons-per-household figures varied with location as discussed below.

The TPU uses traffic analysis zones (TAZs) in making population projections. TAZs within the planning areas are illustrated in Figure A-1 located at the end of this appendix. The TAZs cover the entire area within the McAllen city limits and ETJ as well as surrounding cities including Alamo, Alton, Donna, Edinburg, Hidalgo, Mercedes, Mission, Palmhurst, Palmview, San Juan and Weslaco.

The average persons per household for each TAZ depends on its location relative to 1990 census tracts. If a TAZ is completely within a census tract, the average persons per household for that tract is the same as that for the 1990 census. If a TAZ is located in two or more census tracts, a weighted average was calculated to estimate average persons per household.

To forecast future population growth for each TAZ, baseline population estimates for each TAZ were divided by the MPO control totals for the baseline year. This calculation gave a percentage of TAZ population to MPO population. To forecast future population, this ratio was multiplied by the control total for the forecast years, 2005 and 2015. As necessary, excess population growth was allocated to adjacent TAZs. Adjacent TAZs were ranked, according to various development criteria, so that excess growth would be allocated to TAZs with the highest development potential.

The MPO control totals mentioned in the foregoing paragraph were developed by assuming the following growth rates beginning with the 1990 census population:

- A. 1990-1999: 4.95% average per year
- B. 2000-2010: 4.25% average per year
- C. 2011-2015: 3.24% average per year

The TPU population projections for the area within the McAllen and Hidalgo planning area represent a summation of population projections for TAZs which are wholly or partially within the planning areas. For TAZs which are partially within the planning area, the percentage of the TAZ area within the boundary was multiplied by the projected TAZ population. This estimating technique assumes that the population is evenly distributed in each TAZ. That is a reasonable assumption considering the relatively small size of the TAZs.

### **1.3.2 Texas Water Development Board Projections**

The TWDB's 1995 Texas Water Plan projects population growth for Texas cities through the year 2050. The projections are based on 1990 census data and the following three migration scenarios:

- A. M\_00 Assumes no net migration for the City.
- B. M\_05 Assumes 50% of the net migration (positive or negative) over the period 1980-1990 for the City.

- C. M\_10 Assumes 100% of the net migration (positive or negative) over the period 1980-1990 for the City.

The M\_10 scenario was used to create Figure 4-2 and was also used in the TPU for comparison purposes.

### **1.3.3 Comparison of Projections**

- A. For the City of McAllen (the area within the city limits), the TPU figures are 15% higher than the TWDB's "high scenario" figures for 1995. The projections for 2001, 2016 and 2026 are 15%, 35% and 39% higher, respectively.
- B. For the City of Hidalgo, the adjusted TPU figures are 27% higher than the TWDB's highest figures for 1995. The projections for 2001, 2016 and 2026 are 76%, 132% and 110% higher, respectively. The fact that the TPU projections are higher is acknowledged in the TPU report.
- C. The fact that the TPU projections are higher is acknowledged in the TPU report. The differences in the TWDB and TPU projections are most likely due to estimates of inward migration. Commercial activity along the border is increasing at a rapid rate and that has contributed substantially to higher inward migration.

### **1.3.4 Reasons for Not Using TWDB Projections**

- A. In order to avoid understating water needs, the higher projections were used.
- B. It is not feasible to use the TWDB projections to develop population projections for the planning area since the TWDB data are not broken down by subcounty areas such as TAZs or census tracts.

## **1.4 SHARYLAND WSC BUYOUT AREAS**

The City of McAllen acquired service areas from the SWSC during the period 1994-1996. The details of each buyout are presented below.

- A. Buyout No. 1 - A total of 600 Ac, of which 395 Ac were undeveloped. The buyout was approved by the PUB in October 1994 and the City began service to approximately 30 new accounts shortly thereafter.
- B. Buyout No. 2 - A total of 1,750 Ac, of which 1,333 were undeveloped. The buyout was approved by the PUB in May 1995 and the City began service to approximately 276 new accounts shortly thereafter.

- C. Buyout No. 3 - A total of 4,285 Ac, of which 3,177 were undeveloped. The buyout was approved by the PUB in April 1996 and the City began service to approximately 260 new accounts shortly thereafter.
- D. Buyout No. 4 - To be included later.

The buyouts are documented here for the record. However, the per capita water demands for 1994, 1995, and 1996 were not adjusted to reflect those buyouts because the population in the developed portions of the buyout areas were estimated to less than 1% of the total City population at the time. That calculation is based on an assumed 3 people per account.

**TABLE A-1  
POPULATION PROJECTIONS FOR  
MCALLEN WATER DISTRIBUTION PLANNING AREA**

<b>TAZ</b>	<b>1995 Population</b>	<b>2001 Population</b>	<b>2016 Population</b>	<b>2026 Population</b>
13	22	29	51	62
14	159	169	261	319
21	0	0	0	0
22	4	5	9	13
23	20	27	47	67
24	7	9	17	24
25	8	55	433	695
26	319	318	380	544
28	18	20	37	52
32	0	64	290	468
33	2716	2871	2979	2979
34	2874	4285	9063	12808
35	78	233	1006	1575
36	15	150	1536	2471
104	34	34	34	34
105	5	5	5	5
106	2322	3285	6463	8963
107	663	876	1371	1371
108	364	689	1930	2884
109	0	0	0	0
110	658	658	658	658
111	266	301	405	488
112	22	89	491	778
113	1805	1867	1909	1909
114	2168	2410	2586	2586

**TABLE A-1  
POPULATION PROJECTIONS FOR  
MCALLEN WATER DISTRIBUTION PLANNING AREA  
(continued)**

<b>TAZ</b>	<b>1995 Population</b>	<b>2001 Population</b>	<b>2016 Population</b>	<b>2026 Population</b>
115	540	507	413	340
116	156	144	113	89
117	1473	1564	1688	1688
118	545	590	715	734
119	399	453	556	556
120	756	767	799	824
121	438	413	342	288
122	397	499	816	1067
123	849	872	938	990
124	458	446	414	388
125	691	704	722	722
126	417	474	644	779
127	324	636	1838	2572
128	1121	1281	1757	2135
129	1263	1314	1454	1523
130	1935	1871	1693	1554
131	1631	1658	1729	1732
132	582	582	582	582
133	1175	1189	1227	1257
134	1012	969	848	755
135	1254	1263	1269	1269
136	52	52	52	52
137	398	328	122	9
138	10	10	10	10
139	1070	1070	1070	1070

**TABLE A-1  
POPULATION PROJECTIONS FOR  
MCALLEN WATER DISTRIBUTION PLANNING AREA  
(continued)**

<b>TAZ</b>	<b>1995 Population</b>	<b>2001 Population</b>	<b>2016 Population</b>	<b>2026 Population</b>
140	1068	1010	848	724
141	63	57	41	28
142	661	661	661	661
143	1670	1614	1459	1338
144	1413	1423	1453	1476
145	2501	2501	2501	2501
146	1208	1208	1208	1208
147	2173	2173	2173	2173
148	1785	1785	1785	1785
149	1168	1168	1168	1168
150	1506	1527	1589	1638
151	34	34	34	34
152	1245	1373	1505	1505
153	619	691	907	1077
154	1064	1064	1064	1064
155	914	1616	4208	6212
156	846	1136	2065	2799
157	1078	1479	2786	3816
199	1064	1898	4992	7382
200	911	1449	3331	4799
201	486	1015	3114	4248
202	2110	2713	4498	4608
203	3804	4505	5280	5280
204	3383	3522	3618	3618
205	320	320	320	320



**TABLE A-1  
POPULATION PROJECTIONS FOR  
MCALLEN WATER DISTRIBUTION PLANNING AREA  
(continued)**

<b>TAZ</b>	<b>1995 Population</b>	<b>2001 Population</b>	<b>2016 Population</b>	<b>2026 Population</b>
206	310	547	934	934
207	291	381	456	456
208	642	642	642	642
209	2008	2220	2373	2373
210	939	1388	1801	1801
211	3639	3807	4286	4605
212	1971	1971	1971	1971
213	301	301	301	301
214	1339	1339	1339	1339
215	1007	1007	1007	1007
216	366	366	366	366
217	1914	1927	1946	1946
218	546	546	546	546
219	3395	3431	3455	3455
220	4083	5247	6201	6201
221	2526	2963	3912	3912
222	1376	1652	2034	2034
223	583	942	2031	2031
224	312	678	2189	3336
225	991	1384	2676	3694
258	91	473	2968	3078
259	1446	2309	5279	6817
260	5391	6496	7742	7742
261	1664	3468	10707	15599
262	169	705	3938	6251

**TABLE A-1  
POPULATION PROJECTIONS FOR  
MCALLEN WATER DISTRIBUTION PLANNING AREA  
(continued)**

<b>TAZ</b>	<b>1995 Population</b>	<b>2001 Population</b>	<b>2016 Population</b>	<b>2026 Population</b>
263	2307	3275	6472	8986
264	3646	4565	7393	9234
265	357	848	2978	4580
266	750	1207	2818	4072
280	463	857	2349	3498
281	361	502	963	1327
282	1560	1970	3251	4265
288	543	853	1933	2776
290	122	260	821	1248
337	124	124	124	124
<b>TOTALS</b>	<b>114120</b>	<b>136698</b>	<b>206582</b>	<b>248747</b>

**TABLE A-2  
POPULATION PROJECTIONS FOR  
MCALLEN CITY LIMITS**

<b>TAZ</b>	<b>1995 Population</b>	<b>2001 Population</b>	<b>2016 Population</b>	<b>2026 Population</b>
22	1	1	2	3
25	6	39	307	493
26	331	331	395	565
28	9	10	18	26
32	0	52	236	381
33	2716	2871	2979	2979
34	2874	4285	9063	12808
35	33	100	433	677
104	44	44	44	44
105	6	6	6	6
106	2347	3319	6530	9056
107	663	876	1371	1371
108	116	220	616	920
109	0	0	0	0
110	658	658	658	658
111	266	301	405	488
112	22	89	491	778
113	1805	1867	1909	1909
114	2168	2410	2586	2586
115	540	507	413	340
116	156	144	113	89
117	1473	1564	1688	1688
118	545	590	715	734
119	399	453	556	556
120	764	775	807	832

**TABLE A-2  
POPULATION PROJECTIONS FOR  
MCALLEN CITY LIMITS  
(continued)**

TAZ	1995 Population	2001 Population	2016 Population	2026 Population
121	443	417	346	291
122	397	499	816	1067
123	849	872	938	990
124	458	446	414	388
125	691	704	722	722
126	372	423	576	697
127	338	662	1914	2679
128	1121	1281	1757	2135
129	1263	1314	1454	1523
130	1935	1871	1693	1554
131	1631	1658	1729	1732
132	582	582	582	582
133	1175	1189	1227	1257
134	1012	969	848	755
135	1254	1263	1269	1269
136	52	52	52	52
137	398	328	122	9
138	10	10	10	10
139	1070	1070	1070	1070
140	1068	1010	848	724
141	63	57	41	28
142	661	661	661	661
143	1670	1614	1459	1338
144	1413	1423	1453	1476
145	2501	2501	2501	2501

**TABLE A-2**  
**POPULATION PROJECTIONS FOR**  
**MCALLEN CITY LIMITS**  
**(continued)**

<b>TAZ</b>	<b>1995 Population</b>	<b>2001 Population</b>	<b>2016 Population</b>	<b>2026 Population</b>
146	1208	1208	1208	1208
147	2173	2173	2173	2173
148	1785	1785	1785	1785
149	1168	1168	1168	1168
150	1506	1527	1589	1638
151	34	34	34	34
152	1245	1373	1505	1505
153	619	691	907	1077
154	1064	1064	1064	1064
156	677	908	1652	2239
157	728	1000	1882	2578
199	809	1442	3794	5610
200	474	753	1732	2496
201	486	1015	3114	4248
202	2110	2713	4498	4608
203	3804	4505	5280	5280
204	3383	3522	3618	3618
205	320	320	320	320
206	310	547	934	934
207	291	381	456	456
208	642	642	642	642
209	2008	2220	2373	2373
210	939	1388	1801	1801
211	3639	3807	4286	4605
212	1971	1971	1971	1971

**TABLE A-2  
POPULATION PROJECTIONS FOR  
MCALLEN CITY LIMITS  
(continued)**

<b>TAZ</b>	<b>1995 Population</b>	<b>2001 Population</b>	<b>2016 Population</b>	<b>2026 Population</b>
213	301	301	301	301
214	1339	1339	1339	1339
215	1007	1007	1007	1007
216	366	366	366	366
217	1914	1927	1946	1946
218	546	546	546	546
219	3395	3431	3455	3455
220	4083	5247	6201	6201
221	2526	2963	3912	3912
222	1376	1652	2034	2034
223	613	991	2138	2138
224	321	699	2257	3439
225	1001	1398	2704	3731
258	96	498	3125	3240
259	1468	2345	5360	6921
260	5391	6496	7742	7742
261	1664	3468	10707	15599
262	25	106	591	938
263	2307	3275	6472	8986
264	3646	4565	7393	9234
265	136	322	1131	1740
266	298	479	1119	1617
277	102	132	235	336
280	274	506	1388	2067
281	23	32	62	86

**TABLE A-2  
POPULATION PROJECTIONS FOR  
MCALLEN CITY LIMITS  
(continued)**

<b>TAZ</b>	<b>1995 Population</b>	<b>2001 Population</b>	<b>2016 Population</b>	<b>2026 Population</b>
282	281	355	585	768
283	26	35	67	91
284	21	38	98	145
288	543	853	1933	2776
290	133	282	893	1357
337	124	124	124	124
<b>TOTALS</b>	<b>109108</b>	<b>128323</b>	<b>183860</b>	<b>215110</b>

**TABLE A-3  
POPULATION PROJECTIONS FOR THE  
CITY OF HILDAGO**

<b>TAZ</b>	<b>1995 Population</b>	<b>2001 Population</b>	<b>2016 Population</b>	<b>2026 Population</b>
3	333	298	753	919
4	1432	2678	4774	5832
5	366	365	430	525
6	409	614	961	1174
7	82	132	213	260
8	1012	992	1150	1405
9	95	78	80	97
10	50	510	2815	3439
11	571	1986	5350	6536
12	315	993	2801	3421
13	54	70	122	150
14	396	423	653	798
21	0	0	0	0
23	29	38	67	96
24	13	16	29	42
<b>TOTALS</b>	<b>5157</b>	<b>9193</b>	<b>20198</b>	<b>24694</b>



**TABLE A-4  
POPULATION PROJECTIONS FOR  
SHARYLAND WATER SUPPLY CORPORATION  
SERVICE AREA**

<b>TAZ</b>	<b>1995 Population</b>	<b>2001 Population</b>	<b>2016 Population</b>	<b>2026 Population</b>
191	966	1247	2577	4631
192	812	1047	1905	3424
193	425	548	997	1791
194	576	758	1651	2967
195	927	1196	2462	4424
196	842	1086	1977	3552
197	727	938	4461	8016
198	395	713	3131	5626
256	138	173	302	446
257	451	534	902	1331
258	69	357	2244	2328
259	785	1254	2867	3702
266	355	572	1334	1928
267	194	246	425	616
268	379	489	870	1259
269	624	804	1433	2077
270	536	691	1232	1785
271	539	696	1239	1794
273	1580	1768	2866	4154
274	785	1012	1803	2612
275	1966	2153	3439	4984
276	509	611	1036	1483
277	2048	2641	4699	6724
278	440	568	1011	1446

**TABLE A-4  
POPULATION PROJECTIONS FOR  
SHARYLAND WATER SUPPLY CORPORATION  
SERVICE AREA  
(continued)**

<b>TAZ</b>	<b>1995 Population</b>	<b>2001 Population</b>	<b>2016 Population</b>	<b>2026 Population</b>
279	1195	1438	2445	3543
280	241	445	1221	1818
281	228	317	609	839
283	112	154	289	396
284	53	94	245	362
285	1292	1539	2607	3848
286	707	819	1361	2009
287	751	968	4107	6063
289	287	370	660	975
290	402	854	2700	4103
291	4	5	8	12
292	574	779	1142	1686
293	1481	2209	3451	5095
295	641	827	1519	2243
296	298	261	547	807
366	1057	1363	2481	4459
367	2052	2646	4714	6828
368	504	650	1158	1678
369	355	458	816	1183
370	876	1130	2013	2917
371	658	849	1510	2161
475	800	1032	1878	3374
901	842	1013	1723	2497

**TABLE A-4  
POPULATION PROJECTIONS FOR  
SHARYLAND WATER SUPPLY CORPORATION  
SERVICE AREA  
(continued)**

<b>TAZ</b>	<b>1995 Population</b>	<b>2001 Population</b>	<b>2016 Population</b>	<b>2026 Population</b>
902	240	289	491	711
903	1406	1893	3544	5232
<b>TOTALS</b>	<b>32124</b>	<b>44504</b>	<b>90102</b>	<b>137939</b>

## **APPENDIX B**

### **INTRODUCTION**

This appendix provides historical records for McAllen, Sharyland Water Supply Corporation, and Hidalgo.

### **MCALLEN HISTORICAL DATA**

Records include the following: WTP No. 1 high service pumping (1992-1996), WTP No. 1 raw water intake (1993-1996), billing records, Ordinance No. 1995-32; pertaining to water conservation, and rates and charges.

### **SHARYLAND WATER SUPPLY CORPORATION HISTORICAL DATA**

Records include the following: raw water pumpage (1994-1996), treated water pumpage (1994-1996), raw water analyses and disinfection process data (1994-1996), and finished water analyses (1994-1996).

### **HILDALGO HISTORICAL DATA**

Records include the following: summary of water rights, by District table of Acre/Feet of raw water (1994-1996), and 1995 water analysis report from Texas Water Commission.

**MCALLEN HISTORICAL DATA**

**City of McAllen  
McAllen Public Utilities  
Water Treatment Plant No. 1**

**High Service**

<b>1992</b>			
	<b>Max.</b>	<b>Min.</b>	<b>Avg.</b>
January	2,839	640	2,438
February	1,666	42	828
March	Plant Shutdown		
April	2,648	605	2,125
May	2,634	553	2,169
June	4,175	840	2,322
July	3,853	796	3,083
August	4,133	259	3,094
September	4,030	220	2,779
October	2,896	260	2,501
November	2,996	844	2,378
December	2,876	611	2,402

<b>1993</b>			
	<b>Max.</b>	<b>Min.</b>	<b>Avg.</b>
January	2,768	288	2,366
February	3,456	1,438	2,630
March	2,949	156	1,925
April	3,598	383	2,359
May	4,091	282	2,512
June	4,696	959	1,325
July	3,323	1,161	2,061
August	4,158	1,985	3,044
September	3,619	1,244	2,647
October	2,718	2,467	2,602
November	Plant Shutdown		
December	Plant Shutdown		

\*\* Water is measured in million gallons.

**City of McAllen  
McAllen Public Utilities  
Water Treatment Plant No. 1**

**Raw Water**

<b>1993</b>			
	<b>Max.</b>	<b>Min.</b>	<b>Avg.</b>
January	Plant Shutdown		
February	Plant Shutdown		
March	Plant Shutdown		
April	Plant Shutdown		
May	Plant Shutdown		
June	Plant Shutdown		
July	4,634	1,732	3,052
August	5,922	2,558	4,144
September	4,706	2,200	3,676
October	3,680	3,452	3,574
November	Plant Shutdown		
December	Plant Shutdown		

<b>1994</b>			
	<b>Max.</b>	<b>Min.</b>	<b>Avg.</b>
January	Plant Shutdown		
February	Plant Shutdown		
March	Plant Shutdown		
April	Plant Shutdown		
May	Plant Shutdown		
June	4,380	678	2,952
July	4,300	488	3,032
August	4,202	2,942	3,474
September	Plant Shutdown		
October	Plant Shutdown		
November	Plant Shutdown		
December	Plant Shutdown		

\*\* Water is measured in million gallons.

**City of McAllen  
McAllen Public Utilities  
Water Treatment Plant No. 1**

**High Service**

**1994**

	<b>Max.</b>	<b>Min.</b>	<b>Avg.</b>
January		<i>Plant Shutdown</i>	
February		<i>Plant Shutdown</i>	
March		<i>Plant Shutdown</i>	
April		<i>Plant Shutdown</i>	
May		<i>Plant Shutdown</i>	
June	3,006	648	1,830
July	3,049	252	2,254
August	3,411	2,100	2,810
September		<i>Plant Shutdown</i>	
October		<i>Plant Shutdown</i>	
November		<i>Plant Shutdown</i>	
December		<i>Plant Shutdown</i>	

**1995**

	<b>Max.</b>	<b>Min.</b>	<b>Avg.</b>
January		<i>Plant Shutdown</i>	
February		<i>Plant Shutdown</i>	
March	2,120	494	1,219
April	2,392	954	1,574
May	2,406	708	1,692
June	2,618	2,009	2,326
July	2,878	2,174	2,568
August	2,711	1,212	2,302
September	2,340	1,478	1,854
October	1,574	955	1,424
November	1,731	1,089	1,415
December	3,312	844	1,737

\*\* Water is measured in million gallons.

**City of McAllen  
McAllen Public Utilities  
Water Treatment Plant No. 1**

**Raw Water**

**1995**

	<b>Max.</b>	<b>Min.</b>	<b>Avg.</b>
January		<i>Plant Shutdown</i>	
February		<i>Plant Shutdown</i>	
March	2,686	1,025	1,981
April	3,140	1,432	2,498
May	4,237	1,997	2,944
June	3,770	3,390	3,599
July	3,655	3,310	3,525
August	3,640	2,154	3,282
September	3,234	2,094	2,486
October	2,180	1,004	1,982
November	2,225	1,528	2,036
December	2,790	882	2,094

\*\* Water is measured in million gallons.

	GALLONS WATER TREATED	GALLONS WATER BILLED	GALLONS WATER LOSS	DOLLARS WATER BILLED	DOLLARS WATER COLLECTED	MONTHLY DOLLAR DELINQ	SEWER TREATED GALLONS	SEWER DAILY AVERAGE	SEWER GALLONS BILLED	SEWER DOLLARS BILLED
OCTOBER	16,648,000	14,844,510	1,803,490	\$ 17,274.95			12,862,300	414,913	10,260,428	\$ 11,329.68
NOVEMBER	18,350,000	17,833,420	516,580	\$ 20,295.44			12,104,400	390,465	12,407,469	\$ 12,551.86
DECEMBER	21,894,000	11,496,600	10,397,400	\$ 15,693.10			12,732,900	410,739	7,973,670	\$ 9,887.18
JANUARY	20,686,000	16,271,370	4,414,630	\$ 20,497.12			13,518,700	436,087	11,207,252	\$ 11,974.98
FEBRUARY	20,179,000	13,591,200	6,587,800	\$ 17,807.25			11,297,500	403,482	9,560,734	\$ 10,868.45
MARCH	22,218,000	15,631,420	6,586,580	\$ 19,901.80			12,047,800	388,639	11,044,380	\$ 11,901.21
APRIL	25,655,000	16,908,950	8,746,050	\$ 21,187.72			15,674,400	522,480	11,829,357	\$ 12,346.08
MAY	28,453,000	19,052,200	7,664,150	\$ 23,664.13			13,976,000	450,838	13,614,266	13,985.4
JUNE	29,442,000	26,474,570	2,967,430	\$ 31,104.00			10,363,200	345,440	18,473,545	15,569.55
JULY	32,240,000	25,157,100	7,082,900	\$ 29,798.89			11,696,200	377,296	17,673,888	16,206.8
AUGUST	26,456,000	19,655,450		24,328,810			13,799,100	445,100	14,250,730	
SEPTEMBER										

178,420,190



ORDINANCE NO. 1995-32

AN ORDINANCE AMENDING THE CODE OF ORDINANCES OF THE CITY OF McALLEN CHAPTER 106, UTILITIES, ARTICLE III. WATER, DIVISION 5. SECTION 106-117. WATER CONSERVATION STAGES. BY PROVIDING FOR A SURCHARGE BASED ON WATER USAGE DURING CONSERVATION STAGES; PROVIDING FOR WATER ALLOCATION DURING SHORTAGES; AMENDING SECTION 106-118.; PROVIDING FOR PUBLICATION; PROVIDING FOR SEVERABILITY; AND ORDAINING OTHER PROVISIONS RELATED TO THE SUBJECT MATTER THEREOF.

NOW, THEREFORE, BE IT ORDAINED BY THE BOARD OF COMMISSIONERS OF THE CITY OF McALLEN, TEXAS, THAT:

SECTION I: The Code of Ordinances of the City of McAllen CHAPTER 106, UTILITIES, ARTICLE III. WATER, Division 5. Emergency Conservation, Section 106-117. **Water conservation stages.** is hereby amended to read as follows:

Sec. 106-117. **Water conservation stages.**

(a) No person shall knowingly make, cause, use or permit the use of water received from the city water and wastewater utilities for residential, commercial, industrial, agricultural, governmental or any other purpose in a manner contrary to any provision of this division, or in an amount in excess of that as permitted by the conservation stage in effect pursuant to action taken by the utility manager in accordance with the provisions of this division.

(b) The public utility department shall monitor the projected supply and demand for water by its customers on a daily basis and shall recommend to the public utility

board the extent of the conservation required through the implementation or termination of particular conservation stages in order for the department to prudently plan for and supply water to its customers. Thereafter, the public utility board, shall provide, by minute order, the appropriate stage of water conservation be implemented or terminated in accordance with the applicable provisions of this division, which such order shall be referred to the city commission for action. The city commission may pass a minute order implementing a conservation measure as recommended by the Board or as otherwise deemed appropriate, and such order shall be made by public announcement and shall be published in a newspaper in general circulation and shall become effective immediately upon such publication. Publication shall continue as necessary until such time as all restrictions are removed. In accordance with this section, the public utility board may recommend and the city commission may order the implementation of the following conservation stages:

- (1) *Stage 1. Voluntary conservation.* Customers of the city utility during stage 1 are requested to voluntarily limit the amount of water used to that amount absolutely necessary for health, business and irrigation. Notice of such request shall be given by the utility manager through appropriate circulars, television, radio and newspaper media at his discretion.
- (2) *Stage 2. Mandatory compliance--Water alert.* During stage 2, the following restrictions shall apply to all persons:
  - a. Irrigation utilizing individual sprinklers or sprinkler systems of lawns, gardens, landscaped areas, trees, shrubs and other plants is prohibited except on a designated day which shall be once every

other day, and only then between the hours of 6:00 p.m. to 10:00 a.m. Customers with odd addresses will water on odd days and customers with even numbers will water on even days. Irrigation of lawns, gardens, landscaped areas, trees, shrubs or other plants is permitted at any time if:

1. A handheld hose continuously hand held is used;
2. A handheld, faucet-filled bucket of five gallons or less is used; or
3. A drip irrigation system is used.

*Exception:* Commercial nurseries, commercial sod farmers, and similarly situated establishments are exempt from stage 2 irrigation restrictions, but will be requested to curtail all nonessential water use.

- b. The washing of automobiles, trucks, trailers, boats, airplanes and other types of mobile equipment is prohibited except on designated irrigation days between the hours of 6:00 p.m. to 10:00 a.m. Such washing, when allowed, shall be done with a handheld bucket or a handheld hose equipped with a positive shutoff nozzle for quick rinses.

*Exception:* Washing may be done at any time on the immediate premises of a commercial carwash or commercial service station. Further, such washing may be exempted from this division if the health, safety and welfare of the public is contingent upon frequent

vehicle cleaning, such as garbage trucks and vehicles to transport food and perishables.

- c. The washing or sprinkling of foundations is prohibited except on designated irrigation days between the hours of 8:00 p.m. and 12:00 midnight.
- d. The refilling or adding of water to residential swimming and/or wading pools is prohibited except on designated irrigation days between the hours of 8:00 p.m. to 10:00 a.m.
- e. The operation of any ornamental fountain or other structure making similar use of water is prohibited except for those fountains or structures with a recycling system.
- f. The use of water for irrigation for golf greens and tees is prohibited except on designated irrigation days between the hours of 6:00 p.m. to 10:00 a.m. The irrigation of golf course fairways is absolutely prohibited. Provided, however, any golf course utilizing wastewater effluent or raw water is excepted from the provisions of this division.
- g. Use of water from fire hydrants shall be limited to firefighting and related activities, and/or other governmental use activities necessary to maintain the health, safety and welfare of the citizens of the city.
- h. The following uses of water are defined as waste of water and are absolutely prohibited:

1. Allowing irrigation water to run off into a gutter, ditch or drain;
  2. Failure to repair a controllable leak;
  3. Washing sidewalks, driveways, parking areas, tennis courts, or other paved areas, except to alleviate immediate fire hazards.
- i. No bulk water sales shall be made from City or other sources for any purpose when such water will be transported by any tanker truck or similar type vehicle.

(3) *Stage 3. Mandatory compliance--Water warning.* During stage 3, the following restrictions shall apply to all persons. All elements of stage 2 shall remain in effect in stage 3 except that:

- a. All outdoor irrigation of vegetation shall occur once every five (5) days, only between the hours of 7:00 p.m. and 10:00 a.m. on designated days, such days for customer service will be designated by the utility manager. Irrigation, drip irrigation or handheld buckets is permitted at any time.
- b. The watering of golf fairway areas is prohibited unless done with treated wastewater, reused water, or well water.
- c. A water use surcharge shall be levied against all customers that use over 8,000 gallons per month. Those customers shall pay a ten percent (10%) surcharge for any water used over an amount equal to eighty percent (80%) of the maximum monthly consumption for

any one billing cycle out of the last twelve (12) months preceding the month in which a stage three designation is implemented.

(4) *Stage 4. Mandatory compliance--Water shortage.* During stage 4, the following restrictions shall apply to all persons. All elements of stage 3 shall remain in effect in stage 4 except that:

- a. All outdoor irrigation of vegetation shall be allowed only between the hours of 8:00 p.m. to 10:00 a.m. on designated days, which shall be every tenth (10th) day as established by the utility manager.
- b. The washing of automobiles, trucks, trailers, boats, airplanes, and other types of mobile equipment not occurring upon the immediate premises of commercial carwashes and commercial service stations and not in the immediate interest of the public health, safety and welfare shall be prohibited except on designated irrigation days and only on the owner's of such vehicles, etc. premises.
- c. Commercial carwashes and commercial service stations in the immediate interest of the public health, safety and welfare shall be limited to \_\_\_\_\_ percent of their monthly average usage based on the last twelve billing periods for each of such customer. After such usage, the utility manager shall enforce this subsection by terminating water service.
- d. Commercial nurseries, commercial sod farmers, and similarly situated establishments shall water only on designated days between the hours of 10:00 p.m. and 5:00 a.m. and shall use only handheld

hoses, drip irrigation systems, or handheld buckets.

- e. The filling, refilling or adding of water, except to maintain the structure integrity of the pool, to swimming and/or wading pools is prohibited.
  - f. The operation of any ornamental fountain or similar structure is prohibited.
  - g. A water use surcharge shall be levied against all customers that use over 8,000 gallons per month. Those customers shall pay a ten percent (10%) surcharge for any water used over an amount equal to sixty percent (60%) of the maximum monthly consumption for any one billing cycle out of the last twelve (12) months preceding the month in which a stage four designation is implemented.
- (5) *Stage 5. Mandatory compliance--Water shortage emergency.* During stage 5, the following restrictions shall apply to all persons. All elements of stage 4 shall remain in effect in stage 5 except that:
- a. No applications for new, additional, further expanded, or increased-in-size water service connections, meters, service lines, pipeline extensions, mains, or other water service facilities of any kind shall be allowed, approved or installed except as approved by the public utility board.
  - b. All allocations of water use to non-essential industrial and commercial customers shall be reduced to amounts as established by the public utility board.

- c. The maximum monthly water use allocation for residential customers may be established with revised rate schedules and penalties by the board of commissioners on recommendation by the public utility board.
- d. Irrigation is permitted only by:
  - 1. continuously handheld hoses;
  - 2. handheld or faucet filled bucket;
  - 3. drip irrigationduring the hours from 6:00 p.m. to 8:00 a.m., once every ten (10) days by a schedule established by the utility manager.
- e. The washing of automobiles, trucks, trailers, boats, airplanes, and other types of mobile equipment not occurring upon the immediate premises of commercial carwashes and commercial service stations and not in the immediate interest of the public health, safety and welfare shall be prohibited.
- f. A water use surcharge shall be levied against all customers that use over 8,000 gallons per month. Those customers shall pay a ten percent (10%) surcharge for any water used over an amount equal to fifty percent (50%) of the maximum monthly consumption for any one billing cycle out of the last twelve (12) months preceding the month in which a stage five designation is implemented.

(c) Nothing in this division shall prohibit the utility manager from taking, and he is hereby authorized to take, those actions deemed necessary to meet emergency



conditions resulting from unforeseen circumstances such as canal breakdown, pump failures, line ruptures, etc. Such actions shall remain in full force and effect until the situation causing such emergency is abated or until the public utility board shall have the opportunity to consider such matter.

SECTION II: The Code of Ordinances of the City of McAllen CHAPTER 106, UTILITIES, ARTICLE III. WATER, Division 5. Emergency Conservation, Section 106-118. **Penalty for violation of division.** is hereby amended to read as follows:

**Sec. 106-118. Penalty for violation of division.**

(a) Any person violating any provision of this division after order and notice as specified in this division shall be deemed guilty of an offense, and, upon conviction, shall be punished as prescribed in section 1-14, provided, however, a first offense of this division shall be punishable by a fine of not to exceed \$200.00. The violation of each provision of this division, and each separate violation thereof, shall be deemed a separate offense, and shall be punished accordingly. Provided, however, compliance may be further sought through injunctive relief in the district court.

(b) The police department may issue citations for violations of this article, which citations shall be of the same force and effect as a citation issued under Section 62-1. of the Code.

(c) The utility department personnel may issue citations for violations of this division which will provide that if a person fails to answer such citation, that a municipal court complaint will be sworn to upon a failure to respond to the citation.

(d) Upon continuous violations of any mandated stage, the utility manager may provide for a notice of discontinuation of water service for deferred periods. Anyone

receiving such notice may appeal the same to the utility board by giving written notice therefore, within forty-eight (48) hours of receipt of notice of disconnection. Prior to the reconnection of service, the standard reconnection fee shall be paid.

SECTION III: This ordinance shall become effective immediately upon its passage and execution in accordance with the law.

SECTION IV: The City Secretary of the City of McAllen is hereby authorized and directed to cause the contents of Sections I and II hereof to be published, added and/or deleted in the appropriate location in the Code of Ordinances of the City of McAllen.

SECTION V: The City Secretary is hereby authorized and directed to cause the caption of this ordinance to be published in a newspaper having general circulation in McAllen, Texas in accordance with the provisions of the Code of Ordinances of the City of McAllen, Section 2-56. **Publication of ordinances.**

SECTION VI: If any part or parts of this Ordinance are found to be invalid or unconstitutional by a court having competent jurisdiction, then such invalidity or unconstitutionality shall not affect the remaining parts hereof and such remaining parts shall remain in full force and effect, and to that extent this Ordinance is considered severable.

CONSIDERED, PASSED and APPROVED this 12th day of June, 1995, at a regular meeting of Board Commissioners of the City of McAllen, Texas, at which quorum was present and which was held in accordance with Chapter 551 of the Texas Government Code.

SIGNED this 12th day June, 1995.

CITY OF McALLEN

By: Othal E. Brand Sr.  
Othal E. Brand, Sr., Mayor

ATTEST:

Leticia M. Vacek  
Leticia M. Vacek, City Secretary

Approved as to form:

James E. Darling  
James E. Darling, City Attorney

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**DIVISION 3. RATES AND CHARGES**

**Sec. 106-81. Rate schedules established.**

There are hereby established three schedules of rates to be charged for the consumption of water supplied through the city water system, as follows:

- (1) Standard water rate schedule within the city:
  - a. Standard water rate for single-family, commercial and industrial water users;
  - b. Standard water rate for multifamily water users.
- (2) Standard water rate schedule outside the city.
- (3) Fire hydrant rate schedule.  
(Code 1966, § 30-26)

**Sec. 106-82. Standard water rate schedule within the city.**

(a) Except as provided by subsections (b) and (c) below, the rate to be charged for water furnished and consumed by single-family residence, commercial and industrial customers is as follows:

First 2,000 gallons per month, or less .....	\$4.10
Everything over 2,000 gallons, per month, each additional 1,000 gallons or any part thereof...	0.96

(b) Provided, that minimum monthly charges shall be made, and bills rendered accordingly, on all commercial, master metered multifamily, and industrial accounts as follows:

*Minimum Monthly Charge:*

For ¾-inch or less meter connection .....	\$ 4.10
For 1-inch meter connection .....	8.39
For 1½-inch meter connection ...	17.70
For 2-inch meter connection .....	23.57
For 3-inch meter connection .....	35.39

For 4-inch meter connection .....	47.14
For 6-inch meter connection .....	91.55

(c) Provided that the monthly charges shall be made, and bills rendered accordingly on all accounts located or to be located on or after May 1, 1995, in the areas covered by Sharyland Water Supply Corporation's Certificate of Convenience and Necessity buyout Phase I and Phase II Area I as shown in the agreements between the McAllen Public Utility Board and Sharyland Water Supply Corporation covering the same, as follows;

- (1) Residential connection (½" or ¾" meter):
  - 0 to 3,000 gallons .....
- (2) Commercial connection (½" or ¾" meter):
  - 0 to 3,000 gallons .....
- (3) Meters larger than ½" or ¾":
  - 1" meter, 0 to 3,000 gallons ..
  - 2" meter, 0 to 3,000 gallons ..
  - 3" meter, 0 to 3,000 gallons ..
  - 4" meter, 0 to 3,000 gallons ..
  - 6" meter, 0 to 3,000 gallons ..

(4) Charge per 1,000 gallons, after the first 3,000 gallons of usage, for both residential and commercial connections:

<i>Per Thousand Gallons</i>	
3,000 to 6,000 gallons .....	\$1.50
6,001 to 50,000 gallons .....	1.25
50,001 to 100,000 gallons....	1.50
100,001 to 150,000 gallons...	1.75
All over 150,000 gallons .....	2.00

(d) The penalties and/or remedies provided in division 2 of this article apply to any violation of the provisions of this section. Such penalties or remedies are not exclusive and it is expressly provided that any remedies available by law to the city to enforce the provisions of this section are also applicable to violations of the provisions of this section.

(Code 1966, § 30-27; Ord. No. 1993-08, § I, 2-8-93; Ord. No. 1994-86, § I, 11-28-94; Ord. No. 1995-26, § I, 5-22-95)

**Sec. 106-83. Standard water rate schedule outside the city.**

All customers connected to and using water from the public utility system outside the city limits shall be charged on the schedule of rates set forth in section 106-82 plus an additional charge of 50 percent of the total water bill. (Code 1966, § 30-29)

**Sec. 106-84. Fire hydrant rate.**

Water shall be furnished and made available to the city for fire hydrants at a charge of \$3.00 per hydrant per month. (Code 1966, § 30-30)

**Sec. 106-85. Deposit required.**

(a) A security deposit shall be required for all residential water customers in the amounts as approved by minute order, from time to time, by the board of commissioners and as recommended by the McAllen Public Utility Board. This deposit shall be required for all new accounts as provided for in this section, save and except for any existing customer of the water system who shall transfer an account from one location to another or who shall request additional account(s) to be established under such person's name; provided that such customer has not been in default for payment of the utility bills for the prior two years immediately preceding the transfer of or establishment of any new account. Any such customer paying any deposit as provided for in this section and who shall under the same account maintain such account without delinquency for a continuous two-year period from the date of deposit shall be entitled to a refund of such deposit.

(b) The security deposit should not only cover the water account billing of such customers, but shall also be pro rated among the sewer amounts due and outstanding and the garbage collection service amounts due and outstanding for any account relating to such security deposit. (Code 1966, § 30-27.1; Ord. No. 1992-86, § I, 11-9-92; Ord. No. 1994-57, § I, 8-22-94)

**Sec. 106-86. Meter testing.**

Any customer of the water system may have the meter serving such customer tested by the public

utility department once per year without charge to the customer. Except as provided for in this section, any request for testing of meters at a shorter interval than one year shall be paid for by the customer requesting such test and the fee therefor shall be \$25.00 per test. If any test required to be paid for by the customer results in a finding that such meter is defective to an extent that it creates a substantial disadvantage to the consumer, then the fee to be paid by the consumer shall be waived. The term "substantial disadvantage" as used in this section shall mean that the water charge calculated based on the original meter reading resulted in a 25 percent or greater overcharge to the customer. The one-year period for determining the duration for free meter reading shall commence for all existing customers on the effective date of the ordinance adopting this section and for all future customers commencing on the date of installation of the meter.

(Code 1966, § 30-28)

**Sec. 106-87. Tapping charges.**

The following charges shall be made by the public utilities as tapping fees for making connections for the use of any water user:

For ¾-inch tap ..... \$160.00

For all other size taps, the tapping charge shall be based upon the current cost of the meter, required materials, and labor therefor. (Code 1966, § 30-31)

**Sec. 106-88. Reserve for depreciation.**

There has heretofore been created a reserve for depreciation which has been set aside as a separate fund called the reserve for depreciation—water. Out of the amounts collected monthly as a result of the application of the rates set out in section 106-82, an amount equal to 1/12 of 50 percent of the amount contained in the city public utilities, water fund, annual budget for each succeeding fiscal year, as a reserve for depreciation, shall be set aside in such reserve for depreciation—water fund. Such fund is an account (line item) in the budget for the city water system. All expenditures from the reserve for depreciation shall be for replacement items only and either be budgeted or approved by the board of trustees of the

lines of the city, including storm sewer lines if such lines are used for the purpose of disposing of wastes, cooling water, etc. The schedule of such charges shall be as follows:

- (1) *Residential uses.* \$8.00 per account for administrative charges and other fixed costs as a minimum monthly bill plus \$0.2245 per 1,000 gallons or part thereof of metered water according to water billing. For the purpose of determining whether or not the rates in this subsection apply to the use being made of a specific piece of property, "residential unit" is defined as follows: Any room or group of rooms located within a structure and forming a single habitable unit with facilities which may be used for living, sleeping, cooking and eating.
- (2) *Commercial and industrial uses (all uses other than residential).* \$8.00 per account for administrative charges and other fixed cost as a minimum monthly bill plus \$0.2887 per 1,000 gallons or part thereof of metered water according to water billing.
- (3) *Industrial uses.* \$8.00 per account for administrative charges and other fixed costs plus \$0.3208 per 1,000 gallons of metered water according to water billing. For the purpose of determining whether or not the rates of this subsection apply to the use being made of a specific piece of property. "Industrial use" is defined as follows: Manufacturing, assembly or processing of a commodity or commodities from the development of natural resources or components thereof, and resulting in trade or distribution of products on a wholesale level.
- (4) *Classification as industrial use.* Classification of accounts as industrial in the city and the placing of such accounts in a specific level for computing the sewer bill was done by actual inspection of the businesses currently classified as industrial, as of the time of the passage of this division, and estimating their relationship to all other accounts, based on the amount of sewage sent to the plant for treatment in relation to the water used by the account.
- (5) *Use classification is determined by the utility manager.* The utility manager will be responsible for determining the classification of uses for the purpose of applying the rates set out in this section to the effluent discharged by such uses, based on the definitions contained in this section. Should a sewer account or its representative disagree with the classification for sewer rate purposes in which its account is placed, then anyone representing any sewer account shall have the right to petition the public utility board for a recommendation to the board of commissioners for a change in classification, should such representative feel that the characteristics of his specific use make the load actually placed on the sewer system more properly addressed in another classification for billing purposes.
- (6) *Metered accounts.* Nothing in this division shall be construed to prevent the installation of a meter to actually meter the effluent being discharged into the sewer system, if such meter is approved by utility manager and its installation is also approved by the city engineer. The bill for a metered sewer account shall be computed as follows: \$8.00 per account for administrative charge and other fixed cost plus \$0.91 per 1,000 gallons of metered sewage.
- (7) *Septic tank waste disposal fees.*
  - a. 0—100 gallons: \$8.00.
  - b. Each subsequent 100 gallons or part thereof: \$0.50.

All disposal of septic waste generated from sources outside the city limits shall be subject to a 50 percent surcharge of the applicable rate.  
(Code 1966, § 30-68; Ord. No. 1994-86, § II, 11-28-94; Ord. No. 1995-8, § I, 2-13-95)

#### **Sec. 106-167. Reserve for depreciation.**

Out of the amounts collected monthly as a result of the application of the rates set out in section 106-166, an amount equal to \$25,000.00 per month for the remainder of fiscal year 1981—82 and an amount equal to  $\frac{1}{12}$  of 50 percent of the amount contained in the city public utilities, sewer fund annual budget for each succeeding fiscal

**SHARYLAND WATER SUPPLY CORPORATION  
HISTORICAL DATA**

Name of System: SHARYLAND WATER SUPPLY CORP. PWS ID No.: 1080033  
 Name of Plant: 1 Month/Year: JANUARY 1994 Number of Connections: 9781  
 or Plant No.: \_\_\_\_\_

DATE	RAW WATER PUMPAGE (MGD)	TREATED WATER PUMPAGE (MGD)	RAW WATER ANALYSES			DISINFECTION PROCESS DATA			FINISHED WATER ANALYSES									
			NTU	pH	Alk	D1	D2	D3	pH	Alk	TURBIDITY						DISINFECTANT	
											1	2	3	4	5	6	Lowest Residual	Time †
1	2932.8	2745.0	13.0	7.9	102	.3	X	X	7.6	77	0.2	0.2	0.2	0.2	0.2	0.2	3.6	
2	3127.2	3017.0	11.0	7.9	95	.3	X	X	7.5	78	0.2	0.2	0.2	0.2	0.2	0.2	3.9	
3	3393.6	3400.0	12.0	8.0	95	.3	X	X	7.7	75	0.2	0.2	0.2	0.2	0.2	0.2	2.6	
4	3484.8	3514.8	13.0	8.0	95	.3	X	X	7.6	70	0.2	0.2	0.2	0.2	0.2	0.2	2.6	
5	3446.4	3339.5	13.0	8.0	102	.3	X	X	7.7	83	0.1	0.1	0.2	0.1	0.3	0.3	2.6	
6	3444.0	3420.4	15.0	8.0	105	.3	X	X	7.8	78	0.1	0.1	0.2	0.2	0.2	0.2	2.6	
7	3660.0	3687.6	14.0	8.0	105	.4	X	X	7.5	77	0.2	0.2	0.2	0.2	0.2	0.2	2.8	
8	3638.4	2910.8	11.0	7.9	105	.3	X	X	7.5	78	0.2	0.2	0.3	0.2	0.2	0.2	3.2	
9	3672.0	3766.4	12.0	7.9	106	.4	X	X	7.6	80	0.2	0.2	0.2	0.2	0.2	0.2	3.2	
10	3496.8	3651.0	14.0	7.8	104	.3	X	X	7.6	75	0.2	0.1	0.2	0.2	0.2	0.3	3.0	
11	3619.2	3790.5	15.0	7.9	105	.3	X	X	7.6	79	0.2	0.2	0.2	0.3	0.2	0.2	2.6	
12	3652.8	3618.0	15.0	7.9	110	.3	X	X	7.7	80	0.2	0.2	0.2	0.2	0.2	0.2	2.6	
13	3396.0	3285.6	18.0	7.8	101	.3	X	X	7.6	78	0.2	0.2	0.2	0.2	0.2	0.2	2.6	
14	3007.2	2815.6	14.0	8.0	98	.3	X	X	7.7	78	0.2	0.2	0.2	0.2	0.2	0.2	2.6	
15	2932.8	3021.4	12.0	7.9	105	.3	X	X	7.6	80	0.2	0.2	0.2	0.2	0.2	0.2	2.6	
16	3213.6	3343.9	10.0	8.0	109	.3	X	X	7.6	85	0.2	0.2	0.2	0.2	0.3	0.3	2.6	
17	3489.6	3704.4	14.0	7.9	106	.4	X	X	7.5	75	0.2	0.2	0.2	0.2	0.2	0.2	2.8	
18	2961.6	2898.0	15.0	8.0	104	.3	X	X	7.6	79	0.2	0.2	0.2	0.2	0.3	0.2	3.0	
19	3420.0	3622.0	16.0	7.9	105	.3	X	X	7.6	80	0.2	0.2	0.2	0.2	0.2	0.2	3.2	
20	3360.0	3492.4	15.0	7.9	109	.3	X	X	7.5	84	0.2	0.2	0.2	0.2	0.2	0.2	3.4	
21	3007.2	3280.0	15.0	7.8	105	.3	X	X	7.6	80	0.2	0.2	0.2	0.2	0.3	0.2	3.2	
22	2748.0	2842.6	13.0	7.9	105	.3	X	X	7.6	85	0.2	0.2	0.2	0.2	0.2	0.2	3.4	
23	2944.8	3076.1	12.0	8.0	105	.3	X	X	7.7	86	0.2	0.2	0.2	0.2	0.2	0.2	3.4	
24	3201.6	3282.7	8.0	7.9	105	.3	X	X	7.6	85	0.2	0.2	0.2	0.2	0.2	0.2	3.6	
25	3420.0	3543.0	11.0	8.0	110	.3	X	X	7.7	85	0.2	0.2	0.2	0.2	0.2	0.2	3.6	
26	3487.2	3251.7	12.0	8.0	99	.3	X	X	7.7	89	0.2	0.2	0.2	0.2	0.2	0.2	3.4	
27	3192.0	3157.7	12.0	8.0	100	.3	X	X	7.7	82	0.2	0.2	0.2	0.2	0.2	0.2	3.5	
28	3372.0	3080.9	14.0	7.9	108	.3	X	X	7.6	85	0.2	0.2	0.2	0.2	0.2	0.2	3.4	
29	2688.0	2501.5	15.0	8.0	108	.3	X	X	7.7	85	0.2	0.2	0.2	0.2	0.2	0.2	3.4	
30	2760.0	2738.8	13.0	8.0	110	.3	X	X	7.7	88	0.2	0.2	0.2	0.2	0.2	0.2	3.2	
31	3468.0	3902.7	9.0	7.9	104	.3	X	X	7.7	89	0.1	0.1	0.2	0.2	0.2	0.2	3.5	
TOTAL	101637.6	101702.0	Disinfectant No. 1: C102			Total No. of Turbidity Readings: 186												
AVG	3287.6	3280.7	Disinfectant No. 2: N/A			No. above 0.5 NTU: 0						No. above 1.0 NTU: 0						
MAX	3672.0	3902.7	Disinfectant No. 3: N/A			* NOTE: ONLY use the "TIME" column to show the length of time that the disinfectant residual entering the distribution system fell below acceptable levels.												
MIN	2688.0	2501.5	Distribution Disinfectant: N/A															

Submitted by: James Robert Date: 2-9-94

ADDITIONAL REPORTING REQUIREMENTS ON THE FRONT OF THIS FORM



Name of System: SHARYLAND WATER SUPPLY CORP.

PWS ID No.: 1080033

Name of Plant or Plant No.: 1

Month/Year: Feb. -94

Number of Connections: 9825

DATE	RAW WATER PUMPAGE (MGD)	TREATED WATER PUMPAGE (MGD)	RAW WATER ANALYSES			DISINFECTION PROCESS DATA			FINISHED WATER ANALYSES									
			NTU	pH	Alk	O1	O2	O3	pH	Alk	TURBIDITY						DISINFECTANT	
											1	2	3	4	5	6	Lowest Residual	Time <sup>+</sup>
1	3148.8	3012.2	9.0	7.9	103	.3	X	X	7.6	86	0.1	0.1	0.2	0.2	0.2	0.2	3.0	
2	2966.4	2753.6	11.0	7.9	100	.3	X	X	7.7	84	0.2	0.2	0.2	0.2	0.2	0.2	3.4	
3	3192.0	3066.7	13.0	7.9	98	.5	X	X	7.6	82	0.2	0.2	0.2	0.2	0.2	0.2	3.5	
4	3120.0	2873.2	13.0	7.9	109	.6	X	X	7.7	88	0.2	0.2	0.2	0.2	0.2	0.3	3.8	
5	2988.0	2914.5	14.0	7.9	110	.4	X	X	7.7	85	0.2	0.2	0.2	0.2	0.3	0.3	3.8	
6	3216.0	3453.0	10.0	8.0	110	.4	X	X	7.6	85	0.2	0.2	0.2	0.2	0.2	0.2	3.0	
7	3679.2	3852.5	10.0	7.9	112	.3	X	X	7.6	89	0.2	0.2	0.2	0.2	0.2	0.2	3.4	
8	3499.2	3668.3	16.0	7.9	110	.3	X	X	7.7	87	0.2	0.2	0.2	0.2	0.2	0.2	3.4	
9	3722.4	4031.2	15.0	8.0	108	.3	X	X	7.6	89	0.2	0.2	0.2	0.2	0.2	0.2	3.4	
10	3888.0	4199.8	20.0	8.0	113	.3	X	X	7.6	85	0.2	0.2	0.2	0.2	0.2	0.2	3.5	
11	3405.6	3642.0	16.0	8.0	112	.3	X	X	7.7	89	0.2	0.2	0.2	0.2	0.2	0.2	3.4	
12	3240.0	3488.4	15.0	8.0	108	.3	X	X	7.8	86	0.2	0.2	0.2	0.2	0.2	0.2	3.4	
13	3724.8	3857.0	17.0	7.9	106	.3	X	X	7.6	86	0.2	0.2	0.2	0.2	0.2	0.2	3.2	
14	3249.6	3495.7	15.0	8.0	108	.3	X	X	7.8	89	0.2	0.2	0.2	0.2	0.2	0.2	3.4	
15	3607.2	3778.8	14.0	8.0	106	.5	X	X	7.7	86	0.2	0.2	0.2	0.2	0.2	0.2	3.0	
16	3432.0	2295.2	14.0	8.0	110	.6	X	X	7.6	88	0.2	0.1	0.2	0.2	0.2	0.2	3.0	
17	3249.6	3113.0	15.0	8.0	101	.9	X	X	7.7	89	0.2	0.2	0.2	0.2	0.2	0.2	2.6	
18	3650.4	3626.7	16.0	7.9	108	.5	X	X	7.6	87	0.2	0.2	0.2	0.2	0.2	0.2	2.6	
19	3254.4	3326.9	14.0	7.9	102	.4	X	X	7.7	89	0.2	0.3	0.2	0.2	0.2	0.2	2.6	
20	3600.0	4067.4	8.0	8.0	110	.4	X	X	7.6	94	0.2	0.2	0.2	0.2	0.2	0.2	2.6	
21	3974.4	4075.7	13.0	7.8	108	.2	X	X	7.6	96	0.2	0.3	0.2	0.2	0.2	0.2	2.6	
22	4152.0	4299.1	17.0	7.9	113	.4	X	X	7.7	96	0.2	0.2	0.2	0.2	0.2	0.2	2.6	
23	4380.0	4560.7	18.0	7.8	109	.4	X	X	7.5	88	0.2	0.2	0.2	0.2	0.2	0.2	2.6	
24	3259.2	3328.1	19.0	7.9	112	.4	X	X	7.6	90	0.2	0.2	0.2	0.2	0.2	0.2	2.6	
25	3952.8	4267.9	14.0	7.9	108	.4	X	X	7.7	90	0.2	0.2	0.2	0.2	0.2	0.2	2.6	
26	3885.6	3942.3	15.0	8.0	111	.4	X	X	7.7	95	0.2	0.2	0.2	0.2	0.2	0.2	2.6	
27	3489.6	3323.6	14.0	7.9	115	.4	X	X	7.6	94	0.2	0.2	0.2	0.2	0.2	0.2	2.6	
28	3206.4	3248.1	15.0	7.8	114	.4	X	X	7.6	95	0.2	0.2	0.2	0.2	0.2	0.2	2.6	
29																		
30																		
31																		
TOTAL	98133.6	99561.6	Disinfectant No. 1: <u>CL02</u>			Total No. of Turbidity Readings: <u>168</u>												
AVG	3504.8	3555.8	Disinfectant No. 2: <u>N/A</u>			No. above 0.5 NTU: <u>0</u> No. above 1.0 NTU: <u>0</u>												
MAX	4380.0	4560.7	Disinfectant No. 3: <u>N/A</u>			* NOTE: ONLY use the "TIME" column to show the length of time that the disinfectant residual entering the distribution system fell below acceptable levels.												
MIN	2966.4	2753.6	Distribution Disinfectant: <u>N/A</u>															

Submitted by: James Robert

Date: 2/28/94

Name of System: SHARYLAND WATER SUPPLY CORPORATION PWS ID No.: 1080033  
 Name of Plant or Plant No.: 1 Month/Year: MARCH 1994

Number of Connections: 9870

DATE	RAW WATER PUMPAGE (MGD)	TREATED WATER PUMPAGE (MGD)	RAW WATER ANALYSES			DISINFECTION PROCESS DATA			FINISHED WATER ANALYSES									
			NTU	pH	Alk	D1	D2	D3	pH	Alk	TURBIDITY						DISINFECTANT	
											1	2	3	4	5	6	Lowest Residual	Time*
1	2952.0	2808.8	10.0	7.9	115	.3	X	X	7.6	97	0.3	0.2	0.2	0.2	0.2	0.2	2.6	
2	3600.0	3793.4	14.0	7.9	118	.3	X	X	7.6	94	0.2	0.2	0.2	0.2	0.2	0.2	2.6	
3	3720.0	4359.3	15.0	8.0	119	.3	X	X	7.6	102	0.2	0.2	0.2	0.2	0.3	0.2	2.6	
4	4382.4	4286.4	14.0	8.0	116	.3	X	X	7.6	97	0.2	0.2	0.2	0.2	0.3	0.3	2.8	
5	4104.0	4265.2	14.0	7.9	115	.4	X	X	7.7	96	0.3	0.3	0.3	0.3	0.3	0.3	2.8	
6	4389.6	4645.6	14.0	7.9	115	.4	X	X	7.6	96	0.2	0.2	0.2	0.2	0.2	0.2	2.8	
7	4423.2	4714.5	14.0	7.9	117	.3	X	X	7.6	98	0.2	0.2	0.2	0.2	0.2	0.2	2.8	
8	4351.2	4682.9	14.0	7.9	116	.3	X	X	7.6	96	0.2	0.2	0.2	0.2	0.2	0.2	2.9	
9	4176.0	4320.6	14.0	7.9	115	.3	X	X	7.6	99	0.2	0.2	0.2	0.2	0.2	0.2	5.0	
10	3240.0	3313.2	15.0	7.9	114	.3	X	X	7.6	98	0.2	0.2	0.2	0.2	0.2	0.2	3.5	
11	4406.4	4609.3	14.0	7.9	118	.3	X	X	7.5	98	0.3	0.3	0.2	0.2	0.2	0.2	3.5	
12	3969.6	3858.3	13.0	7.9	116	.3	X	X	7.6	97	0.2	0.2	0.2	0.2	0.2	0.2	3.2	
13	4425.6	4593.2	14.0	7.9	115	.3	X	X	7.7	95	0.2	0.2	0.2	0.2	0.2	0.2	3.0	
14	4396.8	3875.8	14.0	7.9	116	.3	X	X	7.6	97	0.2	0.2	0.2	0.2	0.2	0.2	2.2	
15	3235.2	3250.6	11.0	7.8	118	.3	X	X	7.5	94	0.2	0.2	0.2	0.2	0.2	0.2	2.3	
16	2968.8	2770.5	15.0	7.9	119	.3	X	X	7.7	97	0.1	0.1	0.1	0.2	0.2	0.2	2.6	
17	3120.0	3222.0	18.0	7.8	117	.3	X	X	7.6	93	0.1	0.1	0.1	0.1	0.1	0.2	2.7	
18	3717.6	3323.3	14.0	7.9	113	.3	X	X	7.6	96	0.1	0.1	0.1	0.1	0.1	0.1	2.9	
19	3480.0	3745.4	14.0	7.8	117	.3	X	X	7.6	95	0.1	0.1	0.1	0.2	0.2	0.2	2.8	
20	3636.0	3744.3	12.0	7.9	114	.3	X	X	7.6	98	0.1	0.1	0.2	0.2	0.1	0.1	2.6	
21	4104.0	4187.3	9.0	7.9	109	.3	X	X	7.6	78	0.1	0.2	0.2	0.2	0.2	0.2	2.7	
22	4206.6	4454.2	15.0	7.9	114	.3	X	X	7.7	92	0.2	0.2	0.2	0.2	0.2	0.2	2.7	
23	4501.8	4219.7	10.0	7.9	112	.3	X	X	7.6	96	0.2	0.2	0.2	0.2	0.2	0.2	2.8	
24	4496.9	4341.9	13.0	8.0	115	.3	X	X	7.8	89	0.2	0.2	0.2	0.2	0.2	0.2	2.6	
25	4255.8	4412.7	14.0	7.9	113	.3	X	X	7.7	87	0.2	0.2	0.2	0.2	0.2	0.2	2.9	
26	4218.9	4161.3	14.0	7.9	117	.3	X	X	7.6	92	0.2	0.2	0.2	0.2	0.2	0.2	2.8	
27	4674.0	4549.4	18.0	7.9	112	.3	X	X	7.6	96	0.2	0.2	0.2	0.2	0.2	0.2	2.9	
28	5043.0	4912.4	16.0	7.9	115	.3	X	X	7.6	92	0.2	0.2	0.2	0.2	0.2	0.2	2.6	
29	4280.4	4200.5	16.0	7.9	114	.3	X	X	7.7	88	0.2	0.2	0.2	0.2	0.2	0.2	2.8	
30	4489.5	4599.7	17.0	7.9	115	.3	X	X	7.6	88	0.2	0.2	0.1	0.1	0.2	0.2	3.0	
31	4489.5	4660.2	18.0	8.0	116	.3	X	X	7.8	96	0.2	0.2	0.2	0.2	0.2	0.2	2.6	
TOTAL	125454.8	127382.0	Disinfectant No. 1: <u>CLO2</u>			Total No. of Turbidity Readings: <u>186</u>												
AVG	4046.9	4109.1	Disinfectant No. 2: <u>N/A</u>			No. above 0.5 NTU: <u>0</u> No. above 1.0 NTU: <u>0</u>												
MAX	5043.0	4912.4	Disinfectant No. 3: <u>N/A</u>			* NOTE: ONLY use the "TIME" column to show the length of time that the disinfectant residual entering the distribution system fell below acceptable levels.												
MIN	2952.0	2770.5	Distribution Disinfectant: <u>N/A</u>															

Submitted by: James P. Pitt Date: 3-31-94

Name of System: SHARYLAND WATER SUPPLY CORPORATION PWS ID No.: 1080033  
 Name of Plant or Plant No.: 1 Month/Year: 4-94 Number of Connections: 9928

DATE	RAW WATER PUMPAGE (MGD)	TREATED WATER PUMPAGE (MGD)	RAW WATER ANALYSES			DISINFECTION PROCESS DATA			FINISHED WATER ANALYSES									
			NTU	pH	Alk	D1	D2	D3	pH	Alk	TURBIDITY						DISINFECTANT	
											1	2	3	4	5	6	Lowest Residual	Time †
1	4305.0	4381.0	15.0	7.9	113	.3	X	X	7.6	89	0.2	0.1	0.2	0.2	0.2	0.2	2.6	
2	4317.3	4440.4	13.0	7.9	115	.3	X	X	7.6	92	0.2	0.2	0.1	0.2	0.1	0.1	2.6	
3	4710.9	4595.4	10.0	8.0	112	.3	X	X	7.6	94	0.1	0.1	0.1	0.1	0.1	0.1	2.7	
4	4428.0	4496.4	8.0	7.9	113	.3	X	X	7.7	93	0.1	0.1	0.1	0.1	0.1	0.1	2.6	
5	5485.8	5257.8	19.0	7.9	115	.3	X	X	7.7	92	0.1	0.1	0.1	0.1	0.1	0.1	2.9	
6	5289.0	5196.9	18.0	7.9	114	.3	X	X	7.6	94	0.1	0.1	0.1	0.1	0.2	0.2	2.6	
7	4514.1	4530.5	18.0	8.0	115	.3	X	X	7.8	94	0.1	0.1	0.2	0.2	0.2	0.2	2.7	
8	4920.0	4690.0	19.0	7.9	109	.3	X	X	7.7	92	0.2	0.2	0.2	0.1	0.1	0.1	2.6	
9	5227.5	4832.8	16.0	7.9	111	.3	X	X	7.7	86	0.2	0.2	0.1	0.2	0.2	0.2	3.0	
10	5485.8	5197.6	14.0	7.9	112	.3	X	X	7.7	89	0.2	0.2	0.2	0.2	0.2	0.2	2.6	
11	5904.0	5517.5	23.0	7.9	107	.3	X	X	7.6	76	0.2	0.2	0.2	0.2	0.1	0.1	2.6	
12	5904.0	5672.2	26.0	7.9	109	.3	X	X	7.6	82	0.2	0.2	0.2	0.2	0.2	0.2	3.0	
13	4482.1	4060.0	18.0	8.0	107	.3	X	X	7.8	87	0.2	0.2	0.2	0.2	0.2	0.2	3.0	
14	4214.0	4868.6	20.0	7.9	109	.3	X	X	7.6	82	0.2	0.2	0.2	0.2	0.2	0.2	2.7	
15	4214.0	4439.7	14.0	8.0	111	.3	X	X	7.6	84	0.2	0.2	0.2	0.2	0.2	0.2	2.6	
16	4489.5	4745.1	16.0	8.0	115	.3	X	X	7.6	82	0.2	0.2	0.2	0.2	0.2	0.2	2.6	
17	4710.9	3168.0	14.0	8.0	115	.3	X	X	7.6	86	0.2	0.2	0.2	0.2	0.2	0.2	2.6	
18	3936.0	3839.3	13.0	8.0	113	.3	X	X	7.6	90	0.2	0.2	0.2	0.2	0.2	0.2	2.6	
19	4206.6	4142.6	13.0	8.0	113	.3	X	X	7.6	89	0.2	0.2	0.2	0.2	0.2	0.2	2.6	
20	4501.8	4598.0	14.0	7.9	110	.3	X	X	7.6	92	0.2	0.2	0.2	0.2	0.2	0.2	2.6	
21	4044.2	4305.5	13.0	7.9	108	.3	X	X	7.6	89	0.2	0.2	0.2	0.2	0.2	0.2	2.6	
22	4563.3	4593.2	14.0	8.0	110	.3	X	X	7.6	90	0.2	0.2	0.2	0.2	0.2	0.2	2.6	
23	4305.0	4396.7	14.0	8.0	110	.3	X	X	7.6	89	0.3	0.3	0.3	0.3	0.3	0.3	2.6	
24	4710.9	4676.8	15.0	8.0	111	.3	X	X	7.6	86	0.3	0.3	0.3	0.3	0.3	0.3	2.6	
25	5239.8	5171.0	18.0	8.0	114	.3	X	X	7.6	92	0.3	0.3	0.3	0.3	0.3	0.3	2.6	
26	5264.4	5166.3	22.0	7.9	112	.3	X	X	7.6	89	0.3	0.3	0.3	0.3	0.3	0.3	3.2	
27	5237.3	5313.6	21.0	8.0	109	.3	X	X	7.6	96	0.3	0.3	0.2	0.2	0.2	0.2	3.2	
28	5242.3	5281.4	20.0	7.9	108	.3	X	X	7.5	95	0.2	0.2	0.2	0.2	0.2	0.2	3.4	
29	5276.7	5145.5	29.0	7.9	110	.3	X	X	7.5	82	0.2	0.2	0.2	0.2	0.2	0.2	3.4	
30	4538.7	4944.1	28.0	8.0	110	.3	X	X	7.6	90	0.2	0.2	0.2	0.2	0.2	0.2	3.0	
31																		
TOTAL	143668.9	141663.9	Disinfectant No. 1: <u>CL02</u>			Total No. of Turbidity Readings: <u>180</u>												
AVG	4789.0	4721.1	Disinfectant No. 2: <u>N/A</u>			No. above 0.5 NTU: <u>0</u> No. above 1.0 NTU: <u>0</u>												
MAX	5904.0	4722.1	Disinfectant No. 3: <u>N/A</u>			* NOTE: ONLY use the "TIME" column to show the length of time that the disinfectant residual entering the distribution system fell below acceptable levels.												
MIN	3936.0	3168.0	Distribution Disinfectant: <u>N/A</u>															

Submitted by: James R. Ralston Date: 4/30/94

ADDITIONAL REPORTING REQUIREMENTS ON THE FRONT OF THIS FORM

Name of System: SHARYLAND WATER SUPPLY CORPORATION PWS ID No.: 1080033  
 Name of Plant or Plant No.: 1 Month/Year: 5/94 Number of Connections: 9980

DATE	RAW WATER PUMPAGE (MGD)	TREATED WATER PUMPAGE (MGD)	RAW WATER ANALYSES			DISINFECTION PROCESS DATA			FINISHED WATER ANALYSES									
			NTU	pH	Alk	D1	D2	D3	pH	Alk	TURBIDITY						DISINFECTANT	
											1	2	3	4	5	6	Lowest Residual	Time <sup>†</sup>
1	3389.4	3262.3	22.0	8.0	114	.3	X	X	7.6	90	0.2	0.2	0.2	0.2	0.3	0.3	3.5	
2	2595.6	2696.8	23.0	8.0	113	.3	X	X	7.6	88	0.3	0.3	0.3	0.3	0.3	0.3	3.0	
3	3364.2	3420.8	13.0	8.0	114	.3	X	X	7.6	90	0.2	0.2	0.2	0.2	0.2	0.2	3.1	
4	3414.6	3637.3	25.0	8.0	114	.3	X	X	7.8	91	0.2	0.2	0.2	0.2	0.2	0.2	3.1	
6	3596.0	3067.8	22.0	8.0	112	.3	X	X	7.8	92	0.2	0.2	0.2	0.3	0.2	0.2	3.2	
6	3553.2	3410.7	27.0	8.0	113	.3	X	X	7.7	91	0.2	0.2	0.3	0.3	0.2	0.2	3.4	
7	3780.0	3679.5	26.0	8.0	110	.3	X	X	7.7	91	0.3	0.3	0.3	0.3	0.2	0.2	3.4	
8	4788.0	4446.7	25.0	8.0	114	.3	X	X	7.6	89	0.2	0.2	0.3	0.2	0.2	0.3	3.5	
9	4586.4	4535.1	30.0	8.0	113	.3	X	X	7.6	88	0.2	0.2	0.2	0.2	0.3	0.3	3.4	
10	5128.2	5008.4	33.0	8.0	112	.3	X	X	7.6	88	0.2	0.2	0.2	0.2	0.2	0.2	3.4	
11	4788.0	4747.5	25.0	7.9	111	.3	X	X	7.6	87	0.2	0.2	0.2	0.2	0.3	0.3	3.2	
12	5140.8	5194.8	25.0	8.0	114	.3	X	X	7.6	94	0.3	0.3	0.3	0.3	0.3	0.3	3.1	
13	5367.6	5211.0	29.0	8.0	113	.3	X	X	7.6	88	0.4	0.4	0.4	0.4	0.4	0.4	3.0	
14	4810.7	4907.6	27.0	7.9	112	.3	X	X	7.6	93	0.4	0.4	0.4	0.4	0.4	0.4	3.1	
15	4909.0	4970.0	26.0	8.0	114	.3	X	X	7.6	95	0.4	0.4	0.4	0.4	0.4	0.4	3.1	
16	3845.5	3603.0	26.0	7.9	111	.3	X	X	7.5	80	0.4	0.4	0.4	0.4	0.4	0.4	2.8	
17	3838.0	3562.5	25.0	8.0	106	.3	X	X	7.6	80	0.4	0.4	0.4	0.4	0.4	0.4	2.9	
18	4158.0	4081.9	23.0	8.0	112	.4	X	X	7.8	80	0.3	0.3	0.4	0.3	0.3	0.3	2.8	
19	4359.6	4329.4	27.0	7.9	103	.4	X	X	7.7	68	0.3	0.3	0.3	0.3	0.3	0.3	2.7	
20	4654.4	4805.9	26.0	8.0	110	.3	X	X	7.8	85	0.3	0.3	0.3	0.3	0.3	0.3	2.8	
21	4594.0	4624.3	26.0	8.0	113	.4	X	X	7.8	87	0.3	0.3	0.3	0.3	0.3	0.3	2.8	
22	4611.6	5170.7	31.0	8.0	110	.4	X	X	7.7	82	0.3	0.3	0.3	0.3	0.3	0.3	3.0	
23	5171.0	5423.6	32.0	8.0	109	.3	X	X	7.7	80	0.3	0.3	0.3	0.3	0.3	0.3	2.8	
24	5375.1	5356.6	31.0	8.0	114	.3	X	X	7.7	76	0.3	0.3	0.3	0.3	0.3	0.3	3.1	
25	5397.8	5420.6	30.0	8.0	110	.3	X	X	7.8	93	0.3	0.3	0.4	0.3	0.3	0.3	3.0	
26	5544.0	5505.5	33.0	8.0	111	.3	X	X	7.8	79	0.4	0.4	0.3	0.3	0.3	0.3	3.0	
27	5629.7	5437.4	34.0	8.0	113	.3	X	X	7.8	85	0.3	0.3	0.3	0.3	0.3	0.3	3.0	
28	5103.0	5284.5	35.0	8.0	110	.3	X	X	7.8	88	0.3	0.3	0.3	0.3	0.3	0.3	2.8	
29	5634.7	5459.5	34.0	8.0	114	.3	X	X	7.8	84	0.2	0.2	0.2	0.2	0.2	0.2	2.8	
30	5634.9	5651.2	46.0	8.0	112	.3	X	X	7.6	98	0.2	0.2	0.2	0.2	0.2	0.3	3.0	
31	6048.0	5816.4	49.0	7.9	116	.3	X	X	7.7	78	0.3	0.3	0.2	0.3	0.3	0.3	3.2	
TOTAL	142811.0	141730.3	Disinfectant No. 1: <u>CLO2</u>			Total No. of Turbidity Readings: <u>186</u>												
AVG	4606.8	4571.9	Disinfectant No. 2: <u>N/A</u>			No. above 0.5 NTU: <u>0</u>				No. above 1.0 NTU: <u>0</u>								
MAX	6048.0	5816.4	Disinfectant No. 3: <u>N/A</u>			* NOTE: ONLY use the "TIME" column to show the length of time that the disinfectant residual entering the distribution system fell below acceptable levels.												
MIN	2595.6	2696.8	Distribution Disinfectant: <u>N/A</u>															

Submitted by: James Robert Date: 5-31-94

Name of System: SHARYLAND WATER SUPPLY CORP.

PWS ID No.: 1080033

Name of Plant

or Plant No.:

Month/Year: 6/94

Number of Connections: 9590

DATE	RAW WATER PUMPAGE (MGD)	TREATED WATER PUMPAGE (MGD)	RAW WATER ANALYSES			DISINFECTION PROCESS DATA			FINISHED WATER ANALYSES									
			NTU	pH	Alk	D1	D2	D3	pH	Alk	TURBIDITY						DISINFECTANT	
											1	2	3	4	5	6	Lowest Residual	Time †
1	6048.0	5720.4	46.0	8.0	118	.3	X	X	7.6	78	.4	.4	.4	.4	.4	.4	3.2	
2	5405.0	5799.4	40.0	8.0	121	.3	X	X	7.7	81	.4	.4	.4	.4	.4	.3	3.0	
3	5637.2	5046.3	39.0	8.0	120	.3	X	X	7.8	87	.3	.3	.3	.3	.3	.3	3.1	
4	5607.0	5020.5	48.0	8.0	118	.3	X	X	7.7	92	.3	.3	.3	.3	.3	.3	3.0	
5	6048.0	5257.8	41.0	8.0	121	.3	X	X	7.8	88	.3	.3	.3	.3	.3	.3	3.3	
6	6048.0	5539.6	55.0	7.9	116	.3	X	X	7.7	76	.3	.3	.3	.3	.3	.4	3.2	
7	5644.8	5726.1	43.0	8.0	118	.3	X	X	7.6	79	.4	.3	.4	.3	.3	.3	2.6	
8	6048.0	5766.0	40.0	8.0	110	.3	X	X	7.6	79	.3	.3	.3	.4	.4	.4	3.0	
9	6048.0	5779.1	36.0	8.0	115	.3	X	X	7.8	85	.4	.4	.3	.3	.3	.3	3.0	
10	6048.0	5738.3	45.0	7.9	114	.3	X	X	7.7	84	.3	.3	.3	.3	.3	.3	3.1	
11	3356.6	3926.2	27.0	8.0	114	.3	X	X	7.8	86	.3	.4	.4	.4	.4	.4	2.6	
12	3339.0	3961.5	27.0	7.9	113	.3	X	X	7.7	88	.4	.4	.4	.4	.4	.4	2.6	
13	3616.2	3405.8	28.0	8.0	115	.3	X	X	7.8	90	.3	.3	.3	.3	.3	.3	2.8	
14	3659.0	3272.7	31.0	8.0	112	.3	X	X	7.8	86	.3	.3	.3	.3	.3	.2	3.0	
15	3805.2	3522.2	31.0	8.0	110	.3	X	X	7.8	74	.2	.2	.2	.2	.2	.2	3.0	
16	3792.6	3194.4	32.0	8.0	113	.3	X	X	7.6	79	.2	.2	.2	.2	.2	.2	2.7	
17	4039.6	3582.6	40.0	8.0	109	.3	X	X	7.7	80	.2	.2	.2	.2	.2	.2	3.2	
18	3893.4	3748.8	30.0	8.0	112	.3	X	X	7.8	82	.2	.2	.2	.2	.2	.2	3.2	
19	4107.6	3520.3	30.0	8.0	112	.3	X	X	7.8	80	.2	.2	.2	.2	.2	.2	3.1	
20	4611.6	3841.0	37.0	8.0	110	.3	X	X	7.7	82	.2	.2	.2	.2	.2	.2	3.2	
21	5342.4	3950.1	37.0	8.0	109	.3	X	X	7.7	79	.2	.2	.2	.2	.2	.3	3.4	
22	4813.2	4380.9	39.0	8.0	112	.3	X	X	7.7	82	.3	.2	.2	.3	.3	.3	3.4	
23	4863.6	3129.5	44.0	8.0	114	.3	X	X	7.6	80	.3	.3	.3	.3	.3	.3	3.4	
24	5065.2	4814.0	35.0	8.0	112	.3	X	X	7.7	80	.3	.3	.3	.3	.3	.3	3.4	
25	4667.0	4794.8	35.0	8.0	105	.3	X	X	7.8	84	.3	.3	.3	.3	.3	.3	3.2	
26	4788.0	4894.8	30.0	8.0	110	.3	X	X	7.8	82	.3	.3	.3	.3	.3	.2	3.2	
27	5145.8	4953.4	44.0	8.0	110	.3	X	X	7.8	82	.3	.3	.3	.3	.3	.3	3.4	
28	5796.0	5292.2	45.0	7.9	112	.3	X	X	7.7	83	.3	.4	.4	.4	.4	.2	3.4	
29	6048.0	5386.0	39.0	7.9	112	.3	X	X	7.7	81	.2	.2	.2	.2	.2	.2	3.6	
30	5657.4	5371.8	40.1	8.0	114	.3	X	X	7.6	84	.2	.2	.2	.2	.2	.2	3.0	
31																		
TOTAL	148989.4	138336.5	Disinfectant No. 1: <u>CL02</u>			Total No. of Turbidity Readings: <u>180</u>												
AVG	4966.3	4611.2	Disinfectant No. 2: <u>N/A</u>			No. above 0.5 NTU: <u>0</u> No. above 1.0 NTU: <u>0</u>												
MAX	6048.0	5799.4	Disinfectant No. 3: <u>N/A</u>			* NOTE: ONLY use the "TIME" column to show the length of time that the disinfectant residual entering the distribution system fell below acceptable levels.												
MIN	3339.0	3194.4	Distribution Disinfectant: <u>N/A</u>															

Submitted by: James R. Ralston

Date: 6-30-94

ADDITIONAL REPORTING REQUIREMENTS ON THE FRONT OF THIS FORM

Name of System: SHARYLAND WATER SUPPLY CORP.

PWS ID No.: 1080033

Name of Plant  
or Plant No.: 1

Month/Year: 7/94

Number of  
Connections: 9600

DATE	RAW WATER PUMPAGE (MGD)	TREATED WATER PUMPAGE (MGD)	RAW WATER ANALYSES			DISINFECTION PROCESS DATA			FINISHED WATER ANALYSES									
			NTU	pH	Alk	D1	D2	D3	pH	Alk	TURBIDITY						DISINFECTANT	
											1	2	3	4	5	6	Lowest Residual	Time †
1	5904.0	5385.0	42.0	8.0	112	.3	X	X	7.8	84	.2	.2	.2	.2	.2	.3	3.2	
2	5670.0	5423.1	41.0	8.0	114	.3	X	X	7.6	85	.3	.2	.2	.3	.3	.4	3.4	
3	5352.5	5108.4	40.0	8.0	118	.3	X	X	7.7	90	.5	.4	.4	.4	.4	.4	3.2	
4	5644.8	5268.5	50.0	8.0	115	.3	X	X	7.8	90	.4	.4	.4	.4	.4	.4	3.2	
5	5647.3	5478.2	26.0	8.0	110	.3	X	X	7.7	86	.3	.4	.4	.4	.4	.4	3.1	
6	5644.8	5399.5	34.0	7.9	113	.3	X	X	7.7	87	.4	.4	.4	.4	.4	.4	3.4	
7	5904.0	5360.7	43.0	7.9	110	.3	X	X	7.7	88	.4	.4	.4	.3	.3	.4	3.4	
8	5904.0	5526.6	33.0	8.0	112	.3	X	X	7.7	80	.4	.4	.4	.4	.4	.4	3.4	
9	5904.0	5424.6	37.0	8.0	113	.3	X	X	7.7	88	.4	.4	.4	.4	.4	.3	3.4	
10	5408.0	5205.1	34.0	7.9	113	.3	X	X	7.7	90	.3	.3	.3	.3	.3	.3	3.2	
11	5677.6	5407.9	28.0	7.9	113	.3	X	X	7.7	89	.3	.3	.3	.2	.2	.2	3.2	
12	5796.0	5538.6	34.0	7.8	112	.3	X	X	7.6	90	.2	.2	.2	.2	.2	.2	3.8	
13	5418.0	5521.0	36.0	7.9	111	.3	X	X	7.7	86	.2	.2	.2	.2	.2	.2	4.2	
14	5904.0	5562.0	33.0	7.8	113	.3	X	X	7.6	79	.2	.2	.2	.3	.3	.3	3.8	
15	5658.0	5617.2	29.0	7.9	112	.3	X	X	7.7	85	.3	.2	.2	.2	.3	.4	4.2	
16	5264.4	5535.9	30.0	7.8	112	.3	X	X	7.6	86	.4	.2	.2	.3	.3	.3	2.6	
17	5271.8	5549.3	22.0	8.0	109	.3	X	X	7.8	84	.3	.3	.2	.2	.2	.2	2.6	
18	5554.7	5640.1	29.0	7.8	106	.3	X	X	7.6	89	.2	.3	.3	.2	.2	.2	2.6	
19	5658.0	5680.6	28.0	7.9	108	.3	X	X	7.6	88	.2	.3	.3	.2	.2	.2	3.6	
20	5658.0	5647.1	24.0	7.9	110	.3	X	X	7.6	86	.3	.3	.3	.3	.3	.3	3.3	
21	5522.7	5744.0	30.0	7.8	114	.3	X	X	7.6	90	.2	.2	.2	.4	.3	.3	3.4	
22	5276.7	5619.7	31.0	7.9	109	.3	X	X	7.6	88	.3	.3	.3	.3	.3	.3	3.8	
23	5008.6	5511.1	28.0	7.9	113	.3	X	X	7.6	89	.3	.3	.3	.3	.3	.3	3.4	
24	5006.1	5569.2	29.0	7.7	114	.3	X	X	7.5	89	.3	.3	.3	.3	.3	.3	4.0	
25	5544.8	5638.8	39.0	7.8	108	.3	X	X	7.6	87	.3	.3	.3	.3	.3	.3	3.6	
26	5535.0	5673.1	37.0	7.7	112	.3	X	X	7.5	88	.3	.3	.3	.3	.3	.3	3.4	
27	4784.7	5874.6	33.0	7.9	111	.3	X	X	7.6	84	.3	.4	.4	.4	.4	.4	2.6	
28	6342.2	6002.2	45.0	7.8	115	.3	X	X	7.4	88	.4	.4	.4	.4	.4	.4	2.6	
29	5045.5	5768.1	41.0	7.9	112	.3	X	X	7.7	90	.4	.3	.3	.3	.3	.3	3.4	
30	5050.4	5335.0	38.0	7.8	110	.3	X	X	7.6	88	.3	.3	.3	.2	.2	.3	3.6	
31	4974.1	5699.1	36.0	7.8	108	.3	X	X	7.6	83	.3	.3	.3	.3	.3	.3	3.2	
TOTAL	170934.7	171714.3	Disinfectant No. 1: <u>ClO2</u>			Total No. of Turbidity Readings: <u>186</u>												
AVG	5514.0	5539.2	Disinfectant No. 2: <u>N/A</u>			No. above 0.5 NTU: <u>0</u> No. above 1.0 NTU: <u>0</u>												
MAX	6342.2	6002.2	Disinfectant No. 3: <u>N/A</u>			* NOTE: ONLY use the "TIME" column to show the length of time that the disinfectant residual entering the distribution system fall below acceptable levels.												
MIN	4784.7	5108.4	Distribution Disinfectant: <u>N/A</u>															

Submitted by: James R. [Signature]

Date: 7-31-94

Name of System: SHARYLAN WATER SUPPLY CORP. PWS ID No.: 1060033

Name of Plant or Plant No.: I

Month/Year: 8/94

Number of Connections: 9650

DATE	RAW WATER PUMPAGE (MGD)	TREATED WATER PUMPAGE (MGD)	RAW WATER ANALYSES			DISINFECTION PROCESS DATA			FINISHED WATER ANALYSES									
			NTU	pH	Alk	D1	D2	D3	pH	Alk	TURBIDITY						DISINFECTANT	
											1	2	3	4	5	6	Lowest Residual	Time <sup>†</sup>
1	4543.6	4397.1	39.0	7.9	111	.3	X	X	7.6	87	.3	.3	.3	.3	.3	.3	3.6	
2	4706.0	4956.0	45.0	8.0	108	.3	X	X	7.7	85	.3	.3	.3	.3	.3	.3	3.4	
3	5490.7	5142.8	36.0	7.9	113	.3	X	X	7.6	84	.3	.3	.3	.3	.3	.3	3.6	
4	5190.6	4955.4	33.0	8.0	109	.3	X	X	7.7	79	.3	.3	.3	.3	.3	.3	4.0	
6	4307.5	4600.6	36.0	8.0	104	.3	X	X	7.7	84	.3	.3	.3	.3	.3	.3	3.6	
8	4255.8	4671.6	31.0	8.0	107	.3	X	X	7.7	83	.3	.2	.2	.3	.3	.3	3.8	
7	4428.0	4134.4	33.0	7.9	111	.3	X	X	7.6	85	.3	.3	.3	.3	.3	.3	3.5	
8	4956.9	4950.6	31.0	7.9	106	.3	X	X	7.7	76	.3	.3	.3	.3	.3	.3	3.3	
9	5654.4	5381.6	35.0	7.9	109	.3	X	X	7.7	81	.3	.3	.3	.3	.3	.3	3.5	
10	5254.6	5252.6	30.0	7.9	107	.3	X	X	7.7	85	.3	.3	.3	.3	.3	.3	3.6	
11	4216.4	4513.9	27.0	8.0	110	.3	X	X	7.8	85	.3	.3	.3	.3	.3	.3	3.4	
12	3972.9	4130.5	26.0	7.9	105	.3	X	X	7.7	79	.3	.3	.3	.3	.3	.3	3.3	
13	3505.5	4131.7	32.0	7.9	106	.3	X	X	7.7	83	.3	.3	.3	.3	.3	.3	3.4	
14	4022.1	4497.2	27.0	7.9	107	.3	X	X	7.6	80	.3	.3	.3	.2	.2	.3	3.5	
15	3825.3	4208.0	28.0	8.0	104	.3	X	X	7.7	77	.3	.3	.3	.3	.3	.3	3.9	
16	4009.8	4197.5	32.0	8.0	102	.3	X	X	7.7	72	.3	.3	.3	.3	.3	.3	3.8	
17	4674.0	4644.7	32.0	8.1	110	.3	X	X	7.6	76	.3	.3	.3	.3	.3	.3	3.5	
18	4774.9	4826.1	30.0	8.0	105	.3	X	X	7.8	82	.3	.3	.3	.3	.3	.3	3.8	
19	4735.5	4933.2	33.0	8.0	102	.3	X	X	7.7	77	.3	.3	.3	.3	.3	.3	3.3	
20	4944.6	4930.9	31.0	8.0	104	.3	X	X	7.7	78	.3	.3	.3	.3	.3	.3	3.5	
21	4956.9	5017.1	34.0	7.9	107	.3	X	X	7.6	75	.3	.4	.4	.4	.4	.4	3.4	
22	5522.7	5421.8	36.0	8.0	105	.3	X	X	7.7	74	.4	.4	.4	.3	.3	.4	3.4	
23	5904.0	5298.9	56.0	8.0	104	.3	X	X	7.7	76	.4	.4	.4	.3	.3	.4	4.1	
24	5658.0	5428.9	44.0	8.0	109	.3	X	X	7.6	74	.4	.4	.4	.4	.3	.3	3.5	
25	4691.2	4804.6	34.0	8.0	105	.3	X	X	7.9	85	.3	.3	.3	.3	.3	.3	3.4	
26	4255.8	4630.1	32.0	8.1	97	.3	X	X	7.7	66	.3	.3	.3	.3	.2	.3	3.2	
27	4428.0	4817.8	28.0	8.0	101	.3	X	X	7.7	72	.3	.3	.3	.2	.2	.2	3.5	
28	4920.0	5039.6	31.0	8.0	104	.3	X	X	7.7	73	.2	.2	.2	.2	.2	.2	2.6	
29	5276.7	5300.6	33.0	8.0	92	.3	X	X	7.7	63	.2	.2	.2	.2	.2	.2	2.6	
30	4735.5	5209.3	30.0	7.9	101	.3	X	X	7.6	72	.2	.2	.2	.3	.2	.2	3.3	
31	4720.7	4938.3	27.0	8.0	86	.3	X	X	7.8	73	.2	.2	.2	.2	.2	.2	3.4	
TOTAL	146538.6	149363.4	Disinfectant No. 1: <u>CLO2</u>						Total No. of Turbidity Readings: <u>186</u>									
AVQ	4727.1	4818.2	Disinfectant No. 2: <u>N/A</u>						No. above 0.5 NTU: <u>0</u> No. above 1.0 NTU: <u>0</u>									
MAX	5904.0	5428.9	Disinfectant No. 3: <u>N/A</u>						* NOTE: ONLY use the "TIME" column to show the length of time that the disinfectant residual entering the distribution system fell below acceptable levels.									
MIN	3505.5	4130.5	Distribution Disinfectant: <u>N/A</u>															

Submitted by: James Robert Date: 8-31-94

ADDITIONAL REPORTING REQUIREMENTS ON THE FRONT OF THIS FORM

Name of System: SHARYLAND WATER SUPPLY CORPORATION PWS ID No.: 1080033  
 Name of Plant \_\_\_\_\_  
 or Plant No.: 1 Month/Year: 9/94

Number of Connections: 9475

DATE	RAW WATER PUMPAGE (MGD)	TREATED WATER PUMPAGE (MGD)	RAW WATER ANALYSES			DISINFECTION PROCESS DATA			FINISHED WATER ANALYSES									
			NTU	pH	Alk	D1	D2	D3	pH	Alk	TURBIDITY						DISINFECTANT	
											1	2	3	4	5	6	Lowest Residual	Time <sup>+</sup>
1	3444.0	3943.4	28.0	8.0	88	.3	X	X	7.6	71	.2	.2	.2	.2	.2	.2	3.4	
2	3198.0	2723.0	39.0	8.0	86	.3	X	X	7.6	72	.2	.2	.2	.2	.2	.2	3.0	
3	3025.8	2905.5	40.0	8.0	86	.3	X	X	7.5	76	.2	.2	.2	.2	.2	.2	3.0	
4	3444.0	3629.7	36.0	8.0	84	.3	X	X	7.6	75	.2	.2	.2	.2	.2	.2	2.8	
5	3456.3	3670.2	36.0	8.0	85	.3	X	X	7.6	75	.2	.2	.2	.2	.2	.2	3.0	
6	4260.7	4409.4	28.0	8.0	87	.3	X	X	7.7	77	.2	.2	.2	.2	.2	.2	2.8	
7	4226.3	4292.2	27.0	8.0	88	.3	X	X	7.7	76	.2	.2	.2	.2	.2	.2	3.0	
8	4277.9	4822.6	28.0	8.0	89	.3	X	X	7.7	77	.2	.2	.2	.2	.2	.2	3.6	
9	4969.2	4746.8	27.0	8.0	88	.3	X	X	7.6	77	.2	.2	.2	.2	.2	.2	2.8	
10	4428.0	4196.4	26.0	8.0	90	.3	X	X	7.6	77	.2	.2	.2	.2	.2	.2	3.2	
11	3535.0	3601.6	30.0	8.0	89	.3	X	X	7.7	77	.2	.2	.2	.2	.2	.2	3.4	
12	4206.6	3605.3	28.0	8.0	87	.3	X	X	7.7	75	.2	.2	.2	.2	.2	.2	3.4	
13	4231.2	3704.0	27.0	8.0	91	.3	X	X	7.6	76	.2	.2	.2	.2	.2	.2	3.4	
14	3795.7	3775.4	26.0	8.0	88	.3	X	X	7.6	76	.2	.2	.2	.2	.2	.2	2.6	
15	4282.8	4001.5	23.0	8.0	89	.3	X	X	7.6	79	.2	.2	.2	.2	.2	.2	3.6	
16	4295.1	4242.7	25.0	7.9	89	.3	X	X	7.7	78	.2	.2	.2	.2	.2	.2	3.2	
17	4231.2	4209.4	24.0	8.0	88	.3	X	X	7.6	76	.2	.2	.2	.2	.2	.2	3.4	
18	4182.0	4006.6	28.0	8.0	89	.3	X	X	7.6	76	.2	.2	.2	.2	.2	.2	3.4	
19	3813.0	3331.8	24.0	8.0	90	.3	X	X	7.6	77	.2	.2	.2	.2	.2	.2	3.0	
20	3832.6	3794.6	20.0	8.0	88	.3	X	X	7.6	72	.2	.2	.2	.2	.2	.2	3.5	
21	4182.0	3942.2	21.0	8.0	77	.3	X	X	7.7	88	.2	.2	.2	.2	.2	.2	4.0	
22	4457.5	4434.8	20.0	8.0	99	.3	X	X	7.6	80	.2	.2	.2	.2	.2	.2	4.2	
23	4231.2	4495.1	23.0	8.0	89	.3	X	X	7.6	80	.2	.2	.2	.2	.2	.2	3.5	
24	4292.7	4400.9	25.0	8.0	92	.3	X	X	7.6	79	.2	.2	.2	.2	.2	.2	3.5	
25	4723.2	4733.0	26.0	8.0	92	.3	X	X	7.6	77	.2	.2	.2	.2	.2	.2	3.2	
26	5215.2	4874.1	24.0	8.1	94	.3	X	X	7.5	82	.2	.2	.2	.2	.2	.2	3.5	
27	5215.2	4945.4	27.0	8.0	96	.3	X	X	7.5	80	.2	.2	.2	.2	.2	.2	3.5	
28	5261.9	4909.8	30.0	8.0	90	.3	X	X	7.7	84	.2	.2	.2	.2	.2	.2	3.6	
29	5498.1	4987.0	26.0	8.1	127	.3	X	X	7.7	85	.2	.2	.2	.2	.2	.2	4.0	
30	4194.3	3995.7	26.0	8.1	115	.3	X	X	7.7	86	.2	.2	.2	.2	.2	.2	3.2	
31																		
TOTAL	126406.7	123330.1	Disinfectant No. 1: <u>CL02</u>			Total No. of Turbidity Readings: <u>180</u>												
AVG	4213.5	4111.0	Disinfectant No. 2: <u>N/A</u>			No. above 0.5 NTU: <u>0</u> No. above 1.0 NTU: <u>0</u>												
MAX	5498.1	4987.0	Disinfectant No. 3: <u>N/A</u>			* NOTE: ONLY use the "TIME" column to show the length of time that the disinfectant residual entering the distribution system fell below acceptable levels.												
MIN	3025.8	2783.0	Distribution Disinfectant: <u>N/A</u>															

Submitted by: James R. [Signature]

Date: 9/30/94



Name of System: SHARYLAND WATER SUPPLY CORPORATION PWS ID No.: 1080033

Name of Plant or Plant No.: 1 Month/Year: 10/94

Number of Connections: 9516

DATE	RAW WATER PUMPAGE (MGD)	TREATED WATER PUMPAGE (MGD)	RAW WATER ANALYSES			DISINFECTION PROCESS DATA			FINISHED WATER ANALYSES									
			NTU	pH	Alk	D1	D2	D3	pH	Alk	TURBIDITY						DISINFECTANT	
											1	2	3	4	5	6	Lowest Residual	Time <sup>+</sup>
1	2952.0	2484.6	25.0	8.0	114	.3	X	X	7.6	86	.2	.2	.2	.2	.2	.2	3.5	
2	3444.0	3378.1	26.0	8.0	115	.3	X	X	7.6	88	.2	.2	.2	.2	.2	.1	3.5	
3	4063.9	3909.3	18.0	8.1	116	.3	X	X	7.7	85	.1	.2	.2	.2	.2	.2	3.2	
4	4209.0	3636.8	18.0	8.0	109	.3	X	X	7.8	80	.2	.2	.2	.2	.2	.2	3.7	
5	4794.5	3931.8	20.0	7.9	112	.3	X	X	7.7	75	.2	.2	.2	.2	.2	.2	3.2	
6	4484.6	3985.5	20.0	7.9	105	.3	X	X	7.7	77	.2	.2	.2	.2	.2	.2	3.2	
7	4327.1	4312.4	22.0	7.7	110	.3	X	X	7.6	81	.2	.2	.2	.2	.2	.2	4.0	
8	3690.0	3818.5	26.0	7.9	111	.3	X	X	7.5	80	.2	.2	.2	.2	.2	.2	4.0	
9	2829.0	2637.3	23.0	8.0	110	.3	X	X	7.6	80	.2	.1	.1	.2	.2	.2	3.5	
10	2819.1	2654.3	24.0	7.9	109	.3	X	X	7.7	82	.2	.2	.2	.2	.2	.2	4.0	
11	3512.9	3250.1	24.0	7.8	106	.3	X	X	7.7	82	.2	.2	.2	.2	.2	.2	3.8	
12	2723.2	3236.8	23.0	7.8	107	.3	X	X	7.7	81	.2	.2	.2	.1	.2	.2	4.0	
13	2976.6	3287.4	23.0	7.8	107	.3	X	X	7.5	75	.2	.1	.1	.1	.1	.1	2.6	
14	3461.2	3486.4	23.0	7.8	107	.3	X	X	7.5	81	.2	.1	.1	.2	.2	.2	2.7	
16	2952.0	3053.6	24.0	8.0	110	.3	X	X	7.5	80	.2	.2	.2	.2	.2	.2	2.8	
18	3768.7	3604.6	22.0	7.9	111	.3	X	X	7.5	80	.2	.2	.2	.2	.2	.2	3.4	
17	3941.0	3724.8	23.0	7.8	116	.3	X	X	7.7	82	.2	.2	.2	.2	.2	.2	3.8	
18	4034.4	3741.6	26.0	7.7	109	.3	X	X	7.5	87	.2	.2	.2	.2	.2	.2	3.8	
19	3936.0	4087.2	26.0	7.7	111	.3	X	X	7.6	85	.2	.2	.2	.2	.2	.2	4.0	
20	4236.1	4220.9	26.0	7.8	105	.3	X	X	7.6	85	.2	.2	.2	.2	.2	.2	3.4	
21	3990.1	4186.3	26.0	7.7	107	.3	X	X	7.6	84	.2	.2	.2	.2	.2	.2	3.6	
22	4009.8	3959.7	23.0	8.0	102	.3	X	X	7.5	81	.2	.2	.2	.2	.2	.2	3.5	
23	4236.8	4228.4	21.0	8.0	108	.3	X	X	7.6	80	.2	.2	.2	.2	.2	.2	3.8	
24	4698.6	4260.9	21.0	8.0	108	.3	X	X	7.5	88	.2	.2	.2	.2	.2	.2	4.0	
25	4710.9	4348.1	21.0	7.7	105	.3	X	X	7.6	91	.2	.2	.2	.2	.2	.2	4.0	
25	3977.8	3841.6	22.0	7.7	105	.3	X	X	7.6	91	.2	.2	.2	.2	.2	.2	3.7	
27	3001.2	2547.3	23.0	7.7	106	.3	X	X	7.5	90	.2	.2	.2	.2	.2	.2	4.0	
28	2998.7	2488.5	23.0	7.7	105	.3	X	X	7.5	91	.2	.2	.2	.2	.2	.2	3.7	
29	3333.3	3022.1	23.0	7.7	106	.3	X	X	7.6	91	.2	.2	.2	.2	.2	.2	3.8	
30	3569.5	3724.9	24.0	7.8	104	.3	X	X	7.6	90	.2	.2	.2	.2	.2	.2	3.6	
31	3493.2	3516.6	24.0	7.6	109	.3	X	X	7.5	88	.2	.2	.2	.2	.2	.2	3.6	
TOTAL	115177.0	110566.4	Disinfectant No. 1: <u>CL02</u>			Total No. of Turbidity Readings: <u>186</u>												
AVG	3715.4	3566.7	Disinfectant No. 2: <u>N/A</u>			No. above 0.5 NTU: <u>0</u> No. above 1.0 NTU: <u>0</u>												
MAX	4794.5	4348.1	Disinfectant No. 3: <u>N/A</u>			* NOTE: ONLY use the "TIME" column to show the length of time that the disinfectant residual entering the distribution system fell below acceptable levels.												
MIN	2723.2	2484.6	Distribution Disinfectant: <u>N/A</u>															

Submitted by: James Robert Date: 10-31-94

Name of System: SHARYLAND WATER SUPPLY CORPORATION PWS ID No.: 1  
 Name of Plant or Plant No.: 1 Month/Year: 11-94 Number of Connections: 9563

DATE	RAW WATER PUMPAGE (MGD)	TREATED WATER PUMPAGE (MGD)	RAW WATER ANALYSES			DISINFECTION PROCESS DATA			FINISHED WATER ANALYSES									
			NTU	pH	Alk	D1	D2	D3	pH	Alk	TURBIDITY						DISINFECTANT	
											1	2	3	4	5	6	Lowest Residual	Time†
1	3461.2	3260.1	25.0	7.7	109	.3	X	X	7.6	89	.2	.2	.2	.2	.2	.2	3.6	
2	3559.6	3416.8	25.0	7.9	104	.3	X	X	7.6	87	.2	.2	.2	.2	.2	.1	3.6	
3	3800.0	3592.5	26.0	7.8	124	.3	X	X	7.6	80	.1	.1	.1	.1	.1	.2	4.0	
4	4305.0	3943.6	25.0	7.8	110	.3	X	X	7.7	93	.2	.2	.2	.2	.2	.2	3.5	
5	3690.0	3768.1	25.0	7.8	110	.3	X	X	7.7	93	.2	.2	.2	.2	.2	.2	3.7	
6	3776.1	4032.7	26.0	7.8	109	.3	X	X	7.7	94	.2	.2	.2	.2	.2	.2	3.6	
7	4428.0	4347.5	27.0	7.8	110	.3	X	X	7.8	93	.2	.2	.2	.2	.2	.2	3.6	
8	4201.6	4399.6	28.0	7.8	112	.3	X	X	7.8	96	.2	.2	.2	.2	.2	.2	3.5	
9	4459.9	4484.4	29.0	7.8	106	.3	X	X	7.6	89	.2	.2	.2	.2	.2	.4	3.4	
10	4300.0	4198.1	43.0	8.0	114	.3	X	X	7.8	90	.4	.4	.4	.2	.2	.2	4.0	
11	3913.8	3886.2	28.0	7.7	119	.3	X	X	7.6	93	.2	.2	.2	.3	.3	.3	3.6	
12	3544.8	3682.2	27.0	7.7	119	.3	X	X	7.6	94	.3	.2	.2	.2	.2	.2	3.6	
13	4282.8	4361.2	29.0	7.9	120	.3	X	X	7.8	95	.3	.3	.3	.3	.3	.3	3.5	
14	4578.0	4543.8	31.0	7.8	112	.3	X	X	7.6	92	.4	.4	.4	.4	.4	.4	3.6	
15	4504.2	4446.8	29.0	7.7	113	.3	X	X	7.6	92	.3	.3	.2	.3	.2	.2	3.7	
16	3756.4	3893.8	30.0	7.9	103	.3	X	X	7.6	88	.2	.2	.2	.3	.2	.2	3.7	
17	3948.3	4163.5	26.0	7.9	110	.3	X	X	7.7	93	.2	.2	.2	.2	.2	.2	3.8	
18	4324.6	4430.8	28.0	7.8	112	.3	X	X	7.6	94	.3	.3	.2	.2	.2	.2	3.7	
19	4036.8	4203.2	28.0	7.9	111	.3	X	X	7.7	93	.2	.2	.2	.2	.2	.2	3.7	
20	4428.0	4408.4	29.0	7.9	112	.3	X	X	7.7	94	.2	.2	.2	.2	.2	.2	3.8	
21	4897.8	4735.1	30.0	7.7	112	.3	X	X	7.6	95	.2	.2	.3	.2	.2	.2	3.8	
22	4612.5	4709.3	31.0	7.7	113	.3	X	X	7.6	96	.2	.2	.2	.2	.2	.2	3.8	
23	4489.5	4562.3	41.0	7.9	112	.3	X	X	7.7	94	.2	.2	.2	.2	.2	.2	3.8	
24	3033.1	2939.9	26.0	7.8	110	.3	X	X	7.6	89	.2	.2	.2	.2	.2	.2	3.8	
25	3729.3	3551.9	29.0	7.9	111	.3	X	X	7.7	94	.2	.2	.2	.2	.2	.2	3.8	
26	4243.5	4094.1	30.0	8.0	113	.3	X	X	7.7	92	.2	.2	.2	.2	.2	.2	3.8	
27	4504.2	4258.5	31.0	7.9	112	.3	X	X	7.7	93	.2	.2	.2	.2	.2	.2	3.6	
28	5013.4	4499.5	28.0	7.9	114	.3	X	X	7.6	95	.2	.2	.2	.2	.2	.2	3.8	
29	4233.6	4015.7	25.0	7.9	110	.3	X	X	7.6	92	.2	.2	.2	.2	.2	.2	2.8	
30	4255.8	3594.1	25.0	7.9	110	.3	X	X	7.7	84	.2	.1	.1	.2	.2	.2	2.8	
31																		
TOTAL	124311.8	122423.7	Disinfectant No. 1: <u>CLO2</u>			Total No. of Turbidity Readings: <u>180</u>												
AVG	4143.7	4080.8	Disinfectant No. 2: <u>N/A</u>			No. above 0.5 NTU: <u>0</u> No. above 1.0 NTU: <u>0</u>												
MAX	5013.4	4735.1	Disinfectant No. 3: <u>N/A</u>			* NOTE: ONLY use the "TIME" column to show the length of time that the disinfectant residual entering the distribution system fell below acceptable levels.												
MIN	3461.2	2939.9	Distribution Disinfectant: <u>N/A</u>															

Submitted by: Jamie R. Little Date: 11-30-94

ADDITIONAL REPORTING REQUIREMENTS ON THE FRONT OF THIS FORM

Name of System: SHARYLAND WATER SUPPLY CORP.

PWS ID No.: 1080033

Name of Plant  
or Plant No.: 1

Month/Year: 12-94

Number of  
Connections: 9604

DATE	RAW WATER PUMPAGE (MGD)	TREATED WATER PUMPAGE (MGD)	RAW WATER ANALYSES			DISINFECTION PROCESS DATA			FINISHED WATER ANALYSES									
			NTU	pH	Alk	D1	D2	D3	pH	Alk	TURBIDITY						DISINFECTANT	
											1	2	3	4	5	6	Lowest Residual	Time*
1	4211.5	3994.7	32.0	8.0	112	.3	X	X	7.6	81	.2	.2	.2	.2	.2	.2	3.5	
2	3968.0	4141.3	30.0	7.8	113	.3	X	X	7.6	83	.2	.2	.2	.2	.2	.2	3.5	
3	3485.8	2912.9	28.0	7.9	113	.3	X	X	7.6	87	.2	.2	.2	.2	.2	.2	3.8	
4	4464.9	3631.5	24.0	7.9	116	.3	X	X	7.6	88	.2	.2	.2	.2	.2	.2	3.8	
5	4745.3	3944.3	26.0	8.0	112	.3	X	X	7.7	86	.2	.2	.2	.2	.2	.2	3.8	
6	3520.3	3651.7	30.0	8.0	111	.3	X	X	7.7	84	.2	.2	.2	.2	.2	.2	3.8	
7	4046.7	3971.9	23.0	8.0	112	.3	X	X	7.7	86	.2	.1	.1	.2	.2	.2	4.9	
8	3960.6	4191.0	23.0	8.0	110	.3	X	X	7.6	85	.2	.1	.1	.2	.2	.2	3.5	
9	3963.1	4131.6	31.0	8.0	111	.3	X	X	7.6	84	.2	.2	.2	.2	.2	.2	3.8	
10	3476.0	3470.9	34.0	8.0	111	.3	X	X	7.6	86	.2	.2	.2	.2	.2	.2	4.2	
11	3020.9	2954.6	29.0	8.0	112	.3	X	X	7.7	92	.2	.2	.2	.2	.2	.2	4.0	
12	3886.8	3632.6	26.0	7.8	110	.3	X	X	7.6	90	.2	.2	.2	.2	.2	.2	4.0	
13	3936.0	4011.5	20.0	7.9	108	.3	X	X	7.6	94	.2	.2	.2	.2	.2	.2	4.2	
14	3444.0	3487.3	22.0	7.9	110	.3	X	X	7.7	88	.2	.2	.2	.2	.2	.2	4.3	
15	3001.2	3012.7	18.0	8.0	110	.3	X	X	7.8	86	.2	.2	.2	.2	.2	.2	4.1	
16	3284.1	3344.3	24.0	8.0	108	.3	X	X	7.7	88	.2	.2	.2	.2	.2	.2	4.2	
17	3045.5	3073.1	28.0	8.0	110	.3	X	X	7.8	90	.2	.2	.2	.2	.2	.2	4.2	
18	2767.5	2891.2	31.0	7.8	113	.3	X	X	7.6	92	.2	.2	.2	.2	.2	.2	4.2	
19	2952.0	2928.2	29.0	8.0	111	.3	X	X	7.7	90	.2	.2	.2	.3	.3	.2	4.3	
20	3025.8	3162.9	21.0	8.0	113	.3	X	X	7.7	93	.3	.3	.3	.3	.3	.2	4.0	
21	3087.3	3425.6	23.0	8.0	110	.3	X	X	7.6	90	.2	.2	.2	.2	.2	.2	3.5	
22	2988.9	2965.8	24.0	8.0	112	.3	X	X	7.7	86	.2	.2	.2	.2	.2	.2	4.8	
23	3257.0	3212.9	27.0	7.9	110	.3	X	X	7.6	90	.2	.2	.2	.2	.2	.2	4.6	
24	2829.0	3168.4	24.0	8.0	109	.3	X	X	7.7	88	.2	.2	.2	.2	.2	.2	4.5	
25	2952.0	2806.7	23.0	8.0	112	.3	X	X	7.6	86	.2	.2	.2	.2	.2	.2	4.0	
26	2624.8	2709.5	20.0	8.0	110	.3	X	X	7.7	90	.2	.3	.3	.3	.3	.3	4.3	
27	3259.5	3203.8	22.0	7.9	114	.3	X	X	7.7	92	.2	.2	.2	.2	.2	.2	4.0	
28	2767.5	2729.9	24.0	8.0	110	.3	X	X	7.8	90	.2	.2	.2	.2	.2	.2	4.2	
29	3075.0	3249.1	28.0	7.9	110	.3	X	X	7.6	86	.2	.2	.2	.2	.2	.2	4.0	
30	3222.6	3510.5	8.0	8.0	115	.3	X	X	7.8	94	.2	.3	.3	.3	.3	.2	4.0	
31	2747.8	2713.2	19.0	7.9	113	.3	X	X	7.7	92	.2	.3	.2	.2	.2	.2	4.0	
TOTAL	105017.4	104235.6	Disinfectant No. 1: <u>CLO2</u>			Total No. of Turbidity Readings: <u>186</u>												
AVG	3387.7	3362.4	Disinfectant No. 2: <u>N/A</u>			No. above 0.5 NTU: <u>0</u> No. above 1.0 NTU: <u>0</u>												
MAX	4745.3	4191.0	Disinfectant No. 3: <u>N/A</u>			* NOTE: ONLY use the "TIME" column to show the length of time that the disinfectant residual entering the distribution system fell below acceptable levels.												
MIN	2624.8	2709.5	Distribution Disinfectant: <u>N/A</u>															

Submitted by: James Robert

Date: 12/31/94

ADDITIONAL REPORTING REQUIREMENTS ON THE FRONT OF THIS FORM

Name of System: SHARYLAND WATER SUPPLY CORPORATION PWS ID No.: 1080033  
 Name of Plant or Plant No.: 1 Month/Year: 1-95

Number of Connections: 9644

DATE	RAW WATER PUMPAGE (MGD)	TREATED WATER PUMPAGE (MGD)	RAW WATER ANALYSES			DISINFECTION PROCESS DATA			FINISHED WATER ANALYSES									
			NTU	pH	Alk	D1	D2	D3	pH	Alk	TURBIDITY						DISINFECTANT	
											1	2	3	4	5	6	Lowest Residual	Time <sup>†</sup>
1	2809.3	2879.5	19.0	8.0	112	.3	X	X	7.8	94	.3	.2	.2	.2	.2	.2	3.8	
2	2583.0	2640.5	21.0	8.0	111	.3	X	X	7.8	95	.2	.2	.2	.2	.2	.2	4.0	
3	3055.3	2932.0	16.0	8.0	113	.3	X	X	7.8	90	.2	.3	.3	.2	.2	.3	3.6	
4	2816.7	2631.4	20.0	8.0	112	.3	X	X	7.8	94	.3	.4	.4	.2	.2	.3	4.0	
5	2755.2	2787.2	21.0	8.0	113	.3	X	X	7.8	91	.3	.2	.2	.2	.2	.2	3.5	
6	2809.3	2809.3	22.0	8.0	110	.3	X	X	7.8	92	.2	.3	.3	.3	.3	.2	3.6	
7	2952.0	2952.0	18.0	8.0	114	.3	X	X	7.7	96	.2	.4	.3	.3	.3	.3	4.5	
8	3444.0	3444.0	19.0	8.0	112	.3	X	X	7.8	93	.3	.2	.2	.3	.3	.3	4.8	
9	3586.7	3530.1	17.0	8.0	110	.3	X	X	7.8	92	.3	.3	.2	.2	.2	.3	4.7	
10	3308.7	3382.5	20.0	8.0	111	.3	X	X	7.8	91	.2	.2	.2	.2	.2	.2	4.1	
11	3330.8	3419.4	27.0	8.0	112	.3	X	X	7.8	92	.2	.2	.2	.2	.2	.2	4.0	
12	3402.2	3271.8	21.0	8.0	113	.3	X	X	7.8	93	.2	.2	.2	.2	.2	.2	4.0	
13	3444.0	3379.4	28.0	8.0	112	.3	X	X	7.8	90	.2	.2	.2	.2	.2	.2	3.9	
14	3136.5	3092.2	23.0	8.0	110	.3	X	X	7.8	92	.2	.2	.2	.2	.2	.2	3.8	
15	3567.0	3541.0	19.0	8.0	111	.3	X	X	7.8	95	.2	.3	.3	.2	.2	.2	3.7	
16	3997.5	3837.1	21.0	8.0	113	.3	X	X	7.7	94	.2	.2	.2	.2	.2	.2	2.6	
17	3731.8	3533.0	27.0	8.0	113	.3	X	X	7.8	93	.2	.2	.2	.2	.2	.2	2.7	
18	3788.4	3765.7	28.0	8.0	110	.3	X	X	7.8	95	.2	.2	.2	.2	.2	.2	3.0	
19	3522.7	3345.7	22.0	8.0	115	.3	X	X	7.8	95	.2	.4	.4	.4	.4	.4	4.0	
20	3480.9	3635.3	22.0	8.0	114	.3	X	X	7.8	94	.4	.4	.3	.3	.2	.3	4.9	
21	3579.3	3635.8	28.0	8.0	115	.3	X	X	7.8	94	.3	.3	.3	.3	.3	.3	4.0	
22	3744.1	3297.4	23.0	7.9	112	.3	X	X	7.7	90	.2	.3	.3	.2	.2	.3	4.5	
23	4231.2	4106.7	27.0	8.0	114	.3	X	X	7.8	92	.3	.3	.3	.3	.3	.3	4.5	
24	3468.6	3333.0	25.0	8.0	114	.3	X	X	7.8	93	.3	.3	.3	.3	.3	.3	4.5	
25	3271.8	2826.1	22.0	8.0	110	.3	X	X	7.7	92	.3	.3	.3	.3	.3	.3	4.5	
26	3038.1	2590.5	21.0	8.0	112	.3	X	X	7.7	93	.3	.3	.3	.3	.3	.3	4.5	
27	4120.5	3068.5	20.0	8.0	112	.3	X	X	7.8	86	.2	.3	.3	.3	.3	.3	4.5	
28	3793.3	3055.3	22.0	8.0	118	.3	X	X	7.7	90	.3	.3	.3	.3	.3	.3	4.5	
29	4078.7	3481.0	27.0	8.0	110	.3	X	X	7.8	90	.3	.3	.3	.3	.3	.3	4.5	
30	3714.6	3360.1	27.0	8.0	113	.3	X	X	7.8	90	.3	.3	.3	.3	.3	.3	4.5	
31	3869.6	3519.2	24.0	8.0	110	.3	X	X	7.7	82	.3	.3	.3	.3	.3	.3	4.5	
TOTAL	106431.8	101082.1	Disinfectant No. 1: <u>CL02</u>			Total No. of Turbidity Readings: <u>186</u>												
AVG	3433.3	3260.7	Disinfectant No. 2: <u>N/A</u>			No. above 0.5 NTU: <u>0</u> No. above 1.0 NTU: <u>0</u>												
MAX	4231.2	4106.7	Disinfectant No. 3: <u>N/A</u>			* NOTE: ONLY use the "TIME" column to show the length of time that the disinfectant residual entering the distribution system fell below acceptable levels.												
MIN	2583.0	2590.5	Distribution Disinfectant: <u>N/A</u>															

Submitted by: James R. Smith Date: 1-31-95

Name of System: SHARYLAND WATER SUPPLY CORPORATION PWS ID No.: 80033  
 Name of Plant: \_\_\_\_\_ Month/Year: 2-95 Number of Connections: 9676  
 or Plant No.: \_\_\_\_\_

DATE	RAW WATER PUMPAGE (MGD)	TREATED WATER PUMPAGE (MGD)	RAW WATER ANALYSES			DISINFECTION PROCESS DATA			FINISHED WATER ANALYSES									
			NTU	pH	Alk	D1	D2	D3	pH	Alk	TURBIDITY						DISINFECTANT	
											1	2	3	4	5	6	Lowest Residual	Time*
1	4243.5	3918.8	20.0	8.0	112	.3	X	X	7.6	84	.3	.3	.3	.4	.4	.4	4.5	
2	4002.4	4026.6	24.0	8.0	113	.3	X	X	7.8	85	.4	.3	.3	.3	.3	.4	4.5	
3	4543.6	3980.9	23.0	8.0	106	.3	X	X	7.8	76	.4	.3	.3	.3	.3	.3	4.5	
4	3867.1	3623.4	28.0	8.0	105	.3	X	X	7.7	85	.4	.3	.3	.3	.3	.3	4.5	
6	4583.0	4017.3	27.0	7.9	112	.3	X	X	7.7	80	.3	.3	.3	.3	.3	.3	4.5	
8	4814.2	4373.0	28.0	8.0	120	.3	X	X	7.8	96	.3	.4	.4	.3	.3	.4	4.5	
7	4337.0	4202.1	27.0	8.0	125	.3	X	X	7.8	94	.4	.4	.3	.4	.4	.4	4.5	
8	4428.0	4239.1	28.0	8.0	118	.3	X	X	7.7	89	.4	.3	.3	.4	.4	.4	4.5	
9	3517.0	2645.7	28.0	8.0	115	.3	X	X	7.6	88	.4	.3	.3	.3	.2	.2	4.5	
10	4428.0	4199.1	28.0	8.0	116	.3	X	X	7.8	96	.2	.3	.3	.3	.3	.4	4.5	
11	4513.3	4303.6	22.0	8.0	117	.3	X	X	7.8	96	.4	.4	.4	.3	.3	.4	4.0	
12	4755.2	4397.8	18.0	8.0	115	.3	X	X	7.7	93	.4	.4	.3	.3	.3	.4	4.5	
13	3904.0	3257.2	24.0	8.0	120	.3	X	X	7.8	96	.3	.3	.3	.3	.3	.3	4.5	
14	4046.7	3468.8	27.0	8.0	118	.3	X	X	7.8	96	.3	.3	.3	.3	.3	.3	4.5	
16	3690.0	3828.3	24.0	7.9	122	.3	X	X	7.7	96	.3	.3	.3	.3	.3	.3	4.5	
18	4755.2	4469.0	24.0	8.0	115	.3	X	X	7.4	94	.3	.3	.3	.3	.3	.3	4.5	
17	4059.0	3769.9	35.0	8.0	120	.3	X	X	7.8	94	.3	.3	.3	.3	.3	.3	4.5	
18	3259.5	2792.7	28.0	8.0	117	.3	X	X	7.5	95	.3	.3	.3	.3	.3	.3	4.5	
19	3751.5	3718.2	24.0	8.0	115	.3	X	X	7.5	94	.3	.3	.3	.3	.3	.3	4.5	
20	3505.5	3047.9	25.0	8.1	114	.3	X	X	7.5	90	.3	.3	.3	.3	.3	.3	4.5	
21	4674.0	4291.7	27.0	8.1	114	.3	X	X	7.5	89	.4	.3	.3	.3	.3	.3	4.5	
22	4755.2	4447.1	28.0	8.0	116	.3	X	X	7.6	94	.3	.3	.3	.2	.2	.3	4.5	
23	4551.0	4329.7	32.0	8.0	114	.3	X	X	7.7	86	.3	.3	.3	.3	.3	.3	5.0	
24	4920.0	4535.7	28.0	8.0	114	.3	X	X	7.6	88	.3	.3	.3	.3	.3	.3	4.0	
25	4305.0	4190.1	27.0	8.0	117	.3	X	X	7.6	87	.3	.3	.3	.3	.3	.3	4.0	
26	4735.5	4322.4	24.0	8.0	116	.3	X	X	7.6	87	.3	.3	.3	.3	.3	.3	4.0	
27	5289.0	4981.2	25.0	8.0	116	.3	X	X	7.6	90	.3	.3	.3	.3	.3	.3	4.5	
29	4961.8	4657.1	23.0	8.0	113	.3	X	X	7.6	89	.3	.3	.3	.3	.3	.3	4.5	
29																		
30																		
31																		
TOTAL	121213.2	112034.4	Disinfectant No. 1: <u>ClO2</u>			Total No. of Turbidity Readings: <u>168</u>												
AVG	4329.0	4001.2	Disinfectant No. 2: <u>N/A</u>			No. above 0.5 NTU: <u>0</u> No. above 1.0 NTU: <u>0</u>												
MAX	5289.0	4981.2	Disinfectant No. 3: <u>N/A</u>			* NOTE: ONLY use the "TIME" column to show the length of time that the disinfectant residual entering the distribution system fell below acceptable levels.												
MIN	3259.5	2645.7	Distribution Disinfectant: <u>N/A</u>															

Submitted by: James Pink

Date: 2-28-95

ADDITIONAL REPORTING REQUIREMENTS ON THE FRONT OF THIS FORM

Name of System: SHARYLAND WATER SUPPLY CORPORATION

PWS ID No.: 1087

Name of Plant:

Month/Year: 3/95

or Plant No.:

Number of Connections: 9707

DATE	RAW WATER PUMPAGE (MGD)	TREATED WATER PUMPAGE (MGD)	RAW WATER ANALYSES			DISINFECTION PROCESS DATA			FINISHED WATER ANALYSES									
			NTU	pH	Alk	O1	O2	O3	pH	Alk	TURBIDITY						DISINFECTANT	
											1	2	3	4	5	6	Lowest Residual	Time †
1	4981.5	4650.7	34.0	8.1	112	.3	X	X	7.7	82	.3	.3	.3	.3	.3	.3	4.7	
2	3975.4	3409.8	34.0	7.9	113	.3	X	X	7.8	90	.3	.3	.3	.3	.2	.2	4.6	
3	2991.4	2478.5	30.0	8.0	110	.3	X	X	7.7	88	.2	.2	.2	.2	.2	.2	4.5	
4	2829.0	2230.1	32.0	8.0	110	.3	X	X	7.6	87	.2	.2	.2	.2	.2	.2	4.0	
5	2971.7	2766.5	30.0	8.0	111	.3	X	X	7.7	88	.2	.2	.2	.2	.2	.2	4.0	
6	3483.4	3248.2	25.0	8.0	112	.3	X	X	7.7	82	.2	.2	.2	.2	.2	.2	4.0	
7	3751.5	3684.6	27.0	8.0	112	.3	X	X	7.6	84	.2	.2	.2	.2	.2	.2	3.5	
8	4243.5	2908.9	28.0	8.0	115	.3	X	X	7.7	89	.2	.2	.2	.2	.2	.2	3.8	
9	3763.8	2880.8	28.0	8.0	112	.3	X	X	7.8	88	.2	.2	.2	.2	.2	.2	4.5	
10	4363.5	3209.4	21.0	8.1	118	.3	X	X	7.8	88	.2	.1	.1	.2	.2	.2	4.5	
11	4366.5	3812.9	20.0	8.1	116	.3	X	X	7.7	89	.2	.1	.1	.2	.2	.2	4.5	
12	4674.0	4170.6	23.0	8.0	119	.3	X	X	7.6	91	.2	.2	.2	.2	.2	.2	4.5	
13	4592.8	4218.3	20.0	8.0	112	.3	X	X	7.6	90	.1	.1	.1	.1	.1	.1	4.5	
14	4017.2	4636.0	20.0	8.0	114	.3	X	X	7.6	88	.1	.1	.1	.1	.1	.1	4.5	
15	5289.0	4871.5	20.0	8.0	115	.3	X	X	7.7	87	.1	.1	.1	.1	.1	.1	4.5	
16	5227.5	4602.6	27.0	8.0	118	.3	X	X	7.8	90	.1	.2	.1	.1	.1	.1	4.5	
17	5001.2	4520.5	22.0	8.0	114	.3	X	X	7.6	86	.1	.2	.1	.2	.2	.1	4.5	
18	5904.0	5000.6	26.0	8.0	115	.3	X	X	7.7	92	.1	.2	.2	.2	.2	.1	4.5	
19	5904.0	5008.7	25.0	8.0	112	.3	X	X	7.8	91	.1	.1	.1	.2	.2	.1	4.5	
20	5904.0	5295.6	27.0	7.8	118	.3	X	X	7.6	93	.2	.2	.2	.2	.2	.2	3.8	
21	5904.0	5322.8	27.0	8.0	118	.3	X	X	7.7	93	.2	.2	.2	.2	.3	.2	3.9	
22	5904.0	5299.8	30.0	8.0	112	.3	X	X	7.7	95	.2	.2	.2	.2	.2	.2	3.8	
23	5904.0	5347.4	23.0	8.0	114	.3	X	X	7.7	88	.2	.1	.1	.2	.2	.2	4.0	
24	5904.0	5299.4	26.0	8.0	113	.3	X	X	7.7	93	.2	.2	.2	.2	.2	.2	4.3	
25	5904.0	5324.6	26.0	8.0	114	.3	X	X	7.7	94	.2	.2	.2	.2	.2	.2	4.4	
26	5904.0	5320.6	25.0	8.0	114	.3	X	X	7.7	93	.2	.2	.2	.3	.3	.2	4.3	
27	5904.0	5298.6	25.0	8.0	113	.3	X	X	7.8	94	.2	.2	.2	.2	.2	.2	4.4	
28	4735.5	3649.8	25.0	8.0	113	.3	X	X	7.8	94	.2	.2	.2	.2	.2	.2	4.0	
29	4009.8	3477.5	28.0	8.0	114	.3	X	X	7.8	94	.1	.2	.2	.2	.2	.1	4.0	
30	3599.0	2919.0	33.0	8.0	112	.3	X	X	7.8	86	.1	.2	.1	.1	.1	.1	4.4	
31	3655.6	3198.7	29.0	8.0	113	.3	X	X	7.8	93	.1	.2	.2	.2	.2	.1	4.5	
TOTAL	145562.8	128143.0	Disinfectant No. 1: CLO2			Total No. of Turbidity Readings: 186												
AVG	4695.6	4133.6	Disinfectant No. 2: N/A			No. above 0.5 NTU: 0 No. above 1.0 NTU: 0												
MAX	5904.0	5347.4	Disinfectant No. 3: N/A			* NOTE: ONLY use the 'TIME' column to show the length of time that the disinfectant residual entering the distribution system fall below acceptable levels.												
MIN	2829.0	2230.1	Distribution Disinfectant: N/A															

Submitted by: James R. Ricketts

Date: 3-31-95

ADDITIONAL REPORTING REQUIREMENTS ON THE FRONT OF THIS FORM

Name of System: SHARYLAND WATER SUPPLY CORP.

PWS ID No.: 1080003

Name of Plant or Plant No.:

Month/Year: 4/95

Number of Connections: 9760

DATE	RAW WATER PUMPAGE (MGD)	TREATED WATER PUMPAGE (MGD)	RAW WATER ANALYSES			DISINFECTION PROCESS DATA			FINISHED WATER ANALYSES									
			NTU	pH	Alk	D1	D2	D3	pH	Alk	TURBIDITY						DISINFECTANT	
											1	2	3	4	5	6	Lowest Residual	Time <sup>+</sup>
1	2804.4	2497.0	29.0	8.0	114	.3	X	X	7.8	94	.2	.2	.2	.2	.2	.2	4.5	
2	3009.6	2977.4	28.0	8.0	113	.3	X	X	7.8	95	.2	.2	.2	.2	.2	.2	4.4	
3	3237.6	3084.4	28.0	8.0	112	.3	X	X	7.8	90	.2	.2	.2	.2	.2	.2	4.3	
4	3693.6	3559.2	28.0	8.0	111	.3	X	X	7.8	92	.2	.2	.2	.2	.2	.2	4.5	
5	4211.2	4214.0	26.0	8.0	111	.3	X	X	7.8	93	.2	.2	.2	.2	.2	.2	4.3	
6	4436.9	4471.9	23.0	8.0	108	.3	X	X	7.7	85	.2	.2	.2	.2	.2	.2	4.5	
7	5472.0	5194.7	26.0	8.0	110	.3	X	X	7.8	90	.2	.2	.2	.2	.2	.2	4.4	
8	5472.0	5036.9	27.0	8.0	109	.3	X	X	7.8	91	.2	.2	.2	.2	.2	.2	4.5	
9	5095.8	5140.0	27.0	8.0	112	.3	X	X	7.8	92	.2	.2	.2	.2	.2	.2	4.3	
10	6480.0	5355.2	27.0	8.0	109	.3	X	X	7.8	90	.2	.3	.3	.3	.4	.3	4.2	
11	5472.0	5696.4	27.0	8.0	109	.3	X	X	7.8	91	.3	.3	.3	.3	.3	.3	4.0	
12	5472.0	5135.6	37.0	8.0	110	.3	X	X	7.8	86	.3	.3	.3	.3	.3	.3	4.5	
13	6480.0	5446.6	34.0	8.0	108	.3	X	X	7.8	89	.3	.2	.2	.2	.2	.4	4.4	
14	5976.0	5331.8	29.0	8.0	109	.3	X	X	7.8	91	.4	.4	.3	.3	.4	.4	4.1	
15	6010.2	5336.6	37.0	8.0	111	.3	X	X	7.9	88	.3	.3	.3	.3	.3	.3	4.2	
16	5086.7	5303.0	39.0	8.0	102	.3	X	X	7.8	86	.3	.3	.3	.3	.3	.3	4.2	
17	5084.4	5183.1	38.0	8.0	104	.3	X	X	7.8	88	.3	.3	.3	.3	.3	.3	4.0	
18	5472.0	5636.1	40.0	8.0	108	.3	X	X	7.8	89	.3	.3	.3	.3	.3	.3	4.0	
19	6210.0	5619.5	36.0	8.0	110	.3	X	X	7.8	87	.3	.3	.3	.3	.3	.3	4.7	
20	5940.0	5766.1	32.0	8.0	112	.3	X	X	7.7	87	.3	.3	.3	.4	.3	.4	3.5	
21	5940.0	5574.2	39.0	8.0	100	.3	X	X	7.8	89	.4	.3	.3	.4	.3	.4	3.5	
22	5791.5	5457.8	30.0	8.0	111	.3	X	X	7.8	87	.4	.3	.3	.4	.4	.4	3.2	
23	5791.5	5838.2	31.0	8.0	108	.3	X	X	7.8	88	.4	.4	.4	.4	.4	.4	3.3	
24	4625.1	4718.6	39.0	8.0	111	.3	X	X	7.8	89	.3	.4	.4	.3	.4	.4	3.6	
25	4446.9	4929.7	38.0	8.0	110	.3	X	X	7.8	88	.4	.4	.4	.3	.4	.4	3.6	
26	4981.5	5175.3	29.0	8.0	99	.3	X	X	7.7	82	.3	.3	.3	.3	.3	.3	3.7	
27	5130.0	5443.0	33.0	8.0	108	.3	X	X	7.6	83	.3	.3	.3	.3	.3	.3	3.5	
28	4919.4	5472.0	26.0	7.9	104	.3	X	X	7.6	84	.3	.3	.3	.3	.3	.3	3.4	
29	5259.6	5278.7	28.0	7.5	103	.3	X	X	7.6	87	.3	.3	.3	.3	.3	.3	4.1	
30	5470.2	5592.4	31.0	7.9	103	.3	X	X	7.6	88	.3	.3	.3	.3	.3	.3	3.8	
31																		
TOTAL	153472.1	149464.9	Disinfectant No. 1: <u>CLO2</u>			Total No. of Turbidity Readings: <u>180</u>												
AVG	5115.7	4982.2	Disinfectant No. 2: <u>N/A</u>			No. above 0.5 NTU: <u>0</u> No. above 1.0 NTU: <u>0</u>												
MAX	6480.0	5838.2	Disinfectant No. 3: <u>N/A</u>			* NOTE: ONLY use the "TIME" column to show the length of time that the disinfectant residual entering the distribution system fell below acceptable levels.												
MIN	2804.4	2497.0	Distribution Disinfectant: <u>N/A</u>															

Submitted by: James R. [Signature] Date: 4-30-95

Name of System: SHARYLAND WATER SUPPLY CORPORATION

PWS ID No.: 1U80033

Name of Plant

or Plant No.: 1

Month/Year: JUNE/95

Number of

Connections: 9613

DATE	RAW WATER PUMPAGE (MGD)	TREATED WATER PUMPAGE (MGD)	RAW WATER ANALYSES			DISINFECTION PROCESS DATA			FINISHED WATER ANALYSES									
			NTU	pH	Alk	D1	D2	D3	pH	Alk	TURBIDITY						DISINFECTANT	
											1	2	3	4	5	6	Lowest Residual	Time*
1	3712.5	3514.2	23.0	7.8	111	.3	X	X	7.6	91	.2	.2	.2	.2	.2	.2	3.8	
2	4649.4	3863.1	26.0	7.9	109	.3	X	X	7.7	84	.2	.2	.2	.2	.2	.2	4.0	
3	4179.6	4078.3	43.0	8.0	123	.3	X	X	7.7	80	.2	.2	.2	.2	.2	.2	3.8	
4	4725.0	4335.5	27.0	7.8	110	.3	X	X	7.6	85	.3	.2	.2	.2	.2	.2	3.5	
5	4741.2	4807.3	26.0	7.9	110	.3	X	X	7.7	80	.2	.2	.2	.2	.2	.2	3.7	
6	4887.0	4951.1	25.0	8.0	105	.3	X	X	7.7	88	.2	.2	.2	.2	.2	.2	3.5	
7	4959.9	5157.0	26.0	7.9	112	.3	X	X	7.6	91	.2	.3	.2	.2	.2	.2	3.4	
8	5400.0	5214.6	25.0	8.0	105	.3	X	X	7.7	85	.2	.3	.3	.3	.3	.2	3.6	
9	4981.5	5228.8	26.0	8.0	105	.3	X	X	7.6	91	.3	.3	.3	.3	.2	.2	3.8	
10	5310.9	5295.9	22.0	8.0	110	.3	X	X	7.6	92	.2	.3	.3	.2	.2	.3	3.8	
11	4949.1	5210.0	23.0	8.0	111	.3	X	X	7.6	92	.3	.3	.3	.2	.2	.2	4.0	
12	2667.6	2979.1	28.0	8.1	109	.3	X	X	7.6	88	.2	.2	.2	.2	.2	.2	4.0	
13	3762.0	3682.8	25.0	8.1	108	.3	X	X	7.6	89	.2	.2	.2	.2	.2	.2	3.5	
14	4218.0	3743.3	21.0	8.0	110	.3	X	X	7.6	91	.2	.2	.2	.2	.2	.2	4.0	
15	4297.8	3958.2	22.0	7.8	108	.3	X	X	7.6	86	.2	.1	.2	.2	.2	.2	4.0	
16	5130.0	4285.5	21.0	8.1	108	.3	X	X	7.5	78	.2	.1	.1	.2	.1	.2	4.0	
17	4484.8	4388.6	22.0	8.1	110	.3	X	X	7.5	78	.2	.2	.2	.2	.2	.2	3.8	
18	4959.0	4602.5	24.0	8.0	111	.3	X	X	7.5	79	.2	.2	.2	.2	.2	.2	3.8	
19	4959.0	4523.4	26.0	8.0	110	.3	X	X	7.6	79	.2	.2	.2	.2	.2	.2	3.8	
20	4131.0	3673.0	24.0	8.0	110	.3	X	X	7.6	86	.2	.2	.2	.2	.2	.2	4.0	
21	3780.2	3681.6	30.0	8.0	108	.3	X	X	7.6	78	.2	.2	.2	.2	.2	.2	4.0	
22	4414.1	4204.8	23.0	8.0	98	.4	X	X	7.6	82	.2	.2	.2	.2	.2	.2	2.8	
23	5050.2	4659.2	21.0	8.0	110	.4	3.8	3.3	7.6	86	.2	.2	.2	.2	.2	.2	3.3	
24	4674.0	4591.4	21.0	8.0	111	.4	3.8	3.5	7.6	82	.2	.2	.2	.2	.2	.2	3.5	
25	5168.8	4810.4	22.0	8.0	111	.4	3.6	3.6	7.6	84	.2	.2	.2	.2	.2	.2	3.6	
26	5472.0	4956.6	26.0	8.0	112	.4	3.6	3.8	7.4	84	.2	.2	.2	.2	.2	.2	3.6	
27	5472.0	5119.5	30.0	8.0	111	.4	3.8	4.2	7.8	84	.3	.3	.3	.2	.2	.2	4.2	
28	5316.0	4930.8	26.0	8.0	111	.4	3.6	3.8	7.7	84	.3	.2	.2	.2	.2	.2	3.8	
29	5400.0	5113.8	33.0	8.0	111	.6	3.6	3.6	7.7	84	.3	.2	.2	.2	.2	.2	3.8	
30	5219.1	4903.4	26.0	8.0	112	.5	3.6	3.6	7.6	85	.2	.2	.2	.2	.2	.2	3.6	
31																		
TOTAL	41071.7	134463.7	Disinfectant No. 1: <u>CLO2</u>			Total No. of Turbidity Readings: <u>180</u>												
AVG	4702.4	4337.5	Disinfectant No. 2: <u>2.6</u>			No. above 0.5 NTU: <u>0</u> No. above 1.0 NTU: <u>0</u>												
MAX	5472.0	5295.9	Disinfectant No. 3: <u>2.6</u>			* NOTE: ONLY use the "TIME" column to show the length of time that the disinfectant residual entering the distribution system fall below acceptable levels.												
MIN	2667.6	2979.1	Distribution Disinfectant: <u>N/A</u>															

Submitted by: James R. Ricketts

Date: 6-30-95

ADDITIONAL REPORTING REQUIREMENTS ON THE FRONT OF THIS FORM



Name of System: SHARYLAND WATER SUPPLY CORPORATION PWS ID No.: 080033

Name of Plant or Plant No.: 1

Month/Year: 7/95

Number of Connections: 9644

DATE	RAW WATER PUMPAGE (MGD)	TREATED WATER PUMPAGE (MGD)	RAW WATER ANALYSES			DISINFECTION PROCESS DATA			FINISHED WATER ANALYSES									
			NTU	pH	Alk	D1	D2	D3	pH	Alk	TURBIDITY						DISINFECTANT	
											1	2	3	4	5	6	Lowest Residual	Time †
1	4662.9	4781.7	22.0	8.0	110	.3	3.8	3.6	7.6	85	.2	.2	.2	.2	.2	.2	3.6	
2	4860.0	5021.1	26.0	8.0	114	.3	3.8	3.6	7.6	88	.2	.2	.2	.2	.2	.2	3.6	
3	4860.0	5136.2	27.0	8.1	115	.3	3.5	3.0	7.6	85	.2	.2	.2	.2	.2	.2	3.0	
4	5175.9	5155.0	27.0	8.0	112	.4	3.8	3.5	7.6	87	.2	.2	.2	.2	.2	.2	3.5	
5	5359.5	5343.8	31.0	8.0	103	.4	3.8	3.6	7.6	80	.2	.2	.2	.2	.2	.2	3.6	
6	5940.0	5666.3	27.0	8.0	112	.5	3.6	3.6	7.8	84	.2	.2	.2	.2	.2	.2	3.6	
7	5378.4	4956.8	26.0	8.0	110	.3	3.8	3.8	7.8	86	.2	.2	.2	.2	.2	.2	3.8	
8	5038.2	4194.2	28.0	7.9	112	.3	3.8	3.6	7.7	85	.2	.2	.2	.2	.2	.2	3.6	
9	5265.5	4734.4	27.0	7.9	110	.3	3.8	3.5	7.7	84	.2	.2	.2	.2	.2	.2	3.5	
10	5826.6	5205.2	26.0	7.8	102	.3	3.8	3.5	7.7	82	.2	.2	.2	.2	.2	.2	3.5	
11	5624.1	5471.3	26.0	7.8	104	.4	3.8	3.5	7.7	85	.2	.2	.2	.2	.2	.2	3.5	
12	5715.9	5510.9	25.0	8.0	110	.3	3.6	4.0	7.8	82	.2	.2	.2	.2	.2	.2	4.0	
13	5175.9	5063.9	21.0	8.0	96	.4	3.6	3.6	7.8	70	.2	.2	.2	.2	.2	.2	3.6	
14	4973.4	4922.3	20.0	8.0	102	.4	3.5	3.8	7.5	80	.2	.1	.1	.2	.2	.2	3.8	
15	4050.0	4067.2	24.0	7.9	103	.3	3.8	3.8	7.8	84	.1	.2	.2	.2	.2	.2	3.8	
16	4139.1	4047.1	25.0	7.9	102	.3	3.8	4.0	7.7	84	.2	.2	.2	.2	.2	.2	4.0	
17	4274.1	4789.7	25.0	7.8	104	.3	3.8	4.0	7.8	83	.2	.2	.2	.2	.2	.2	4.0	
18	4160.7	4053.6	25.0	7.8	103	.3	3.4	3.4	7.8	84	.2	.2	.2	.2	.2	.2	3.4	
19	4117.5	4025.3	21.0	7.9	104	.3	3.4	3.4	7.6	84	.2	.1	.1	.2	.2	.2	3.4	
20	4797.9	4897.0	21.0	8.0	90	.4	2.6	3.0	7.8	75	.2	.2	.2	.2	.2	.2	3.0	
21	5130.0	5268.3	23.0	7.9	101	.4	3.2	3.2	7.7	82	.2	.2	.2	.2	.2	.2	3.2	
22	5240.7	5398.5	24.0	8.0	101	.4	3.2	3.2	7.8	83	.2	.2	.2	.2	.2	.2	3.2	
23	5737.5	5502.6	24.0	8.0	103	.4	3.2	3.2	7.8	83	.2	.2	.2	.2	.2	.2	3.2	
24	5467.5	5551.9	25.0	8.0	102	.4	3.0	3.0	7.8	84	.2	.2	.2	.2	.2	.2	3.0	
25	5826.6	5774.9	26.0	8.0	103	.4	3.4	3.4	7.7	84	.2	.2	.2	.2	.2	.2	3.4	
26	5648.4	5899.4	24.0	8.0	103	.4	3.8	3.8	7.8	83	.2	.1	.2	.2	.2	.2	3.8	
27	5648.4	5738.4	30.0	8.0	108	.4	3.7	3.8	7.7	88	.2	.2	.2	.2	.2	.2	3.8	
28	5670.0	5858.2	26.0	8.0	106	.4	3.7	3.6	7.7	90	.2	.3	.3	.2	.2	.2	3.6	
29	5713.2	5763.5	27.0	8.0	105	.4	3.7	3.6	7.7	91	.2	.3	.3	.2	.2	.2	3.6	
30	5894.1	5807.9	26.0	8.0	105	.4	3.6	3.5	7.7	90	.2	.2	.2	.2	.2	.2	3.5	
31	5535.6	5525.6	27.0	7.9	103	.4	3.5	3.5	7.7	87	.2	.2	.2	.2	.2	.2	3.5	
TOTAL	160907.6	159141.2	Disinfectant No. 1: <u>CL02 - 0.2</u>			Total No. of Turbidity Readings: <u>186</u>												
AVG	5190.6	5133.6	Disinfectant No. 2: <u>0.5</u>			No. above 0.5 NTU: <u>0</u> No. above 1.0 NTU: <u>0</u>												
MAX	5940.0	5899.4	Disinfectant No. 3: <u>1.5</u>			* NOTE: ONLY use the 'TIME' column to show the length of time that the disinfectant residual entering the distribution system fell below acceptable levels.												
MIN	4050.0	4025.3	Distribution Disinfectant: <u>N/A</u>															

Submitted by: James R. Smith

Date: 7/31/95

ADDITIONAL REPORTING REQUIREMENTS ON THE FRONT OF THIS FORM

Name of System: SHARYLAND WATER SUPPLY CORPORATION PWS ID No.: 1080033  
 Name of Plant: \_\_\_\_\_ Month/Year: 8/95 Number of Connections: 9700  
 or Plant No.: \_\_\_\_\_

DATE	RAW WATER PUMPAGE (MGD)	TREATED WATER PUMPAGE (MGD)	RAW WATER ANALYSES			DISINFECTION PROCESS DATA			FINISHED WATER ANALYSES									
			NTU	pH	Aik	D1	D2	D3	pH	Aik	TURBIDITY						DISINFECTANT	
											1	2	3	4	5	6	Lowest Residual	Time †
1	4860.0	4754.2	77.0	7.8	101	.36	3.8	3.7	7.7	85	.2	.2	.2	.1	.1	.1	3.7	
2	4198.5	4502.3	71.0	7.9	105	.36	2.7	3.4	7.6	87	.2	.2	.2	.2	.2	.2	3.7	
3	4692.2	4858.6	20.0	8.0	101	.28	4.0	4.0	7.7	85	.2	.2	.2	.2	.2	.2	3.4	
4	5472.2	5121.1	25.0	7.9	98	.48	3.6	4.0	7.7	80	.2	.2	.2	.2	.2	.2	4.0	
5	5472.0	5100.6	24.0	7.9	97	.45	3.8	4.0	7.7	80	.2	.2	.2	.2	.2	.2	4.0	
6	5472.0	5294.5	77.0	7.8	88	.48	4.0	3.8	7.6	79	.2	.2	.2	.3	.2	.2	4.0	
7	5130.0	4723.9	21.0	8.0	86	.59	4.2	3.9	7.6	78	.2	.2	.2	.2	.2	.2	3.8	
8	4724.1	4545.5	24.0	8.0	92	.48	3.5	3.6	7.6	83	.2	.2	.2	.3	.3	.2	3.9	
9	4749.2	5584.5	21.0	8.0	92	.48	3.5	3.6	7.6	83	.3	.3	.3	.3	.3	.3	3.6	
10	4560.0	4172.8	26.0	8.0	94	.48	3.8	3.8	7.7	84	.3	.3	.3	.3	.3	.3	3.6	
11	3032.4	3194.8	24.0	7.9	92	.50	4.0	4.0	7.8	82	.3	.3	.3	.3	.3	.3	3.8	
12	2964.0	3008.1	32.0	7.8	94	.48	4.0	4.0	7.7	84	.3	.3	.3	.2	.2	.3	4.0	
13	3046.0	2911.3	34.0	7.9	89	.47	4.0	4.0	7.7	79	.3	.3	.3	.3	.3	.3	4.0	
14	3255.8	3395.9	26.0	8.0	96	.48	3.6	3.6	7.7	84	.2	.3	.3	.3	.3	.2	4.0	
15	3591.0	3732.1	28.0	8.0	99	.49	3.6	3.8	7.7	88	.3	.3	.3	.3	.3	.3	3.6	
16	3210.2	3534.0	25.0	7.9	92	.48	4.0	3.6	7.7	84	.3	.3	.3	.3	.3	.3	3.8	
17	3230.8	3572.7	25.0	7.9	94	.35	3.8	3.6	7.7	84	.3	.3	.3	.3	.3	.3	3.6	
18	3762.0	3757.5	22.0	7.8	97	.48	3.6	3.8	7.8	83	.3	.3	.3	.3	.3	.3	3.6	
19	3283.2	3594.8	20.0	7.9	99	.35	3.6	3.8	7.9	84	.3	.3	.3	.3	.3	.3	3.6	
20	3752.8	3907.0	22.0	7.9	95	.35	3.6	3.8	7.8	82	.3	.3	.3	.3	.4	.3	3.8	
21	4293.2	4229.2	25.0	8.0	92	.31	3.6	3.5	7.7	82	.4	.4	.4	.4	.4	.4	3.8	
22	4788.0	4691.7	26.0	7.9	96	.35	3.6	3.5	7.5	83	.4	.4	.4	.4	.4	.4	3.5	
23	4541.8	4227.1	30.0	8.0	99	.40	4.2	4.0	7.5	84	.4	.4	.4	.4	.4	.4	3.5	
24	4104.0	3725.5	36.0	8.0	100	.31	3.8	3.6	7.8	90	.4	.4	.4	.4	.4	.4	4.0	
25	3837.2	3912.9	32.0	8.0	103	.40	3.5	3.6	7.8	89	.4	.4	.4	.4	.4	.4	3.6	
26	4104.0	3983.2	39.0	7.9	96	.40	3.6	3.6	7.7	88	.4	.4	.4	.4	.4	.4	3.6	
27	5016.0	3419.4	34.0	7.9	97	.41	4.0	4.0	7.6	84	.4	.4	.4	.4	.4	.4	3.6	
28	4788.0	3717.9	32.0	7.9	96	.40	3.8	3.8	7.5	88	.4	.4	.4	.4	.4	.4	4.0	
29	4161.0	3718.5	31.0	7.9	98	.35	3.8	3.6	7.6	86	.4	.4	.4	.4	.4	.4	3.8	
30	3344.8	4005.1	34.0	8.0	97	.35	3.6	3.5	7.6	88	.4	.4	.4	.4	.4	.4	3.6	
31	4806.2	4225.6	26.0	7.9	96	.35	3.8	4.2	7.7	84	.4	.4	.4	.4	.4	.4	4.0	
TOTAL	130242.4	128122.3	Disinfectant No. 1: <u>CLO2 0.2</u>			Total No. of Turbidity Readings: <u>186</u>												
AVG	4201.4	4133.0	Disinfectant No. 2: <u>0.5</u>			No. above 0.5 NTU: <u>0</u>				No. above 1.0 NTU: <u>0</u>								
MAX	5472.0	5294.5	Disinfectant No. 3: <u>1.5</u>			* NOTE: ONLY use the "TIME" column to show the length of time that the disinfectant residual entering the distribution system fell below acceptable levels.												
MIN	2964.0	2911.3	Distribution Disinfectant: <u>N/A</u>															

Submitted by: Jamie R. [Signature] Date: 8/31/95

ADDITIONAL REPORTING REQUIREMENTS ON THE FRONT OF THIS FORM

Name of System: SHARYLAND WATER SUPPLY CORPORATION PWS ID No.: 105933  
 Name of Plant: \_\_\_\_\_ Month/Year: 9/95 Number of Connections: 967  
 or Plant No.: \_\_\_\_\_

DATE	RAW WATER PUMPAGE (MGD)	TREATED WATER PUMPAGE (MGD)	RAW WATER ANALYSES			DISINFECTION PROCESS DATA			FINISHED WATER ANALYSES									
			NTU	pH	Alk	D1	D2	D3	pH	Alk	TURBIDITY						DISINFECTANT	
											1	2	3	4	5	6	Lowest Residual	Time †
1	4788.0	4360.1	30.0	8.0	98	.48	3.9	4.0	7.7	82	.4	.4	.4	.4	.4	.4	4.0	
2	3306.0	3132.5	33.0	8.0	105	.40	4.0	3.8	7.7	82	.4	.4	.4	.3	.3	.3	3.8	
3	3996.8	3743.9	32.0	8.0	106	.35	3.6	3.4	7.8	85	.3	.4	.3	.3	.3	.3	3.4	
4	4326.0	3934.4	40.0	8.0	106	.41	3.8	3.8	7.7	80	.3	.3	.3	.3	.3	.3	3.8	
5	5152.8	4749.9	49.0	8.0	105	.41	3.8	3.6	7.8	80	.3	.3	.3	.3	.3	.3	3.6	
6	4731.0	4275.5	45.0	7.9	105	.41	4.0	4.0	7.6	80	.3	.3	.3	.3	.3	.2	4.0	
7	4536.0	3827.8	46.0	7.9	104	.45	4.0	3.8	7.6	82	.2	.3	.3	.3	.3	.2	3.8	
8	3876.0	3782.8	33.0	8.0	106	.45	4.2	3.8	7.7	80	.2	.3	.2	.2	.2	.2	3.8	
9	3472.4	3421.7	43.0	8.0	113	.45	3.9	3.8	7.8	80	.2	.2	.2	.2	.2	.2	3.8	
10	3898.8	3634.7	35.0	7.9	108	.41	4.0	4.0	7.7	85	.2	.2	.2	.2	.2	.2	4.0	
11	4393.6	3989.1	32.0	8.0	105	.40	4.0	4.0	7.8	80	.2	.2	.2	.2	.2	.2	4.0	
12	4487.0	4197.5	25.0	8.0	108	.47	4.0	4.0	7.8	80	.2	.2	.2	.2	.2	.2	4.0	
13	4464.2	4275.9	24.0	8.1	110	.47	3.9	3.9	7.6	70	.2	.2	.2	.2	.2	.2	3.9	
14	5123.2	4282.2	27.0	8.0	109	.47	3.9	3.9	7.7	82	.2	.2	.2	.2	.2	.2	3.9	
15	4279.6	4118.0	25.0	8.0	109	.49	3.9	3.8	7.7	86	.2	.2	.2	.2	.2	.2	3.8	
16	4293.2	4091.8	27.0	8.0	106	.45	3.9	3.8	7.7	88	.2	.2	.2	.2	.2	.2	3.8	
17	4872.4	4576.1	30.0	7.9	110	.49	3.5	3.5	7.7	85	.2	.2	.2	.2	.2	.2	3.5	
18	5266.8	4966.2	27.0	8.0	108	.45	3.3	3.2	7.7	84	.2	.2	.2	.2	.2	.2	3.2	
19	5244.0	4905.7	28.0	8.0	105	.45	3.6	3.6	7.7	90	.2	.2	.2	.2	.2	.2	3.6	
20	5472.0	4909.0	25.0	8.0	105	.40	3.6	3.8	7.7	84	.2	.2	.2	.2	.2	.2	3.8	
21	5904.0	4952.2	27.0	8.0	110	.40	3.4	3.4	7.7	84	.2	.2	.2	.2	.2	.2	3.4	
22	5130.0	4616.0	35.0	8.0	106	.45	3.8	4.0	7.8	83	.2	.2	.2	.2	.2	.2	4.0	
23	3141.8	2665.3	27.0	8.0	105	.45	3.8	4.0	7.8	80	.2	.2	.2	.2	.2	.2	4.0	
24	3039.2	3409.8	27.0	8.0	108	.40	3.8	4.0	7.7	83	.2	.2	.2	.2	.2	.2	4.0	
25	3682.2	3480.8	21.0	7.9	104	.40	3.0	4.2	7.7	80	.2	.2	.2	.2	.2	.2	4.2	
26	3914.8	3721.1	42.0	8.0	108	.45	3.8	3.9	7.7	83	.2	.2	.2	.2	.2	.3	3.9	
27	4551.0	3970.9	28.0	8.0	90	.45	4.0	4.0	7.7	70	.2	.2	.2	.2	.2	.2	4.0	
28	3926.2	3743.1	31.0	8.0	90	.42	3.8	3.8	7.8	83	.3	.2	.2	.2	.2	.2	3.8	
29	4610.2	4112.1	37.0	8.0	104	.36	3.8	3.8	7.8	84	.2	.2	.2	.2	.2	.2	3.8	
30	3914.8	4076.3	38.0	8.0	100	.42	3.8	3.8	7.7	83	.2	.2	.2	.2	.2	.2	3.8	
31																		
TOTAL	131794.0	121922.4	Disinfectant No. 1: <u>0.2</u>			Total No. of Turbidity Readings: <u>180</u>												
AVG	4393.1	4064.1	Disinfectant No. 2: <u>0.5</u>			No. above 0.5 NTU: <u>0</u> No. above 1.0 NTU: <u>0</u>												
MAX	5904.0	4952.2	Disinfectant No. 3: <u>1.5</u>			* NOTE: ONLY use the "TIME" column to show the length of time that the disinfectant residual entering the distribution system fell below acceptable levels.												
MIN	3039.2	2265.3	Distribution Disinfectant: _____															

Submitted by: James Robert Date: 9/30/95

ADDITIONAL REPORTING REQUIREMENTS ON THE FRONT OF THIS FORM

Name of System: SHARYLAND WATER SUPPLY CORPORATION PWS ID. No.: 106

Name of Plant or Plant No.: 1

Month/Year: 10/95

Number of Connections: 9707

DATE	RAW WATER PUMPAGE (MGD)	TREATED WATER PUMPAGE (MGD)	RAW WATER ANALYSES			DISINFECTION PROCESS DATA			FINISHED WATER ANALYSES									
			NTU	pH	Alk	O1	O2	O3	pH	Alk	TURBIDITY						DISINFECTANT	
											1	2	3	4	5	6	Lowest Residual	Time †
1	4731.0	4565.9	39.0	8.0	101	.40	3.6	3.8	7.6	84	.2	.2	.2	.2	.2	.2	3.8	
2	4256.8	4064.5	42.0	8.0	102	.40	3.0	3.4	7.7	84	.2	.2	.2	.2	.2	.2	3.8	
3	3039.2	3730.0	40.0	8.1	95	.45	3.0	3.4	7.9	70	.2	.2	.2	.2	.2	.2	3.4	
4	3912.5	3949.0	40.0	8.0	94	.42	3.8	3.8	7.7	70	.2	.2	.2	.2	.2	.2	3.8	
5	5114.0	4246.4	54.0	8.4	104	.45	3.8	3.8	7.8	70	.2	.2	.2	.2	.2	.2	3.8	
6	4788.0	4444.6	51.0	8.3	100	.42	2.7	3.4	7.9	70	.2	.2	.2	.2	.2	.2	3.4	
7	4218.0	4366.7	53.0	8.2	105	.38	3.5	3.6	7.7	75	.2	.2	.2	.2	.2	.2	3.6	
8	3826.0	4453.5	52.0	8.2	106	.35	3.8	3.8	7.7	73	.2	.2	.2	.2	.2	.2	3.8	
9	3420.0	4651.1	30.0	8.3	106	.35	3.8	3.9	7.9	74	.2	.2	.2	.2	.2	.2	3.9	
10	3267.2	4747.1	30.0	8.3	105	.35	4.2	4.0	7.9	73	.2	.2	.2	.2	.2	.2	4.0	
11	4788.0	4528.8	27.0	8.4	120	.37	3.9	4.2	7.8	95	.2	.2	.2	.2	.2	.2	4.2	
12	5091.2	4603.2	27.0	8.1	120	.36	3.6	3.8	7.9	95	.2	.2	.2	.2	.2	.2	3.8	
13	3534.0	3507.1	42.0	8.1	128	.35	3.4	3.5	7.6	101	.2	.2	.2	.2	.2	.2	3.5	
14	2850.0	2937.7	38.0	8.1	127	.35	3.5	3.5	7.7	100	.2	.2	.2	.3	.3	.2	3.8	
15	3267.2	3432.3	36.0	8.1	120	.37	3.8	3.8	7.7	98	.2	.3	.3	.2	.2	.2	3.5	
16	3722.2	3874.7	25.0	8.2	119	.38	3.4	3.5	7.8	90	.2	.3	.3	.3	.2	.2	3.5	
17	3951.2	4066.2	35.0	8.2	120	.35	3.4	3.5	7.8	92	.2	.2	.2	.2	.2	.2	3.5	
18	4332.0	4343.7	27.0	8.3	120	.38	3.6	3.8	7.9	90	.2	.2	.2	.2	.2	.2	3.8	
19	4179.2	3873.0	33.0	8.2	120	.38	3.8	3.8	7.9	90	.2	.2	.2	.2	.2	.2	3.8	
20	4635.2	4133.9	53.0	8.2	115	.33	3.3	3.6	7.9	85	.2	.2	.2	.2	.2	.2	3.6	
21	3826.0	3734.4	46.0	8.1	110	.35	3.5	3.6	7.8	86	.2	.2	.2	.2	.2	.2	3.8	
22	4635.2	4140.3	48.0	8.1	111	.37	3.5	3.8	7.8	86	.2	.2	.2	.2	.2	.2	3.8	
23	4826.8	4505.7	32.0	8.3	110	.35	3.8	3.6	7.9	80	.2	.2	.2	.2	.2	.2	3.6	
24	4674.0	4628.8	33.0	8.3	110	.37	3.4	3.4	7.8	85	.2	.1	.1	.2	.2	.2	3.4	
25	4179.2	3849.7	24.0	8.0	110	.37	3.0	3.0	7.9	80	.2	.1	.1	.1	.1	.2	3.0	
26	3686.8	3554.1	26.0	8.3	110	.33	2.2	2.6	7.8	80	.2	.1	.1	.1	.1	.2	2.6	
27	3894.2	3662.9	24.0	8.2	105	.35	2.0	2.6	7.9	80	.2	.2	.2	.2	.2	.2	2.6	
28	4098.4	3870.5	26.0	8.0	112	.37	2.4	2.6	7.9	85	.2	.2	.2	.2	.2	.2	2.6	
29	3813.0	3275.2	27.0	8.0	112	.35	2.4	2.6	7.9	83	.2	.2	.2	.2	.2	.2	2.6	
30	3628.5	2899.6	32.0	8.2	100	.37	2.0	2.6	7.9	80	.2	.2	.2	.2	.2	.2	2.6	
31	3936.0	3505.4	30.0	8.3	105	.40	3.2	3.9	7.9	80	.2	.2	.2	.2	.2	.2	3.9	
TOTAL	126121.0	124206.0	Disinfectant No. 1: <u>0.2</u>			Total No. of Turbidity Readings: <u>186</u>												
AVG	4068.4	4006.6	Disinfectant No. 2: <u>0.5</u>			No. above 0.5 NTU: <u>0</u> No. above 1.0 NTU: <u>0</u>												
MAX	5091.2	4747.1	Disinfectant No. 3: <u>1.5</u>			* NOTE: ONLY use the "TIME" column to show the length of time that the disinfectant residual entering the distribution system fall below acceptable levels.												
MIN	2850.0	2899.6	Distribution Disinfectant: _____															

Submitted by: James Rubin Date: 10-31-95

ADDITIONAL REPORTING REQUIREMENTS ON THE FRONT OF THIS FORM

Name of System: SHARYLAND WATER SUPPLY CORP.

PWS ID No.: 10863

Name of Plant:

Month/Year: 11-95

or Plant No.: 1

Number of Connections: 9737

DATE	RAW WATER PUMPAGE (MGD)	TREATED WATER PUMPAGE (MGD)	RAW WATER ANALYSES			DISINFECTION PROCESS DATA			FINISHED WATER ANALYSES									
			NTU	pH	Alk	D1	D2	D3	pH	Alk	TURBIDITY						DISINFECTANT	
											1	2	3	4	5	6	Lowest Residual	Time <sup>†</sup>
1	3648.0	3336.9	38.0	8.2	100	.37	3.6	3.6	7.9	84	.1	.1	.1	.2	.2	.1	3.6	
2	3814.4	3489.6	29.0	8.2	113	.35	3.6	3.8	7.6	75	.1	.2	.2	.2	.2	.2	3.8	
3	3997.5	3455.8	30.0	8.2	100	.36	3.6	3.8	7.7	80	.2	.2	.2	.2	.2	.2	3.8	
4	3198.0	2743.1	27.0	8.0	112	.37	3.5	3.5	7.8	85	.2	.2	.2	.2	.2	.2	3.5	
5	3421.9	2893.2	28.0	8.0	112	.36	3.5	3.5	7.8	82	.2	.2	.2	.2	.2	.2	3.5	
6	3690.0	3322.9	18.0	8.2	95	.40	4.0	4.0	7.6	70	.2	.1	.2	.2	.2	.2	4.0	
7	3955.7	3308.2	20.0	8.2	95	.36	3.8	3.8	7.6	75	.2	.2	.2	.2	.2	.2	3.8	
8	3819.0	3592.6	30.0	8.3	95	.40	3.6	3.6	7.6	75	.2	.1	.2	.2	.2	.2	3.6	
9	3609.2	3577.1	28.0	8.2	95	.36	3.6	3.6	7.6	70	.2	.2	.2	.2	.2	.2	3.6	
10	4036.9	3663.6	28.0	8.2	100	.37	3.6	3.6	7.6	75	.2	.2	.2	.2	.2	.2	3.6	
11	4140.2	3714.8	29.0	8.0	112	.40	3.6	3.5	7.8	80	.2	.2	.2	.2	.2	.2	3.5	
12	3894.2	3377.5	27.0	8.0	112	.40	3.8	3.8	7.8	79	.2	.2	.2	.2	.2	.2	3.8	
13	4199.8	4087.7	28.0	8.2	110	.40	3.6	3.6	7.6	75	.2	.2	.2	.2	.2	.2	3.6	
14	4920.0	4132.6	37.0	8.0	115	.40	3.8	4.0	7.8	82	.2	.2	.2	.2	.2	.2	4.0	
15	4632.2	3832.5	33.0	8.0	110	.35	3.8	4.0	7.8	80	.2	.2	.2	.2	.2	.2	4.0	
16	3750.6	3603.2	26.0	8.2	115	.37	3.9	3.9	7.8	85	.2	.2	.2	.2	.2	.2	3.9	
17	2850.0	2791.4	28.0	8.0	110	.45	3.4	3.8	7.8	80	.2	.2	.1	.2	.2	.2	3.8	
18	3321.0	2942.4	27.0	8.0	112	.47	3.3	3.5	7.8	84	.2	.2	.2	.2	.2	.2	3.5	
19	3114.4	3039.8	27.0	8.0	113	.40	2.8	2.5	7.8	86	.2	.2	.2	.2	.2	.2	2.5	
20	3936.0	3431.4	27.0	8.0	110	.45	2.5	2.5	7.8	84	.2	.2	.2	.2	.2	.2	2.5	
21	4098.4	3918.4	28.0	7.9	114	.35	3.2	3.2	7.7	88	.2	.2	.2	.2	.2	.2	3.2	
22	3985.2	3856.1	24.0	7.9	112	.37	3.3	3.5	7.8	84	.2	.2	.2	.2	.2	.2	3.5	
23	3852.4	3636.0	27.0	8.0	115	.42	3.4	3.5	7.8	85	.2	.2	.2	.2	.2	.2	3.5	
24	3401.8	3298.3	28.0	8.2	114	.45	3.4	3.5	7.8	85	.2	.2	.2	.2	.2	.2	3.5	
25	3226.2	3247.2	24.0	8.0	112	.37	3.6	3.6	7.8	86	.2	.2	.2	.2	.2	.2	3.6	
26	3420.0	3585.3	30.0	8.0	108	.40	3.5	3.5	7.8	84	.2	.2	.2	.2	.2	.2	3.5	
27	3789.4	3957.3	26.0	8.0	115	.33	3.0	3.0	7.8	88	.2	.2	.2	.2	.2	.2	3.0	
28	3876.0	3897.1	31.0	8.0	113	.35	3.3	3.6	7.8	87	.2	.2	.2	.2	.2	.2	3.6	
29	3135.0	3232.4	24.0	8.0	112	.37	3.6	3.6	7.8	87	.2	.1	.2	.2	.2	.1	3.6	
30	3495.2	3690.0	29.0	8.0	111	.37	3.6	3.6	7.7	85	.1	.1	.1	.1	.2	.1	3.6	
31																		
TOTAL	112228.6	104654.4	Disinfectant No. 1: <u>0.2</u>			Total No. of Turbidity Readings: <u>180</u>												
AVG	3741.0	3488.5	Disinfectant No. 2: <u>0.5</u>			No. above 0.5 NTU: <u>0</u> No. above 1.0 NTU: <u>0</u>												
MAX	4920.0	2791.4	Disinfectant No. 3: <u>1.5</u>			* NOTE: ONLY use the "TIME" column to show the length of time that the disinfectant residual entering the distribution system fall below acceptable levels.												
MIN	2850.0	4132.6	Distribution Disinfectant:															

Submitted by: James Robert

Date: 11/30/95

ADDITIONAL REPORTING REQUIREMENTS ON THE FRONT OF THIS FORM

Name of System: SHARYLAND WATER SUPPLY CORPORATION PWS ID No.: 10F03  
 Name of Plant or Plant No.: 1 Month/Year: 12-95 Number of Connections: 9783

DATE	RAW WATER PUMPAGE (MGD)	TREATED WATER PUMPAGE (MGD)	RAW WATER ANALYSES			DISINFECTION PROCESS DATA			FINISHED WATER ANALYSES									
			NTU	pH	Alk	D1	D2	D3	pH	Alk	TURBIDITY						DISINFECTANT	
											1	2	3	4	5	6	Lowest Residual	Time †
1	3522.6	3564.2	27.0	7.9	106	.41	3.7	3.8	7.7	88	.1	.2	.2	.2	.2	.2	3.8	
2	3260.4	3649.2	30.0	8.0	113	.45	3.3	3.5	7.8	89	.2	.2	.2	.2	.2	.2	3.5	
3	4104.0	4306.4	22.0	7.8	98	.40	3.3	3.5	7.7	84	.2	.2	.2	.2	.2	.2	3.5	
4	3990.0	4259.3	24.0	7.9	95	.43	3.4	3.6	7.7	82	.2	.2	.2	.2	.2	.2	3.6	
6	3506.6	3563.2	34.0	7.8	97	.38	3.7	3.8	7.6	84	.2	.2	.2	.2	.2	.2	3.8	
8	3609.2	3807.5	30.0	8.0	100	.45	3.6	3.6	7.8	85	.2	.2	.2	.2	.2	.2	3.6	
7	3591.0	3663.5	46.0	8.0	110	.40	3.6	3.6	7.7	84	.2	.2	.2	.2	.2	.2	3.6	
8	3648.0	3704.2	38.0	8.0	110	.37	3.7	3.8	7.8	84	.2	.2	.2	.2	.2	.2	3.8	
9	3420.0	3526.8	34.0	7.9	111	.35	3.9	3.9	7.7	88	.2	.2	.2	.2	.2	.2	3.9	
10	2822.6	3033.7	30.0	8.0	112	.42	3.4	3.6	7.8	89	.2	.2	.2	.2	.3	.2	3.6	
11	3306.0	3519.0	25.0	8.0	111	.45	3.9	4.0	7.8	84	.2	.2	.3	.2	.2	.2	4.0	
12	3876.0	4036.3	22.0	8.0	107	.40	3.9	4.0	7.8	83	.2	.2	.2	.2	.2	.3	4.0	
13	3762.0	3934.1	25.0	8.0	110	.42	3.9	4.0	7.8	85	.3	.2	.2	.2	.2	.2	4.0	
14	3723.2	4003.4	33.0	8.0	106	.35	3.8	4.0	7.8	84	.2	.2	.2	.2	.2	.2	4.0	
15	3648.0	3793.5	13.0	7.8	104	.37	3.8	4.0	7.6	85	.2	.2	.2	.2	.2	.2	4.0	
16	3723.2	3883.0	16.0	8.0	109	.42	3.9	4.0	7.8	83	.2	.2	.2	.2	.2	.2	4.0	
17	3591.0	4051.0	18.0	7.9	112	.40	3.8	3.8	7.7	89	.2	.2	.2	.2	.2	.2	3.8	
18	4104.0	4180.3	22.0	8.0	115	.40	4.0	4.0	7.8	94	.2	.2	.2	.2	.2	.2	4.0	
19	3705.0	3832.5	24.0	8.0	113	.45	3.9	4.0	7.8	92	.2	.2	.2	.2	.2	.2	4.0	
20	3591.0	3632.9	22.0	8.0	112	.42	2.8	3.0	7.7	90	.2	.2	.2	.2	.2	.2	3.0	
21	3515.8	3381.0	27.0	8.0	112	.42	3.2	3.2	7.8	87	.2	.2	.2	.2	.2	.2	3.2	
22	2444.1	2625.4	18.0	8.0	111	.45	3.2	3.5	7.8	89	.2	.2	.2	.2	.2	.2	3.5	
23	2831.8	2772.6	33.0	7.9	120	.40	3.8	3.8	7.6	95	.2	.2	.2	.2	.2	.2	3.8	
24	2701.8	2585.2	27.0	8.0	122	.37	3.8	4.0	7.8	94	.2	.2	.2	.2	.2	.2	4.0	
25	2637.9	2510.1	18.0	8.0	123	.37	3.9	4.0	7.8	92	.2	.2	.2	.2	.2	.2	4.0	
26	2811.2	2636.0	12.0	8.0	117	.40	4.0	4.0	7.8	90	.2	.2	.2	.2	.2	.2	4.0	
27	2991.4	2791.0	22.0	8.0	123	.45	4.0	4.0	7.8	94	.2	.2	.2	.2	.2	.3	4.0	
28	3009.6	3053.8	18.0	8.0	117	.40	3.7	3.8	7.8	90	.2	.2	.2	.2	.2	.2	3.8	
29	3048.4	2950.6	11.0	8.0	123	.40	3.9	4.0	7.8	92	.2	.2	.2	.2	.2	.2	4.0	
30	2900.2	2891.5	12.0	8.0	115	.42	4.0	4.0	7.8	87	.2	.2	.2	.2	.2	.2	4.0	
31	3078.0	2983.4	10.0	8.0	124	.42	4.0	4.0	7.8	94	.3	.2	.2	.2	.2	.2	4.0	
TOTAL	104474.0	107124.6	Disinfectant No. 1: _____			0.2			Total No. of Turbidity Readings: <u>186</u>									
AVG	3370.1	3455.6	Disinfectant No. 2: _____			0.5			No. above 0.5 NTU: <u>0</u> No. above 1.0 NTU: <u>0</u>									
MAX	4104.0	4306.4	Disinfectant No. 3: _____			1.5			* NOTE: ONLY use the "TIME" column to show the length of time that the disinfectant residual entering the distribution system fell below acceptable levels.									
MIN	2444.1	2510.1	Distribution Disinfectant: _____															

Submitted by: James R. [Signature] Date: 12-31-95

ADDITIONAL REPORTING REQUIREMENTS ON THE FRONT OF THIS FORM

Name of System: SHARYLAND WATER SUPPLY CORPORATION PWS ID No.: 108C-3  
 Name of Plant or Plant No.: \_\_\_\_\_ Month/Year: JANUARY 1996 Number of Connections: 9819

DATE	RAW WATER PUMPAGE (MGD)	TREATED WATER PUMPAGE (MGD)	RAW WATER ANALYSES			DISINFECTION PROCESS DATA			FINISHED WATER ANALYSES									
			NTU	pH	Alk	D1	D2	D3	pH	Alk	TURBIDITY						DISINFECTANT	
											1	2	3	4	5	6	Lowest Residual	Time <sup>±</sup>
1	3260.4	2846.1	14.0	7.9	112	.42	4.0	4.0	7.7	90	.2	.2	.2	.2	.2	.2	4.0	
2	3230.8	2775.4	12.0	8.0	112	.40	3.9	4.0	7.8	94	.2	.1	.1	.2	.2	.2	4.0	
3	3237.6	3169.9	14.0	8.0	100	.42	3.8	3.8	7.8	90	.2	.2	.2	.2	.2	.2	3.8	
4	3290.0	3352.8	14.0	8.0	110	.42	4.0	4.0	7.8	90	.2	.2	.2	.2	.2	.2	4.0	
6	3552.2	3430.9	17.0	8.0	113	.42	3.8	4.0	7.7	90	.2	.2	.2	.2	.2	.2	4.0	
6	3538.6	3055.2	17.0	8.0	112	.40	3.9	4.0	7.8	93	.2	.2	.2	.2	.2	.2	4.0	
7	3066.6	3063.9	19.0	8.0	110	.42	3.7	3.8	7.8	90	.2	.2	.2	.2	.2	.2	3.8	
8	4047.0	3710.5	18.0	8.0	112	.40	4.0	4.0	7.8	88	.2	.2	.2	.2	.2	.2	4.0	
9	3944.4	3838.1	18.0	8.0	112	.45	3.9	4.0	7.8	90	.2	.2	.2	.2	.2	.2	4.0	
10	3990.0	3856.3	19.0	8.1	112	.40	3.9	4.0	7.9	90	.2	.1	.1	.2	.2	.2	4.0	
11	4017.4	3431.0	18.0	8.0	110	.38	3.8	3.8	7.9	93	.1	.1	.1	.1	.1	.1	3.8	
12	3951.2	3381.1	20.0	8.0	113	.48	3.7	3.8	7.8	94	.1	.2	.1	.2	.2	.1	4.0	
13	3951.2	3645.8	14.0	8.0	120	.45	3.9	4.0	7.8	92	.1	.2	.1	.2	.2	.1	4.0	
14	4190.6	4047.2	17.0	8.0	117	.40	4.0	4.0	7.8	90	.1	.1	.1	.2	.2	.2	4.0	
15	4179.2	3699.7	17.0	7.9	115	.48	4.0	4.0	7.7	92	.2	.2	.2	.1	.1	.2	4.0	
16	4309.2	4065.5	20.0	8.0	115	.48	4.0	4.0	7.8	93	.2	.1	.1	.1	.1	.1	.40	
17	4324.6	3627.8	21.0	8.0	118	.45	4.0	4.0	7.7	96	.1	.2	.2	.2	.2	.2	4.0	
18	3971.8	3772.1	18.0	8.0	118	.45	4.0	4.0	7.8	96	.2	.1	.1	.2	.2	.2	4.0	
19	3720.9	3791.0	16.0	8.0	115	.41	3.4	3.4	7.8	94	.2	.1	.1	.1	.1	.2	3.4	
20	3534.0	3524.1	18.0	8.0	112	.42	3.3	3.5	7.6	94	.2	.2	.2	.2	.2	.2	3.5	
21	4108.4	4111.6	18.0	8.0	111	.42	3.5	3.6	7.7	94	.2	.2	.2	.1	.1	.1	3.6	
22	4256.8	4157.3	15.0	8.0	111	.45	4.0	4.0	7.7	92	.1	.2	.2	.1	.1	.1	4.0	
23	3990.0	3884.6	15.0	8.0	114	.37	3.8	4.0	7.7	93	.1	.2	.1	.1	.1	.2	4.0	
24	4313.8	4083.6	17.0	8.0	111	.35	3.9	4.0	7.8	92	.2	.1	.1	.1	.1	.2	4.0	
25	3784.8	3390.6	28.0	8.0	112	.37	3.9	4.0	7.8	89	.2	.1	.1	.1	.1	.1	4.0	
26	4293.2	3715.4	18.0	8.0	110	.41	3.9	4.0	7.7	93	.2	.1	.1	.1	.1	.1	4.0	
27	3951.2	3977.0	17.0	8.0	108	.40	4.0	4.0	7.7	92	.1	.1	.1	.1	.1	.2	4.0	
28	3534.0	3389.9	20.0	8.0	110	.37	3.6	3.8	7.7	90	.1	.1	.1	.1	.1	.2	3.8	
29	4179.2	3872.6	21.0	8.0	110	.37	3.8	4.0	7.7	91	.2	.1	.1	.1	.1	.1	4.0	
30	4332.0	4057.5	19.0	8.0	112	.40	4.0	4.0	7.7	92	.1	.1	.1	.1	.1	.2	4.0	
31	4446.0	4130.9	17.0	8.0	110	.41	3.6	3.6	7.8	92	.2	.2	.1	.2	.2	.2	3.6	
TOTAL	120497.2	112855.4	Disinfectant No. 1: <u>0.2</u>			Total No. of Turbidity Readings: <u>186</u>												
AVG	3887.0	3640.5	Disinfectant No. 2: <u>0.5</u>			No. above 0.5 NTU: <u>0</u> No. above 1.0 NTU: <u>0</u>												
MAX	4446.0	4157.3	Disinfectant No. 3: <u>1.5</u>			* NOTE: ONLY use the "TIME" column to show the length of time that the disinfectant residual entering the distribution system fell below acceptable levels.												
MIN	3260.4	2775.4	Distribution Disinfectant: _____															

Submitted by: James Robert Date: 1-31-96

ADDITIONAL REPORTING REQUIREMENTS ON THE FRONT OF THIS FORM

Name of System: SHARYLAND WATER SUPPLY CORP.

PWS ID No.: 1080033

Name of Plant  
or Plant No.: 1

Month/Year: 2/96

Number of  
Connections: 9858

DATE	RAW WATER PUMPAGE (MGD)	TREATED WATER PUMPAGE (MGD)	RAW WATER ANALYSES			DISINFECTION PROCESS DATA			FINISHED WATER ANALYSES									
			NTU	pH	Alk	D1	D2	D3	pH	Alk	TURBIDITY						DISINFECTANT	
											1	2	3	4	5	6	Lowest Residual	Time <sup>+</sup>
1	3392.6	2828.0	18.0	8.0	112	.40	3.8	4.0	7.7	93	.2	.1	.1	.2	.2	.2	4.0	
2	2964.0	2769.6	18.0	8.0	110	.40	3.8	4.0	7.7	93	.2	.2	.2	.2	.2	.2	4.0	
3	3648.0	3333.0	20.0	8.0	114	.45	3.9	4.0	7.7	91	.2	.2	.2	.2	.2	.2	4.0	
4	3990.0	3856.9	22.0	8.0	117	.41	4.3	4.5	7.8	94	.2	.2	.2	.3	.3	.3	4.5	
5	3933.0	3521.4	19.0	8.0	117	.40	3.5	3.5	7.7	95	.3	.3	.2	.3	.3	.3	3.5	
6	4028.8	3571.5	19.0	8.1	120	.41	2.4	2.4	7.7	95	.3	.3	.2	.2	.2	.3	2.4	
7	4446.0	3829.1	17.0	8.1	117	.42	3.9	3.9	7.8	95	.3	.2	.2	.3	.2	.3	4.0	
8	4026.4	3706.5	20.0	8.0	115	.42	4.0	4.0	7.8	93	.3	.3	.3	.3	.2	.2	4.0	
9	4008.2	3767.5	17.0	8.0	114	.42	3.8	3.5	7.7	94	.2	.3	.3	.2	.2	.2	3.5	
10	4218.0	4049.0	19.0	8.0	116	.40	3.9	4.0	7.6	95	.2	.3	.3	.3	.3	.2	4.0	
11	4218.0	4130.8	21.0	8.0	115	.40	4.0	4.0	7.7	95	.2	.3	.3	.2	.2	.2	4.0	
12	3876.0	3506.9	22.0	8.0	112	.42	4.0	4.0	7.6	90	.2	.3	.3	.2	.2	.3	4.0	
13	3876.0	3434.3	19.0	8.0	111	.41	3.9	4.0	7.6	87	.2	.3	.3	.3	.3	.3	4.0	
14	4712.8	3976.8	14.0	7.9	114	.42	4.0	4.0	7.6	86	.3	.3	.3	.3	.3	.3	4.0	
15	4712.8	4162.3	16.0	8.0	110	.40	3.8	3.8	7.8	90	.3	.3	.3	.3	.3	.3	3.8	
16	4560.0	4425.9	18.0	8.0	111	.41	3.9	4.0	7.7	90	.3	.3	.3	.3	.3	.3	4.0	
17	4305.0	3671.9	17.0	8.0	115	.41	3.8	3.8	7.7	94	.3	.3	.3	.3	.3	.3	3.8	
18	4366.5	4005.1	19.0	8.0	111	.43	3.8	3.8	7.7	94	.3	.3	.3	.3	.3	.3	3.8	
19	5350.5	4662.9	22.0	7.8	109	.44	3.7	3.7	7.7	93	.3	.3	.3	.3	.3	.3	3.7	
20	5616.1	5198.0	21.0	7.9	110	.44	3.7	3.7	7.8	94	.3	.2	.2	.3	.3	.3	3.7	
21	5168.8	5050.8	22.0	8.0	111	.42	3.7	3.8	7.8	93	.3	.3	.3	.3	.3	.2	3.8	
22	5068.4	4894.1	21.0	8.0	114	.35	3.8	4.0	7.8	94	.3	.2	.2	.2	.2	.2	4.0	
23	5205.3	4922.8	18.0	7.9	110	.35	3.2	3.2	7.8	93	.2	.2	.2	.2	.2	.2	3.2	
24	5512.8	4893.4	19.0	7.9	111	.37	3.0	3.0	7.8	94	.2	.2	.2	.2	.2	.2	3.0	
25	5574.3	5003.4	20.0	7.9	112	.34	2.9	3.0	7.8	95	.2	.2	.2	.2	.2	.2	3.0	
26	5535.0	5121.2	20.0	7.9	110	.35	2.9	3.0	7.8	93	.2	.2	.2	.2	.2	.2	3.0	
27	5166.0	5149.6	20.0	7.9	110	.35	3.0	3.0	7.7	92	.2	.2	.2	.2	.2	.2	3.0	
28	5148.3	5215.8	22.0	8.0	110	.35	3.3	3.4	7.8	90	.2	.2	.2	.2	.2	.2	3.4	
29	3629.8	3604.0	19.0	8.0	113	.37	3.8	3.8	7.8	92	.2	.2	.2	.2	.2	.2	3.8	
30																		
31																		
TOTAL	130257.4	120262.5	Disinfectant No. 1: <u>0.2</u>			Total No. of Turbidity Readings: <u>174</u>												
AVG	4491.6	4147.0	Disinfectant No. 2: <u>0.5</u>			No. above 0.5 NTU: <u>0</u> No. above 1.0 NTU: <u>0</u>												
MAX	5616.1	5215.8	Disinfectant No. 3: <u>1.5</u>			* NOTE: ONLY use the "TIME" column to show the length of time that the disinfectant residual entering the distribution system fell below acceptable levels.												
MIN	2964.0	2769.6	Distribution Disinfectant: _____															

Submitted by: James R. [Signature]

Date: 2/29/96

ADDITIONAL REPORTING REQUIREMENTS ON THE FRONT OF THIS FORM



# TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

## WATER UTILITIES DIVISION

MONTHLY OPERATIONAL REPORT FOR SURFACE WATER TREATMENT PLANTS (cont)

PerS ID No.: 1080033

Connections: 9880

System Name: SHARYLAND WATER SUPPLY CORPORATION

Population: 43,472

Plant Name or Number: 1

Month/Year: 3/96

TREATMENT PROCESS PARAMETERS								WATER QUALITY LIMITS		
Peak Flow (MGD)	Disinfection Process Data							SOR REQD?	Turbidity Limit	Residual Limit
	Temp	D1	pH1	D2	pH2	D3	pH3			
6.0 MGD	10°	0.2	9.0	0.5	9.0	1.5	9.0	yes	0.5	0.5

COMPLIANCE DATA																			
DATE	RAW WATER PUMPAGE (MGD)	TREATED WATER PUMPAGE (MGD)	RAW WATER ANALYSES		DISINFECTION PROCESS DATA							FINISHED WATER QUALITY							
					Zone 1		Zone 2		Zone 3		SOR REQD?	TURBIDITY						DISINFECTANT	
					NTU	TEMP	D1	pH1	D2	pH2		D3	pH3	NTU1	NTU2	NTU3	NTU4	NTU5	NTU6
1	3444.0	3172.5	20.0	19c	.45	7.9	3.7	7.8	3.8	7.8	X	.2	.2	.2	.2	.2	.2	3.8	
2	4059.0	3768.2	22.0	19c	.45	7.9	3.7	7.8	3.8	7.8	X	.2	.2	.2	.2	.2	.2	3.8	
3	4674.0	4664.6	22.0	20c	.47	7.9	3.8	7.8	3.9	7.8	X	.2	.2	.2	.2	.2	.2	3.9	
4	5124.2	4961.0	20.0	18c	.43	7.9	3.9	7.8	3.9	7.8	X	.2	.2	.2	.2	.2	.2	3.9	
5	4590.4	4077.0	19.0	20c	.47	8.1	4.2	7.8	4.2	7.8	X	.2	.2	.2	.2	.2	.2	4.2	
6	4560.0	4870.9	18.0	20c	.43	7.9	3.8	7.8	3.8	7.8	X	.2	.2	.2	.2	.2	.2	3.8	
7	4753.8	4757.3	25.0	18c	.47	7.9	3.6	7.8	3.6	7.8	X	.2	.2	.2	.2	.2	.2	3.6	
8	4182.0	4139.4	19.0	17c	.45	8.1	3.6	7.8	3.6	7.9	X	.3	.3	.3	.3	.2	.3	3.6	
	4120.5	4105.0	19.0	17c	.45	8.1	3.6	7.9	3.8	7.8	X	.2	.3	.3	.3	.3	.3	3.8	
	4140.2	3620.6	21.0	19c	.48	8.0	4.0	7.9	4.0	7.9	X	.3	.3	.3	.3	.3	.3	4.0	
11	4981.5	4758.8	19.0	17c	.43	8.0	3.9	7.9	3.9	7.9	X	.3	.3	.3	.3	.3	.3	3.9	
12	5166.0	4872.0	24.0	18c	.43	8.0	3.4	7.9	3.4	7.9	X	.3	.2	.2	.2	.2	.3	3.4	
13	4856.4	4921.6	27.0	18c	.45	8.0	3.7	7.9	3.8	7.8	X	.3	.3	.3	.2	.2	.2	4.0	
14	4407.2	4902.0	27.0	20c	.45	7.9	3.6	7.8	3.6	7.8	X	.2	.2	.2	.2	.2	.2	3.6	
15	5535.0	5226.2	28.0	20c	.45	7.8	4.0	7.6	4.0	7.6	X	.2	.2	.2	.2	.2	.2	4.0	
16	5472.0	5522.9	24.0	20c	.43	7.8	4.0	7.8	4.0	7.7	X	.2	.2	.2	.2	.2	.2	4.0	
17	5180.1	5242.9	22.0	21c	.43	7.9	3.9	7.6	4.0	7.7	X	.2	.2	.2	.2	.2	.2	4.0	
18	5225.7	5334.6	27.0	20c	.43	7.9	3.9	7.6	3.9	7.8	X	.2	.2	.2	.2	.2	.2	3.9	
19	4696.8	4734.5	21.0	19c	.47	7.9	3.8	7.9	4.0	7.7	X	.2	.2	.2	.2	.2	.2	4.0	
20	5168.8	5219.4	24.0	18c	.43	7.9	4.0	7.9	4.0	7.8	X	.2	.1	.1	.2	.2	.2	4.0	
21	4788.0	4996.7	26.0	18c	.45	7.9	4.0	7.8	4.0	7.8	X	.2	.2	.2	.2	.2	.2	4.0	
22	5111.8	5296.0	24.0	19c	.45	7.9	4.0	7.7	3.9	7.7	X	.2	.2	.2	.2	.2	.2	3.9	
23	4560.0	4802.9	21.0	20c	.47	7.8	4.0	7.8	4.0	7.8	X	.2	.2	.1	.2	.2	.2	4.0	
24	4719.0	4733.6	23.0	20c	.47	8.0	4.0	7.8	4.0	7.7	X	.2	.2	.2	.2	.2	.2	4.0	
25	5472.0	5775.4	26.0	20c	.45	7.9	4.0	7.8	4.0	7.7	X	.2	.2	.2	.2	.2	.2	4.0	
26	4218.0	4224.0	19.0	19c	.45	7.9	4.0	7.8	4.0	7.7	X	.2	.1	.2	.2	.2	.2	4.0	
27	3324.2	3010.9	21.0	15c	.45	7.9	3.6	7.8	3.6	7.8	X	.2	.1	.1	.2	.2	.1	3.6	
28	3078.0	2988.9	23.0	16c	.43	7.9	3.0	7.7	3.0	7.7	X	.2	.2	.2	.2	.2	.2	3.0	
29	4263.0	4559.4	18.0	18c	.43	7.9	3.5	7.7	3.5	7.7	X	.1	.1	.2	.2	.2	.1	3.5	
30	4556.0	4928.3	15.0	20c	.47	7.8	4.0	7.7	4.0	7.7	X	.1	.1	.2	.2	.2	.2	4.0	
31	5358.0	5488.1	17.0	20c	.45	7.9	4.0	7.7	4.0	7.7	X	.1	.1	.1	.2	.2	.2	4.0	
T-1	143785.6	143675.6	Disinfectant No. 1:		0.2							* NOTE: ONLY use the time column to show the length of time that the disinfectant residual entering the distribution system fell below acceptable levels.							
	4638.2	4634.7	Disinfectant No. 2:		0.5														
Max	5535.0	5775.4	Disinfectant No. 3:		1.5														
Min	3078.0	2988.9	Distribution Disinfectant:																

SUBMITTED BY: James Robert  
JAMES ROBERTS

Certificate No. \_\_\_\_\_ and Grade: 466-82-5536 (B) DATE: 3/31/96

**TEXAS NATURAL RESOURCE CONSERVATION COMMISSION**  
**WATER UTILITIES DIVISION**  
 MONTHLY OPERATIONAL REPORT FOR SURFACE WATER TREATMENT PLANTS (cont)

PLS ID No.: 1080033

Connections: 9986

System Name: SHARYLAND WATER SUPPLY CORPORATION

Population: \_\_\_\_\_

Plant Name  
 or Number: 1

Month/Year: APRIL 1996

TREATMENT PROCESS PARAMETERS								WATER QUALITY LIMITS		
Peak Flow (MGD)	Disinfection Process Data							SOR REQD?	Turbidity Limit	Residual Limit
	Temp	D1	pH1	D2	pH2	D3	pH3			
6.0	10C	0.2	9.0	0.5	9.0	1.5	9.0	yes	0.5	0.5

COMPLIANCE DATA																			
DATE	RAW WATER PUMPAGE (MGD)	TREATED WATER PUMPAGE (MGD)	RAW WATER ANALYSES		DISINFECTION PROCESS DATA							FINISHED WATER QUALITY							
			NTU	TEMP	Zone 1		Zone 2		Zone 3		SOR REQD?	TURBIDITY						Disinfectant Residual	Time*
					D1	pH1	D2	pH2	D3	pH3		NTU1	NTU2	NTU3	NTU4	NTU5	NTU6		
1	5130.0	5253.8	23.0	20 <sup>C</sup>	.45	7.9	4.0	7.9	4.0	7.7	yes	.2	.2	.2	.2	.2	.2	4.0	
2	4840.0	5033.0	21.0	20 <sup>C</sup>	.45	7.8	4.0	7.8	4.0	7.7	yes	.2	.2	.2	.2	.2	.2	4.0	
3	5102.6	5148.3	16.0	19 <sup>C</sup>	.47	7.9	3.6	7.6	3.6	7.6	yes	.2	.1	.1	.1	.2	.1	3.6	
4	5073.0	5216.0	20.0	20 <sup>C</sup>	.43	7.6	3.6	7.6	3.9	7.8	yes	.1	.1	.2	.2	.2	.2	3.9	
5	4674.0	5036.0	18.0	21 <sup>C</sup>	.45	7.9	3.8	7.9	3.9	7.8	yes	.2	.2	.2	.2	.2	.2	3.9	
6	3192.0	3237.3	19.0	18 <sup>C</sup>	.45	7.8	3.9	7.8	3.9	7.7	yes	.2	.2	.2	.2	.2	.2	3.8	
7	3153.2	3172.6	22.0	18 <sup>C</sup>	.43	7.9	3.9	7.9	3.9	7.7	yes	.2	.2	.2	.2	.2	.2	3.9	
8	4332.0	4552.1	17.0	19 <sup>C</sup>	.43	7.8	3.7	7.8	3.7	7.7	yes	.2	.2	.2	.2	.2	.2	3.7	
	5414.0	5475.0	17.0	19 <sup>C</sup>	.43	7.9	3.6	7.9	3.6	7.7	yes	.2	.2	.2	.2	.2	.2	3.6	
	5472.0	5453.7	15.0	20 <sup>C</sup>	.47	8.0	4.0	8.0	3.6	7.5	yes	.2	.2	.2	.2	.2	.2	3.6	
11	5472.0	5808.0	22.0	20 <sup>C</sup>	.43	8.2	3.6	7.5	3.9	7.9	yes	.2	.2	.2	.2	.2	.2	3.9	
12	5171.0	4526.7	27.0	21 <sup>C</sup>	.45	8.0	3.4	7.5	3.8	7.6	yes	.2	.2	.2	.2	.2	.2	3.8	
13	5472.0	5500.6	27.0	20 <sup>C</sup>	.43	8.0	3.6	7.7	3.8	7.7	yes	.2	.2	.2	.2	.2	.2	3.8	
14	5472.0	5719.0	23.0	22 <sup>C</sup>	.45	8.0	3.8	7.6	4.0	7.8	yes	.2	.2	.2	.2	.2	.2	4.0	
15	5472.0	5916.1	20.0	19 <sup>C</sup>	.45	8.0	3.0	7.8	3.3	7.8	yes	.2	.2	.2	.2	.2	.2	3.3	
16	5319.2	5468.7	26.0	20 <sup>C</sup>	.45	8.1	4.5	7.8	4.5	7.8	yes	.2	.2	.2	.2	.2	.2	4.5	
17	5472.0	5614.2	25.0	20 <sup>C</sup>	.47	7.9	3.9	7.4	3.9	7.4	yes	.2	.2	.2	.2	.2	.2	3.9	
18	5472.0	5605.1	26.0	20 <sup>C</sup>	.45	8.0	4.2	7.6	3.9	7.6	yes	.2	.2	.2	.2	.2	.2	3.9	
19	5472.0	5746.0	27.0	22 <sup>C</sup>	.43	8.1	3.9	7.6	3.9	7.6	yes	.2	.3	.3	.2	.2	.2	3.9	
20	5472.0	5651.3	28.0	22 <sup>C</sup>	.43	8.0	4.0	7.8	3.8	7.7	yes	.2	.3	.3	.3	.3	.3	3.8	
21	5472.0	5824.1	27.0	24 <sup>C</sup>	.43	8.0	3.9	7.7	4.0	7.6	yes	.3	.3	.3	.3	.3	.3	4.0	
22	5472.0	5825.1	30.0	22 <sup>C</sup>	.45	8.1	3.8	7.7	3.9	7.8	yes	.3	.3	.3	.3	.3	.3	3.9	
23	5472.0	5604.2	30.0	22 <sup>C</sup>	.45	8.2	4.6	7.8	4.5	7.9	yes	.3	.3	.3	.3	.3	.3	4.5	
24	5472.0	5323.4	26.0	22 <sup>C</sup>	.43	8.2	3.9	7.7	3.0	7.7	yes	.3	.3	.3	.3	.3	.3	3.9	
25	5472.0	5782.7	29.0	21 <sup>C</sup>	.45	8.0	3.6	7.6	3.9	7.7	yes	.3	.4	.4	.3	.3	.3	3.9	
26	5472.0	5592.0	27.0	21 <sup>C</sup>	.45	8.3	3.9	7.6	4.2	7.5	yes	.3	.3	.3	.3	.3	.3	4.2	
27	5472.0	5658.0	29.0	22 <sup>C</sup>	.47	8.3	3.3	7.6	4.3	7.7	yes	.3	.2	.3	.3	.3	.3	4.3	
28	5273.6	5739.8	30.0	24 <sup>C</sup>	.43	8.1	3.4	7.5	4.2	7.7	yes	.3	.3	.3	.3	.3	.2	4.2	
29	5472.0	5572.3	26.0	21 <sup>C</sup>	.43	8.3	3.3	7.4	3.0	7.1	yes	.2	.3	.3	.2	.3	.2	3.0	
30	3743.7	3108.5	27.0	20 <sup>C</sup>	.43	8.1	3.6	7.6	3.0	7.5	yes	.2	.3	.3	.3	.3	.2	3.0	
31																			
Total	153443.8	157163.6	Disinfectant No. 1:		1.5							* NOTE: ONLY use the time column to show the length of time that the disinfectant residual entering the distribution system fell below acceptable levels.							
	5114.8	5238.8	Disinfectant No. 2:		0.5														
Max	5472.0	5916.1	Disinfectant No. 3:		0.2														
Min	3743.7	3108.5	Distribution Disinfectant:		0.5														

SUBMITTED BY: James R. [Signature]

Certificate No. \_\_\_\_\_ and Grade: 466-82-5536 DATE: B

# TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

## WATER UTILITIES DIVISION

MONTHLY OPERATIONAL REPORT FOR SURFACE WATER TREATMENT PLANTS (cont)

ID No.: 1080033

Connections: 10,044

System Name: Sharyland Water Supply Corporation

Population: \_\_\_\_\_

Plant Name or Number: 1

Month/Year: 5/96

TREATMENT PROCESS PARAMETERS								WATER QUALITY LIMITS		
Peak Flow (MGD)	Disinfection Process Data							SOR REQD?	Turbidity Limit	Residual Limit
	Temp	D1	pH1	D2	pH2	D3	pH3			
6.0	10 <sup>c</sup>	0.2	9.0	0.5	9.0	1.5	9.0	yes	0.5	0.5

COMPLIANCE DATA																		
DATE	RAW WATER PUMPAGE (MGD)	TREATED WATER PUMPAGE (MGD)	RAW WATER ANALYSES		DISINFECTION PROCESS DATA							FINISHED WATER QUALITY						
					Zone 1		Zone 2		Zone 3		SOR REQD?	TURBIDITY						DISINFECTANT
					D1	pH1	D2	pH2	D3	pH3		NTU1	NTU2	NTU3	NTU4	NTU5	NTU6	Lowest Residual
1	4172.4	3842.2	26.0	19 <sup>c</sup>	.43	7.2	3.9	7.5	3.9	7.2	yes	.2	.3	.2	.2	.3	.2	3.9
2	5130.0	4532.4	26.0	20 <sup>c</sup>	.43	7.2	4.5	7.4	4.2	7.3	"	.2	.3	.3	.3	.3	.2	4.2
3	5100.4	4949.8	27.0	21 <sup>c</sup>	.43	7.2	3.9	7.3	3.9	7.3	"	.3	.3	.3	.3	.3	.3	3.9
4	4851.8	4873.4	28.0	20 <sup>c</sup>	.47	7.1	3.9	7.4	3.8	7.4	"	.3	.3	.3	.3	.3	.3	3.8
5	5472.0	5452.5	33.0	22 <sup>c</sup>	.45	7.2	3.3	7.4	3.6	7.6	"	.3	.3	.3	.3	.3	.3	3.6
6	5472.0	5409.0	30.0	21 <sup>c</sup>	.45	7.1	3.3	7.5	3.6	7.3	"	.3	.3	.3	.3	.3	.3	3.6
7	5358.0	5583.9	26.0	21 <sup>c</sup>	.45	7.1	3.9	7.6	3.6	7.3	"	.3	.3	.3	.3	.3	.3	3.6
8	5472.0	5105.9	27.0	23 <sup>c</sup>	.47	7.1	3.9	7.5	3.7	7.3	"	.3	.4	.4	.3	.3	.3	3.7
9	5472.0	5389.4	31.0	22 <sup>c</sup>	.43	7.2	3.3	7.5	3.0	7.4	"	.3	.3	.3	.3	.3	.3	3.0
10	5244.0	5419.9	29.0	22 <sup>c</sup>	.43	7.2	3.6	7.7	3.6	7.4	"	.3	.4	.3	.3	.3	.3	3.6
11	5472.0	5188.7	33.0	22 <sup>c</sup>	.45	7.1	3.6	7.6	3.9	7.3	"	.3	.4	.4	.3	.3	.3	3.9
12	5472.0	5055.8	31.0	22 <sup>c</sup>	.45	7.1	3.6	7.5	3.6	7.3	"	.3	.4	.4	.4	.4	.4	3.6
13	4275.0	3859.5	29.0	22 <sup>c</sup>	.45	7.1	3.0	7.6	3.3	7.3	"	.3	.4	.4	.3	.4	.4	3.3
14	4560.0	4372.9	28.0	21 <sup>c</sup>	.45	7.1	3.3	7.6	3.6	7.3	"	.3	.4	.4	.4	.4	.4	3.6
15	4902.0	4363.9	30.0	22 <sup>c</sup>	.43	7.2	3.0	7.5	3.8	7.6	"	.4	.4	.4	.4	.4	.4	3.8
16	5472.0	4778.7	31.0	22 <sup>c</sup>	.40	7.3	3.6	7.6	3.8	7.6	"	.4	.4	.4	.4	.4	.4	3.8
17	5472.0	4958.0	30.0	22 <sup>c</sup>	.40	7.1	3.6	7.7	3.0	7.3	"	.4	.4	.4	.4	.4	.4	3.0
18	5472.0	4986.0	33.0	22 <sup>c</sup>	.35	7.1	2.9	7.6	3.6	7.3	"	.4	.3	.4	.4	.4	.4	3.6
19	5472.0	5284.0	38.0	22 <sup>c</sup>	.35	7.3	2.8	7.7	3.6	7.5	"	.4	.4	.4	.4	.4	.4	3.6
20	5472.0	5569.0	40.0	22 <sup>c</sup>	.37	7.2	2.8	7.7	3.0	7.4	"	.4	.4	.4	.4	.4	.4	3.0
21	5472.0	5528.0	39.0	22 <sup>c</sup>	.40	7.2	2.7	7.7	3.0	7.4	"	.4	.4	.4	.4	.4	.4	3.0
22	5472.0	5634.8	38.0	22 <sup>c</sup>	.40	7.3	2.8	7.7	3.0	7.5	"	.4	.4	.4	.3	.3	.4	3.0
23	5472.0	5673.6	40.0	22 <sup>c</sup>	.45	7.5	2.7	7.6	3.0	7.6	"	.4	.3	.3	.3	.3	.3	3.0
24	5472.0	5554.6	36.0	22 <sup>c</sup>	.45	7.1	3.6	7.6	3.9	7.3	"	.3	.3	.3	.3	.3	.3	3.9
25	5472.0	5520.3	40.0	22 <sup>c</sup>	.37	7.3	3.6	7.7	3.6	7.2	"	.3	.2	.3	.3	.3	.3	3.6
26	5472.0	5399.1	45.0	22 <sup>c</sup>	.35	7.3	3.3	7.6	3.9	7.3	"	.3	.3	.3	.3	.3	.3	3.9
27	5472.0	5890.8	69.0	22 <sup>c</sup>	.35	7.4	2.1	7.6	2.9	7.3	"	.3	.3	.3	.3	.3	.3	2.9
28	5472.0	5860.7	59.0	23 <sup>c</sup>	.35	7.2	3.3	7.7	3.3	7.3	"	.3	.3	.3	.4	.4	.4	3.3
29	5472.0	5599.7	48.0	25 <sup>c</sup>	.40	7.3	3.6	7.5	3.6	7.5	"	.4	.4	.4	.4	.4	.4	3.6
30	5472.0	5597.6	46.0	23 <sup>c</sup>	.40	7.3	3.8	7.5	3.6	7.4	"	.4	.4	.4	.4	.4	.4	3.6
31	5472.0	5585.9	49.0	22 <sup>c</sup>	.40	7.1	3.9	7.6	3.3	7.5	"	.4	.4	.4	.4	.4	.4	3.3
Total	16397.6	160820.0	Disinfectant No. 1:		0.2							* NOTE: ONLY use the time column to show the length of time that the disinfectant residual entering the distribution system fell below acceptable levels.						
	5289.6	5187.7	Disinfectant No. 2:		0.5													
	5472.0	5890.8	Disinfectant No. 3:		1.5													
Min	4172.4	3859.5	Distribution Disinfectant:		0.5													

SUBMITTED BY: James R. Mat

Certificate No. \_\_\_\_\_ and Grade: 466-82-5536 DATE: 5/31/96

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION  
 WATER UTILITIES DIVISION  
 MONTHLY OPERATIONAL REPORT FOR SURFACE WATER TREATMENT PLANTS (cont)

PWS ID No.: 1080033

Connections: 9811

System Name: Sharyland Water Supply Corporation

Population: \_\_\_\_\_

Plant Name: \_\_\_\_\_

or Number: 1

Month/Year: 6/96

TREATMENT PROCESS PARAMETERS								WATER QUALITY LIMITS		
Peak Flow (MGD)								SOR REQD?	Turbidity Limit	Residual Limit
	Temp	D1	pH1	D2	pH2	D3	pH3			
6.0	10c	0.2	9.0	0.5	9.0	1.5	9.0	yes	0.5	0.5

COMPLIANCE DATA																			
DATE	RAW WATER PUMPAGE (MGD)	TREATED WATER PUMPAGE (MGD)	RAW WATER ANALYSES		DISINFECTION PROCESS DATA						FINISHED WATER QUALITY								
					Zone 1		Zone 2		Zone 3		SOR REQD?	TURBIDITY						DISINFECTANT	
					D1	pH1	D2	pH2	D3	pH3		NTU1	NTU2	NTU3	NTU4	NTU5	NTU6	Residual	Time*
1	5100.4	5462.6	44.0	23c	.43	7.2	3.3	7.6	3.3	7.3	yes	.4	.4	.4	.4	.4	.4	3.3	
2	5472.0	5490.8	44.0	23c	.43	7.2	3.0	7.6	3.1	7.3	"	.4	.4	.4	.4	.4	.4	3.1	
3	5472.0	5617.7	41.0	22c	.45	7.1	3.3	7.6	3.9	7.3	"	.4	.4	.4	.4	.4	.4	3.9	
4	5472.0	5577.0	35.0	23c	.45	7.2	3.3	7.6	3.9	7.4	"	.4	.3	.3	.3	.4	.4	3.9	
5	5472.0	5394.4	36.0	23c	.45	7.4	3.3	7.6	3.9	7.6	"	.4	.4	.3	.4	.3	.4	3.9	
6	5472.0	5475.9	46.0	22c	.45	7.4	3.6	7.6	3.8	7.6	"	.4	.3	.3	.3	.3	.4	3.8	
7	5244.0	5481.8	35.0	23c	.43	7.2	3.0	7.5	3.0	7.4	"	.4	.3	.4	.4	.3	.4	3.0	
8	5472.0	5492.9	32.0	23c	.40	7.4	3.2	7.5	3.2	7.5	"	.4	.3	.3	.4	.4	.3	3.2	
9	5472.0	5554.9	32.0	23c	.40	7.3	3.0	7.5	3.0	7.5	"	.3	.3	.3	.4	.4	.4	3.0	
10	5244.0	5692.6	40.0	22c	.40	7.2	3.6	7.4	3.6	7.4	"	.3	.4	.4	.4	.4	.4	3.6	
11	5244.0	5566.1	43.0	22c	.35	7.2	3.8	7.4	3.8	7.4	"	.4	.4	.4	.4	.4	.4	3.8	
12	5472.0	5420.1	35.0	22c	.40	7.3	3.9	7.5	3.9	7.3	"	.4	.3	.3	.3	.3	.4	3.9	
13	5472.0	5485.5	36.0	24c	.45	7.2	3.9	7.5	3.9	7.5	"	.4	.4	.3	.3	.3	.4	3.9	
14	5472.0	5411.8	34.0	23c	.45	7.3	4.0	7.5	4.0	7.5	"	.4	.4	.4	.4	.4	.3	4.0	
15	5472.0	5363.5	36.0	23c	.47	7.3	3.8	7.5	3.8	7.5	"	.3	.4	.4	.3	.3	.3	3.8	
16	5472.0	5375.5	34.0	23c	.43	7.3	3.8	7.5	3.8	7.5	"	.3	.4	.4	.4	.4	.3	3.8	
17	5472.0	5238.3	36.0	23c	.43	7.3	3.8	7.5	3.8	7.5	"	.3	.4	.4	.4	.4	.4	3.8	
18	5472.0	5411.3	34.0	23c	.45	7.2	4.0	7.5	4.0	7.5	"	.4	.3	.3	.3	.3	.4	4.0	
19	5472.0	5509.5	35.0	24c	.45	7.0	2.6	7.2	2.6	7.2	"	.3	.2	.3	.3	.3	.3	2.6	
20	5472.0	5579.0	31.0	26c	.45	7.2	3.0	7.4	3.0	7.4	"	.2	.2	.2	.2	.2	.3	3.0	
21	5472.0	5654.9	33.0	24c	.47	7.1	3.0	7.5	3.0	7.5	"	.2	.3	.3	.2	.2	.2	3.0	
22	5472.0	5187.0	30.0	24c	.47	7.1	3.4	7.4	3.4	7.4	"	.2	.2	.2	.2	.2	.2	3.4	
23	5091.2	4875.8	32.0	24c	.47	7.2	3.2	7.4	3.2	7.4	"	.2	.2	.2	.2	.2	.2	3.2	
24	4788.0	4958.8	33.0	23c	.43	7.3	3.0	7.4	3.0	7.4	"	.2	.2	.2	.2	.2	.2	3.0	
25	5472.0	5220.8	33.0	24c	.43	7.2	3.2	7.4	3.2	7.4	"	.2	.2	.2	.2	.2	.2	3.2	
26	5205.2	4834.7	27.0	23c	.43	7.0	3.8	7.2	3.8	7.2	"	.2	.2	.2	.2	.2	.2	3.8	
27	5472.0	5320.4	28.0	26c	.41	7.0	2.8	7.2	2.8	7.3	"	.2	.2	.2	.2	.2	.2	2.8	
28	5472.0	5136.6	28.0	23c	.40	7.2	3.0	7.4	3.0	7.4	"	.2	.2	.2	.2	.2	.2	3.0	
29	5472.0	5097.3	30.0	22c	.45	7.0	3.2	7.4	3.2	7.4	"	.2	.3	.3	.2	.2	.2	3.2	
30	5472.0	5000.7	31.0	22c	.45	7.1	3.6	7.4	3.6	7.4	"	.2	.3	.3	.3	.3	.2	3.6	
31																			
Total	161772.8	160888.2	Disinfectant No. 1:		0.2						* NOTE: ONLY use the time column to show the length of time that the disinfectant residual entering the distribution system fell below acceptable levels.								
Avg	5392.4	5362.9	Disinfectant No. 2:		0.5														
Max	5472.0	5692.6	Disinfectant No. 3:		1.5														
Min	4788.0	4834.7	Distribution Disinfectant:		0.5														

SUBMITTED BY: \_\_\_\_\_

*James R. [Signature]*

Certificate No. \_\_\_\_\_

and Grade: \_\_\_\_\_

466-82-5536

B

DATE: \_\_\_\_\_

6/30/96

**TEXAS NATURAL RESOURCE CONSERVATION COMMISSION  
WATER UTILITIES DIVISION**

MONTHLY OPERATIONAL REPORT FOR SURFACE WATER TREATMENT PLANTS (cont)

PWS ID No.: 1080033

Connections: 9850

System Name: Sharyland Water Supply Corporation

Population: \_\_\_\_\_

Plant Name \_\_\_\_\_

or Number: 1

Month/Year: 7/96

TREATMENT PROCESS PARAMETERS								WATER QUALITY LIMITS		
Peak Flow (MGD)	Temp	D1	pH1	D2	pH2	D3	pH3	SOR REQD?	Turbidity Limit	Residual Limit

COMPLIANCE DATA																			
DATE	RAW WATER PUMPAGE (MGD)	TREATED WATER PUMPAGE (MGD)	RAW WATER ANALYSES		DISINFECTION PROCESS DATA								FINISHED WATER QUALITY						
					Zone 1		Zone 2		Zone 3		SOR REQD?	TURBIDITY						DISINFECTANT	
					NTU	TEMP	D1	pH1	D2	pH2		D3	pH3	NTU1	NTU2	NTU3	NTU4	NTU5	NTU6
1	5472.0	4784.0	39.0	22c	.40	7.1	3.8	7.4	3.8	7.4	yes	.2	.2	.2	.2	.2	.2	3.8	
2	5472.0	4888.3	41.0	22c	.40	7.1	4.0	7.4	4.0	7.4	yes	.2	.2	.2	.2	.2	.2	4.0	
3	5472.0	5448.0	27.0	26c	.43	7.2	3.6	7.5	3.6	7.5	yes	.2	.2	.2	.2	.2	.2	3.6	
4	5472.0	5153.0	28.0	24c	.45	7.2	3.8	7.4	3.8	7.4	yes	.2	.2	.2	.2	.2	.2	3.8	
5	5472.0	5458.4	30.0	24c	.47	7.2	3.8	7.4	3.8	7.4	yes	.2	.2	.2	.2	.2	.2	3.8	
6	5472.0	5292.2	29.0	25c	.40	7.2	3.9	7.4	3.9	7.4	yes	.2	.2	.2	.2	.2	.2	3.9	
7	5472.0	5362.5	29.0	25c	.40	7.2	3.7	7.4	3.7	7.4	yes	.2	.2	.2	.2	.2	.2	3.7	
8	5472.0	5418.6	22.0	24c	.43	7.4	3.6	7.2	3.6	7.2	yes	.2	.2	.2	.2	.2	.2	3.6	
9	5472.0	5566.5	20.0	24c	.45	7.5	3.0	7.2	3.0	7.2	yes	.2	.3	.3	.3	.3	.2	3.0	
10	5472.0	5581.0	23.0	23c	.45	7.1	3.8	7.6	3.6	7.4	yes	.2	.3	.3	.3	.3	.2	3.6	
11	5472.0	5668.7	24.0	24c	.45	7.1	3.6	7.6	3.3	7.4	yes	.3	.2	.2	.3	.3	.2	3.3	
12	5472.0	5661.6	21.0	24c	.40	7.3	3.5	7.2	3.5	7.2	yes	.2	.3	.2	.2	.2	.2	3.5	
13	5472.0	5423.9	20.0	24c	.40	7.3	3.4	7.2	3.4	7.2	yes	.3	.2	.2	.2	.2	.2	3.4	
14	5472.0	5530.9	21.0	24c	.40	7.2	3.5	7.2	3.5	7.2	yes	.2	.2	.2	.2	.2	.2	3.5	
15	5472.0	5589.9	20.0	24c	.43	7.2	3.8	7.3	3.8	7.4	yes	.2	.1	.1	.2	.2	.2	3.8	
16	5472.0	5697.3	21.0	23c	.41	7.2	3.6	7.4	3.6	7.4	yes	.2	.1	.1	.1	.1	.1	3.6	
17	5472.0	5621.9	19.0	23c	.40	7.2	3.6	7.6	3.8	7.7	yes	.1	.1	.2	.2	.2	.1	3.8	
18	5472.0	5681.0	21.0	23c	.40	7.1	3.6	7.6	3.0	7.2	yes	.1	.2	.2	.2	.2	.1	3.0	
19	5472.0	5582.7	20.0	23c	.40	7.2	3.4	7.2	3.4	7.2	yes	.1	.1	.2	.2	.1	.1	3.4	
20	5472.0	5414.0	20.0	23c	.40	7.2	3.6	7.4	3.6	7.4	yes	.2	.2	.1	.1	.1	.2	3.6	
21	5472.0	5550.2	21.0	23c	.45	7.2	3.6	7.4	3.6	7.4	yes	.1	.2	.2	.1	.1	.1	3.6	
22	5472.0	5663.7	20.0	23c	.43	7.2	3.5	7.4	3.5	7.4	yes	.1	.1	.1	.2	.2	.1	3.5	
23	5472.0	5743.9	20.0	23c	.40	7.2	3.2	7.4	3.2	7.4	yes	.1	.1	.1	.1	.2	.1	3.2	
24	5472.0	5792.1	21.0	23c	.40	7.2	3.2	7.4	3.5	7.4	yes	.1	.2	.2	.2	.2	.2	3.5	
25	5472.0	5973.3	25.0	23c	.40	7.1	3.2	7.6	3.2	7.1	yes	.1	.2	.2	.2	.2	.1	3.2	
26	5472.0	5741.9	20.0	24c	.41	7.5	3.8	7.7	3.6	7.4	yes	.2	.1	.2	.2	.2	.1	3.6	
27	5472.0	5492.4	20.0	23c	.43	7.2	3.2	7.4	3.0	7.4	yes	.2	.1	.1	.1	.1	.1	3.0	
28	5472.0	5083.4	20.0	24c	.43	7.3	3.3	7.4	3.3	7.4	yes	.1	.1	.1	.1	.1	.1	3.2	
29	5472.0	5665.3	21.0	24c	.45	7.2	3.2	7.4	3.2	7.4	yes	.1	.2	.1	.1	.1	.1	4.0	
30	5244.0	5019.8	21.0	23c	.40	7.2	4.0	7.4	4.0	7.4	yes	.2	.1	.2	.2	.2	.1	4.0	
31	4653.4	4458.9	20.0	24c	.40	7.1	3.6	7.4	3.9	7.2	yes	.2	.2	.2	.3	.2	.2	3.9	

Total	168585.4	169009.8	Disinfectant No. 1:	.2
Avg	5438.2	5451.9	Disinfectant No. 2:	.5
Max	5472.0	5973.3	Disinfectant No. 3:	1.5
Min	4653.4	4458.9	Distribution Disinfectant:	.5

\* NOTE: ONLY use the time column to show the length of time that the disinfectant residual entering the distribution system fell below acceptable levels.

MITTED BY: *James Robert*

Certificate No. and Grade: 466-82-5536 B

Date 7/31/96

# TEXAS NATURAL RESOURCE CONSERVATION COMM.

## WATER UTILITIES DIVISION

MONTHLY OPERATIONAL REPORT FOR SURFACE WATER TREATMENT PLANTS (cont)

ID No.: 1080033

Connections: 9928

System Name: Sharyland Water Supply Corp.

Population: \_\_\_\_\_

Plant Name or Number: 1

Month/Year: 8/96

TREATMENT PROCESS PARAMETERS										WATER QUALITY LIMITS		
Peak Flow (MGD)	Disinfection Process Data							SOR REQD?	Turbidity Limit	Residual Limit		
	Temp	D1	pH1	D2	pH2	D3	pH3					
6.0	10°	0.2	9.0	0.5	9.0	1.5	9.0	NO	0.5	0.5		

COMPLIANCE DATA																			
DATE	RAW WATER PUMPAGE (MGD)	TREATED WATER PUMPAGE (MGD)	RAW WATER ANALYSES		DISINFECTION PROCESS DATA							FINISHED WATER QUALITY							
					Zone 1		Zone 2		Zone 3		SOR REQD?	TURBIDITY						DISINFECTANT	
					NTU	TEMP	D1	pH1	D2	pH2		D3	pH3	NTU1	NTU2	NTU3	NTU4	NTU5	NTU6
1	4952.2	4288.0	18.0	23°	.40	7.2	3.8	7.6	3.6	7.4	NO	.2	.1	.2	.2	.1	.1	3.6	
2	4218.0	4248.3	20.0	23°	.40	7.1	3.8	7.3	3.8	7.3	↑	.1	.2	.2	.2	.2	.2	3.8	
3	4446.0	4429.7	19.0	23°	.40	7.1	3.8	7.6	3.8	7.4		.2	.1	.2	.2	.2	.2	3.8	
4	3944.4	4421.6	18.0	23°	.35	7.1	3.8	7.4	3.8	7.6		.1	.1	.1	.2	.2	.2	3.8	
5	4560.0	4522.3	20.0	23°	.37	7.2	3.8	7.3	3.8	7.7		.2	.2	.2	.2	.2	.2	3.8	
6	5472.0	5310.1	23.0	23°	.41	7.1	3.8	7.4	3.6	7.6		.2	.1	.2	.2	.2	.2	3.6	
7	5472.0	5553.9	22.0	24°	.40	7.2	3.8	7.3	3.8	7.5		.2	.2	.2	.2	.2	.2	3.8	
8	5472.0	5244.9	24.0	23°	.35	7.1	3.8	7.5	3.8	7.5		.2	.2	.2	.2	.2	.2	3.8	
9	4446.0	4048.4	21.0	23°	.35	7.3	3.8	7.4	3.8	7.3		.2	.2	.1	.2	.2	.2	3.8	
10	3078.0	3007.4	19.0	23°	.35	7.2	3.8	7.6	3.6	7.4		.2	.1	.2	.2	.2	.2	3.6	
11	4674.0	3160.0	18.0	23°	.41	7.4	3.8	7.5	3.6	7.6		.2	.2	.2	.2	.2	.2	3.6	
12	3876.0	3547.4	21.0	23°	.40	7.3	3.8	7.6	3.8	7.5		.2	.2	.2	.2	.2	.2	3.8	
13	3921.6	4027.4	17.0	23°	.40	7.3	3.8	7.6	3.6	7.5		.1	.2	.2	.2	.2	.2	3.6	
14	3618.4	4153.3	18.0	24°	.40	7.3	3.8	7.5	3.3	7.3		.2	.2	.2	.2	.2	.2	3.3	
15	4788.0	3999.3	20.0	23°	.40	7.2	3.6	7.5	3.6	7.5		.2	.2	.2	.2	.2	.2	3.6	
16	5472.0	5057.2	20.0	23°	.40	7.3	3.6	7.5	3.6	7.5		.2	.2	.2	.2	.2	.2	3.6	
17	5244.0	4927.0	18.0	23°	.35	7.2	3.6	7.5	3.6	7.5		.2	.2	.2	.2	.2	.2	3.6	
18	5305.6	5234.3	17.0	23°	.35	7.2	3.6	7.6	3.8	7.5		.2	.2	.2	.2	.2	.2	3.6	
19	5472.0	5177.9	17.0	23°	.47	7.2	3.6	7.6	3.6	7.5		.2	.2	.2	.2	.2	.2	3.6	
20	5168.8	5747.4	21.0	22°	.47	7.2	3.6	7.6	3.6	7.6		.2	.2	.2	.2	.2	.2	3.6	
21	4503.0	4353.5	23.0	26°	.41	7.3	3.0	7.5	3.0	7.5		.2	.2	.2	.2	.2	.2	3.0	
22	3324.2	3157.1	25.0	23°	.47	7.2	3.4	7.4	3.4	7.4		.2	.2	.2	.2	.2	.2	3.6	
23	3192.0	3216.7	20.0	22°	.35	7.2	3.6	7.5	3.6	7.4		.2	.2	.2	.2	.2	.2	3.6	
24	3021.0	2988.2	16.0	22°	.35	7.1	3.2	7.5	3.6	7.6		.2	.2	.2	.2	.2	.2	3.6	
25	3078.0	2959.3	19.0	22°	.40	7.4	3.8	7.6	3.6	7.5		.2	.2	.2	.2	.2	.2	3.6	
26	3591.0	3439.9	17.0	22°	.41	7.3	3.8	7.6	3.6	7.5		.2	.2	.2	.2	.2	.2	3.6	
27	3495.2	3241.2	20.0	23°	.41	7.3	3.8	7.6	3.6	7.5		.2	.2	.2	.2	.2	.2	3.6	
28	3260.4	3108.4	26.0	23°	.41	7.3	3.5	7.6	3.5	7.6		.2	.2	.2	.2	.2	.2	3.5	
29	3078.0	3360.3	25.0	24°	.40	7.3	3.5	7.5	3.6	7.5		.2	.2	.2	.2	.2	.2	3.6	
30	5244.0	3791.0	24.0	24°	.40	7.2	3.5	7.4	3.6	7.5		.2	.2	.2	.2	.2	.2	3.6	
31	3420.0	3244.9	23.0	26°	.40	7.4	3.0	7.5	3.0	7.5	NO	.2	.2	.2	.2	.2	.2	3.0	
Total	132807.8	126466.2	Disinfectant No. 1:		0.2							* NOTE: ONLY use the time column to show the length of time that the disinfectant residual entering the distribution system fell below acceptable levels.							
	4284.1	4679.6	Disinfectant No. 2:		0.5														
	5472.0	5553.9	Disinfectant No. 3:		1.5														
Min	3021.0	2988.2	Distribution Disinfectant:																

SUBMITTED BY: JAMES ROBERTS

Certificate No. and Grade: 466-82-5536 (B) DATE: 8-31-96

AS NATURAL RESOURCE CONSERVATION COMMISS  
 WATER UTILITIES DIVISION  
 MONTHLY OPERATIONAL REPORT FOR SURFACE WATER TREATMENT PLANTS (cont)

VS ID No.: 1080033

Connections: 9961

System Name: Sharyland Water Supply Corporation

Population: \_\_\_\_\_

Plant Name \_\_\_\_\_

or Number: 1

Month/Year: 9/96

TREATMENT PROCESS PARAMETERS								WATER QUALITY LIMITS		
Peak Flow (MGD)	Temp	D1	pH1	D2	pH2	D3	pH3	SOR REQD?	Turbidity Limit	Residual Limit
	6.0	10C	0.2	9.0	0.5	9.0	.15			

COMPLIANCE DATA

DATE	RAW WATER PUMPAGE (MGD)	TREATED WATER PUMPAGE (MGD)	RAW WATER ANALYSES		DISINFECTION PROCESS DATA								FINISHED WATER QUALITY								
					Zone 1				Zone 2		Zone 3		SOR REQD?	TURBIDITY						DISINFECTANT	
					NTU	TEMP	D1	pH1	D2	pH2	D3	pH3		NTU1	NTU2	NTU3	NTU4	NTU5	NTU6	Lowest Residual	Time*
1	3078.0	2915.6	22.0	24C	.30	7.2	3.0	7.4	3.6	7.5	NO	.2	.2	.2	.2	.2	.2	3.6			
2	3123.6	2982.8	10.0	26C	.31	7.1	3.3	7.3	3.6	7.6	NO	.2	.2	.2	.2	.2	.2	3.6			
3	3857.8	3533.2	23.0	26C	.30	7.3	3.4	7.4	3.6	7.6	NO	.2	.2	.2	.2	.2	.2	3.6			
4	3192.0	3007.8	22.0	22C	.30	7.3	5.4	7.6	3.9	7.4	NO	.2	.2	.2	.2	.2	.2	4.0			
5	3285.4	3111.0	21.0	23C	.32	7.2	4.0	7.5	4.0	7.5	NO	.2	.2	.2	.2	.2	.2	4.0			
6	3363.0	2954.7	21.0	24C	.30	7.3	3.0	7.5	3.0	7.5	NO	.2	.2	.2	.2	.2	.2	3.0			
7	3814.4	2787.6	26.0	24C	.30	7.2	2.6	7.4	3.0	7.5	NO	.2	.2	.2	.2	.2	.2	3.0			
8	3374.4	2947.3	24.0	24C	.31	7.3	2.8	7.4	3.0	7.6	NO	.2	.2	.2	.2	.2	.2	3.0			
9	3488.4	3288.5	23.0	24C	.30	7.2	2.8	7.5	3.0	7.5	NO	.2	.2	.2	.2	.2	.2	3.0			
10	3960.4	3477.6	25.0	26C	.30	7.3	2.7	7.5	2.4	7.5	NO	.2	.2	.2	.2	.2	.2	2.4			
11	3702.7	3434.8	25.0	23C	.30	7.3	5.1	7.6	3.3	7.7	NO	.2	.2	.2	.2	.2	.2	3.3			
12	3762.0	3499.4	23.0	25C	.30	7.2	3.6	7.5	3.6	7.5	NO	.2	.2	.2	.2	.2	.2	3.6			
13	3716.4	3612.3	23.0	25C	.30	7.3	3.6	7.5	3.0	7.7	NO	.2	.3	.2	.2	.2	.2	3.0			
14	3367.6	2329.3	24.0	26C	.32	7.2	3.0	7.5	3.0	7.5	NO	.2	.2	.3	.2	.2	.2	3.0			
15	3905.6	4955.0	25.0	26C	.32	7.3	3.2	7.5	3.2	7.5	NO	.2	.3	.2	.2	.2	.2	3.2			
16	4525.8	4421.8	23.0	24C	.32	7.2	3.0	7.6	3.0	7.6	NO	.2	.3	.2	.2	.3	.3	3.0			
17	4532.6	4393.3	31.0	26C	.31	7.3	3.0	7.5	3.0	7.5	NO	.3	.3	.2	.2	.2	.3	3.0			
18	4452.8	4208.6	34.0	26C	.31	7.2	3.0	7.5	3.0	7.5	NO	.3	.2	.3	.3	.3	.3	3.0			
19	4332.0	4334.1	28.0	24C	.31	7.2	3.8	7.5	3.8	7.6	NO	.3	.3	.3	.3	.3	.3	3.8			
20	3875.4	3875.4	28.0	24C	.30	7.2	2.8	7.6	2.7	7.6	NO	.3	.3	.3	.3	.3	.3	2.7			
21	3618.4	3601.6	30.0	24C	.30	7.3	3.0	7.5	3.2	7.5	NO	.3	.3	.2	.2	.2	.3	3.2			
22	4065.2	4035.3	26.0	26C	.31	7.2	2.8	7.6	3.0	7.6	NO	.3	.2	.2	.2	.2	.2	3.0			
23	4678.6	4481.2	25.0	26C	.40	7.2	3.0	7.3	2.6	7.5	NO	.3	.3	.2	.2	.2	.2	2.6			
24	4475.6	4489.7	24.0	26C	.35	7.3	2.8	7.3	3.0	7.6	NO	.2	.2	.2	.2	.2	.2	3.0			
25	5244.0	5014.0	17.0	24C	.35	6.9	3.6	7.3	3.8	7.3	NO	.2	.2	.2	.2	.2	.2	3.8			
26	4902.0	4949.6	17.0	24C	.30	7.1	2.1	7.4	3.1	7.4	NO	.2	.2	.2	.2	.2	.2	3.1			
27	4801.7	4746.6	28.0	24C	.30	7.2	3.0	7.5	3.0	7.5	NO	.2	.2	.2	.2	.2	.2	3.0			
28	4560.0	4427.8	25.0	22C	.30	7.2	3.5	7.5	3.5	7.5	NO	.2	.2	.2	.2	.2	.2	3.5			
29	3688.0	3688.0	26.0	23C	.30	7.1	3.5	7.5	3.5	7.5	NO	.2	.2	.2	.2	.2	.2	3.5			
30	4218.0	4170.2	26.0	20C	.30	7.0	3.5	7.1	3.5	7.1	NO	.2	.2	.2	.2	.2	.2	3.5			
31																					

Total	118961.8	113674.1	Disinfectant No. 1:	0.2
Avg	3965.4	3789.1	Disinfectant No. 2:	0.5
Max	5244.0	5014.0	Disinfectant No. 3:	1.5
Min	3078.0	2329.0	Distribution Disinfectant:	0.5

\* NOTE: ONLY use the time column to show the length of time that the disinfectant residual entering the distribution system fell below acceptable levels.

SUBMITTED BY: *James Ralich*

Certificate No. \_\_\_\_\_  
 and Grade: 466-82-5536 -B

DATE: 9/30/96

**TEXAS NATURAL RESOURCE CONSERVATION COMMISSION**  
**WATER UTILITIES DIVISION**

MONTHLY OPERATIONAL REPORT FOR SURFACE WATER TREATMENT PLANTS (cont)

WS ID No.: 1080033

Connections: 9999

System Name: Sharyland Water Supply Corporation

Population: \_\_\_\_\_

Plant Name or Number: 1

Month/Year: 10/96

TREATMENT PROCESS PARAMETERS								WATER QUALITY LIMITS		
Peak Flow (MGD)								SOR REQD?	Turbidity Limit	Residual Limit
	Temp	D1	pH1	D2	pH2	D3	pH3			
6.0	10c	0.2	9.0	0.5	9.0	1.5	9.0	no	0.5	0.5

COMPLIANCE DATA																			
DATE	RAW WATER PUMPAGE (MGD)	TREATED WATER PUMPAGE (MGD)	RAW WATER ANALYSES		DISINFECTION PROCESS DATA						FINISHED WATER QUALITY								
					Zone 1		Zone 2		Zone 3		SOR REQD?	TURBIDITY						DISINFECTANT	
					NTU	TEMP	D1	pH1	D2	pH2		D3	pH3	NTU1	NTU2	NTU3	NTU4	NTU5	NTU6
1	4362.2	4176.8	20.0	20c	.3	7.0	3.3	7.1	3.3	7.1	no	.1	.1	.1	.2	.2	.2	3.3	
2	3990.0	4090.8	30.0	20c	.3	7.3	2.4	7.5	3.0	7.5	no	.2	.3	.3	.2	.1	.2	3.0	
3	3876.0	3723.2	18.0	22c	.2	7.4	2.2	7.4	2.8	7.6	no	.2	.2	.2	.2	.2	.2	2.8	
4	3192.0	3319.9	21.0	21c	.3	7.0	2.8	7.4	3.6	7.4	no	.2	.2	.2	.2	.2	.2	3.6	
5	2280.0	3001.0	20.0	20c	.2	7.1	3.6	7.4	3.6	7.4	no	.2	.2	.2	.2	.2	.2	3.6	
6	2811.2	3007.3	19.0	20c	.3	7.1	3.5	7.5	3.5	7.5	no	.2	.2	.2	.2	.2	.2	3.5	
7	3581.9	3386.7	28.0	21c	.2	7.0	4.3	7.4	4.5	7.4	no	.2	.2	.1	.1	.2	.2	4.5	
8	3951.2	3778.9	32.0	21c	.4	7.3	3.0	7.4	3.0	7.3	no	.2	.3	.3	.2	.2	.2	3.0	
9	3848.6	3541.0	24.0	21c	.3	7.2	3.9	7.1	3.9	7.2	no	.2	.2	.2	.2	.2	.2	3.9	
10	3762.0	3728.3	20.0	21c	.3	7.4	4.1	7.5	3.3	7.4	no	.2	.1	.1	.2	.2	.2	3.3	
11	4218.0	3767.0	22.0	21c	.2	7.3	4.0	7.7	4.2	7.5	no	.2	.1	.1	.2	.2	.2	4.2	
12	4179.2	4009.3	22.0	21c	.3	7.3	3.6	7.5	3.6	7.5	no	.2	.2	.2	.2	.2	.2	3.6	
13	4635.2	4340.9	22.0	20c	.2	7.2	4.0	7.5	4.0	7.5	no	.2	.2	.2	.2	.2	.1	4.0	
14	4617.0	4310.0	18.0	20c	.3	7.2	4.5	7.5	3.6	7.4	no	.2	.2	.2	.1	.1	.1	3.6	
15	4418.6	4293.7	18.0	20c	.3	7.3	4.2	7.5	3.6	7.5	no	.1	.1	.1	.1	.1	.1	3.6	
16	4617.0	4266.5	20.0	21c	.3	7.2	4.2	7.4	3.3	7.3	no	.1	.2	.1	.1	.2	.1	3.3	
17	4460.6	4328.3	17.0	22c	.3	7.0	4.5	7.5	3.6	7.5	no	.1	.1	.2	.1	.1	.1	3.6	
18	4332.0	4450.8	16.0	21c	.3	7.3	3.9	7.6	3.9	7.4	no	.1	.1	.1	.2	.2	.1	3.9	
19	4635.2	3928.7	18.0	21c	.3	7.1	4.0	7.5	4.0	7.5	no	.1	.2	.2	.1	.1	.1	4.0	
20	4788.0	4324.5	18.0	21c	.3	7.2	4.0	7.4	4.0	7.4	no	.1	.2	.2	.1	.1	.1	4.0	
21	5098.1	4672.4	16.0	21c	.3	7.1	3.9	7.5	4.2	7.4	no	.1	.1	.1	.1	.1	.1	4.2	
22	5041.1	4468.7	16.0	20c	.3	7.1	4.3	7.4	3.9	7.5	no	.1	.2	.1	.1	.1	.1	3.9	
23	4653.5	4000.3	17.0	20c	.2	7.4	4.3	7.6	3.0	7.5	no	.1	.2	.1	.1	.1	.1	3.0	
24	4886.0	4443.8	13.0	21c	.3	7.3	4.5	7.6	4.2	7.5	no	.1	.2	.2	.1	.1	.1	4.2	
25	4902.0	4545.2	15.0	20c	.3	7.0	3.0	7.4	3.3	7.4	no	.1	.2	.2	.1	.1	.1	3.3	
26	4908.8	4358.7	16.0	22c	.3	7.2	3.3	7.5	3.6	7.3	no	.1	.2	.2	.1	.1	.1	3.6	
27	4689.8	4689.8	20.0	24c	.3	7.0	3.6	7.3	3.0	7.2	no	.1	.1	.2	.2	.2	.1	3.0	
28	5132.2	4908.0	20.0	25c	.3	7.1	3.9	7.3	3.0	7.3	no	.1	.1	.1	.1	.1	.1	3.0	
29	5472.0	4677.2	22.0	24c	.3	7.0	3.9	7.4	3.9	7.3	no	.1	.1	.2	.2	.2	.2	3.9	
30	5016.0	4710.3	21.0	22c	.3	7.2	3.8	7.3	3.8	7.3	no	.2	.1	.1	.1	.1	.1	3.8	
31	5205.2	4745.7	22.0	24c	.2	7.3	4.0	7.2	4.0	7.2	no	.1	.1	.1	.1	.1	.1	4.0	
Total	135420.0	127993.7	Disinfectant No. 1:		0.2		* NOTE: ONLY use the time column to show the length												
Avg	4368.4	4128.8	Disinfectant No. 2:		0.5		of time that the disinfectant residual entering the												
Max	5472.0	4908.0	Disinfectant No. 3:		1.5		distribution system fell below acceptable levels.												
Min	2280.0	3001.0	Distribution Disinfectant:		0.5														

SUBMITTED BY: James Robert

Certificate No. and Grade: 466-82-5536 B Date: 10/31/96



**TEXAS NATURAL RESOURCE CONSERVATION COMMISSION**  
**WATER UTILITIES DIVISION**

MONTHLY OPERATIONAL REPORT FOR SURFACE WATER TREATMENT PLANTS (cont)

PWS ID No.: 1080033

Connections: 10040

System Name: Sharyland Water Supply Corporation

Population: \_\_\_\_\_

Plant Name or Number: 1

Month/Year: 11/96

TREATMENT PROCESS PARAMETERS								WATER QUALITY LIMITS			
Peak Flow (MGD)	Temp	D1	pH1	D2	pH2	D3	pH3	SOR REQD?	Turbidity Limit		Residual Limit
									6.0	10c	

COMPLIANCE DATA																			
DATE	RAW WATER PUMPAGE (MGD)	TREATED WATER PUMPAGE (MGD)	RAW WATER ANALYSES		DISINFECTION PROCESS DATA							FINISHED WATER QUALITY							
					Zone 1		Zone 2		Zone 3		SOR REQD?	TURBIDITY						DISINFECTANT	
					D1	pH1	D2	pH2	D3	pH3		NTU1	NTU2	NTU3	NTU4	NTU5	NTU6	Residual	Time
1	4667.2	4950.1	22.0	25c	.29	7.1	3.0	7.5	3.0	7.2	no	.1	.2	.2	.1	.1	.1	3.0	
2	2902.4	4054.0	20.0	18c	.27	7.0	3.6	7.4	3.3	7.2	no	.1	.2	.1	.1	.1	.1	3.3	
3	3153.2	3825.1	17.0	20c	.30	7.0	3.9	7.4	3.6	7.5	no	.1	.2	.2	.2	.2	.1	3.6	
4	4532.6	4891.5	14.0	20c	.31	7.1	4.8	7.4	4.5	7.4	no	.1	.2	.2	.2	.2	.2	4.5	
5	4674.0	4868.3	14.0	20c	.30	7.1	2.4	7.3	2.6	7.3	no	.1	.2	.2	.2	.2	.1	2.6	
6	5016.0	4764.5	18.0	22c	.33	7.2	2.5	7.3	2.5	7.3	no	.1	.1	.1	.1	.1	.1	2.5	
7	4541.8	4668.9	21.0	22c	.40	7.1	2.6	7.3	2.6	7.3	no	.1	.2	.1	.1	.1	.1	2.6	
8	4236.2	4695.4	17.0	20c	.48	7.0	3.6	7.5	3.3	7.4	no	.1	.1	.2	.1	.1	.1	3.3	
9	4496.1	4506.2	26.0	18c	.43	7.0	3.6	7.4	3.6	7.3	no	.1	.1	.2	.1	.1	.1	3.6	
10	4594.2	4788.3	18.0	20c	.40	7.1	3.6	7.1	3.6	7.4	no	.1	.1	.1	.1	.1	.1	3.6	
11	5444.6	5073.9	17.0	20c	.37	7.0	3.6	7.3	3.9	7.3	no	.1	.1	.1	.1	.1	.1	3.9	
12	5054.8	4981.8	19.0	20c	.37	7.0	3.3	7.3	3.3	7.4	no	.1	.1	.2	.2	.2	.1	3.3	
13	4256.8	4315.9	18.0	20c	.35	7.1	3.9	7.3	3.9	7.3	no	.2	.1	.1	.1	.1	1	3.9	
14	4051.6	3954.7	22.0	20c	.45	7.2	3.0	7.3	3.0	7.3	no	.1	.1	.1	.1	.1	.1	3.0	
15	3971.8	4125.3	17.0	20c	.40	7.3	3.0	7.4	3.0	7.3	no	.1	.1	.1	.1	.1	.1	3.0	
16	3705.0	4013.4	20.0	21c	.37	7.2	3.0	7.4	3.0	7.4	no	.1	.1	.1	.1	.1	.1	3.0	
17	4268.2	4380.2	26.0	21c	.35	7.2	3.6	7.3	3.3	7.3	no	.1	.1	.2	.2	.2	.1	3.3	
18	4674.0	4755.1	23.0	20c	.39	7.0	3.3	7.5	3.3	7.3	no	.1	.2	.2	.2	.1	.1	3.3	
19	4275.0	4400.6	18.0	20c	.33	7.1	3.0	7.4	3.0	7.3	no	.1	.1	.2	.1	.1	.1	3.0	
20	4142.8	4402.3	20.0	20c	.45	7.2	3.3	7.3	3.3	7.3	no	.1	.1	.1	.2	.2	.1	3.3	
21	4446.0	4577.1	20.0	21c	.29	7.2	3.5	7.3	3.5	7.3	no	.1	.1	.1	.1	.1	.1	3.5	
22	4491.6	4649.3	17.0	21c	.30	7.2	3.0	7.4	3.0	7.4	no	.1	.2	.2	.1	.1	.1	3.0	
23	4332.0	4370.1	20.0	21c	.28	7.2	3.0	7.3	3.0	7.3	no	.1	.2	.2	.2	.2	.1	3.0	
24	4446.0	4645.4	20.0	20c	.32	7.3	3.2	7.3	3.2	7.3	no	.1	.1	.1	.2	.2	.2	3.2	
25	4161.0	4242.3	21.0	18c	.30	7.1	3.0	7.3	3.0	7.3	no	.2	.2	.2	.1	.2	.2	3.0	
26	3876.0	4287.5	21.0	18c	.26	7.1	3.3	7.3	3.3	7.3	no	.2	.1	.1	.1	.2	.1	3.3	
27	3990.0	4160.1	15.0	18c	.23	7.2	3.3	7.3	3.5	7.4	no	.1	.1	.1	.1	.2	.1	3.5	
28	3648.0	3975.2	19.0	17c	.27	7.2	3.5	7.4	3.5	7.4	no	.1	.1	.1	.2	.1	.1	3.5	
29	2850.0	3154.1	20.0	18c	.23	7.2	3.3	7.3	3.3	7.3	no	.1	.1	.1	.1	.1	.1	3.3	
30	3306.0	3727.0	20.0	20c	.23	7.2	3.4	7.3	3.4	7.3	no	.1	.1	.1	.1	.1	.1	3.4	
31																			

Total	126204.9	132203.6	Disinfectant No. 1:	0.2
Avg	4206.8	4406.8	Disinfectant No. 2:	0.5
Max	5444.6	5073.9	Disinfectant No. 3:	1.5
Min	2850.0	3154.1	Distribution Disinfectant:	0.5

\* NOTE: ONLY use the time column to show the length of time that the disinfectant residual entering the distribution system fell below acceptable levels.

SUBMITTED BY: James Robert

Certificate No. \_\_\_\_\_ and Grade: 466-82-5536 B DATE: 11/30/96

**TEXAS NATURAL RESOURCE CONSERVATION COMMISSION**  
**WATER UTILITIES DIVISION**

MONTHLY OPERATIONAL REPORT FOR SURFACE WATER TREATMENT PLANTS (cont)

PWS ID No.: 1080033

Connections: 10092

System Name: Sharyland Water Supply Corporation

Population: \_\_\_\_\_

Plant Name: \_\_\_\_\_

Month/Year: December 1996

or Number: 1

TREATMENT PROCESS PARAMETERS								WATER QUALITY LIMITS		
Peak Flow (MGD)	Temp	D1	pH1	D2	pH2	D3	pH3	SOR REQD?	Turbidity Limit	Residual Limit
	6.0	10c	0.2	9.0	0.5	9.0	1.5			

COMPLIANCE DATA																			
DATE	RAW WATER PUMPAGE (MGD)	TREATED WATER PUMPAGE (MGD)	RAW WATER ANALYSES		DISINFECTION PROCESS DATA							FINISHED WATER QUALITY							
					Zone 1		Zone 2		Zone 3		SOR REQD?	TURBIDITY						DISINFECTANT	
					NTU	TEMP	D1	pH1	D2	pH2		D3	pH3	NTU1	NTU2	NTU3	NTU4	NTU5	NTU6
1	3477.0	3686.9	21.0	18c	.41	7.2	3.6	7.3	3.6	7.3	no	.1	.1	.1	.1	.1	.1	3.6	
2	3912.5	4143.6	21.0	18c	.38	7.2	3.6	7.4	3.6	7.4	no	.1	.1	.1	.1	.1	.1	3.6	
3	4047.0	4171.5	22.0	18c	.35	7.3	4.8	7.4	4.2	7.4	no	.1	.1	.1	.1	.1	.1	4.2	
4	3990.0	4036.6	26.0	18c	.40	7.2	4.2	7.4	4.0	7.3	no	.1	.2	.1	.1	.1	.1	4.0	
5	3420.0	3607.7	23.0	19c	.33	7.2	3.6	7.4	3.6	7.4	no	.1	.1	.1	.1	.1	.1	3.6	
6	3420.0	2899.0	24.0	20c	.35	7.2	4.8	7.4	4.8	7.4	no	.1	.1	.1	.1	.1	.1	4.8	
7	4635.2	3893.1	25.0	20c	.30	7.2	4.2	7.3	4.2	7.3	no	.1	.1	.1	.1	.1	.1	4.2	
8	4484.8	4123.8	25.0	20c	.33	7.2	4.1	7.3	4.1	7.3	no	.1	.1	.1	.1	.1	.1	4.1	
9	5016.0	4563.0	27.0	19c	.35	7.0	5.4	7.5	4.2	7.4	no	.1	.1	.1	.1	.1	.1	4.2	
10	4902.0	4220.6	27.0	19c	.33	7.1	3.3	7.4	3.3	7.4	no	.1	.2	.1	.1	.1	.1	3.3	
11	4446.0	4284.9	14.0	19c	.35	7.2	3.6	7.6	3.6	7.4	no	.1	.1	.1	.1	.1	.1	3.6	
12	4104.0	4088.6	28.0	20c	.33	7.2	3.6	7.4	3.6	7.4	no	.1	.1	.2	.2	.2	.1	3.6	
13	3477.0	3554.9	26.0	19c	.33	7.2	3.3	7.4	3.3	7.4	no	.1	.1	.1	.1	.1	.1	3.3	
14	2964.0	3368.6	24.0	19c	.40	7.1	3.6	7.4	3.6	7.4	no	.1	.1	.1	.1	.1	.1	3.6	
15	2850.0	3108.3	26.0	19c	.37	7.2	3.4	7.4	3.4	7.4	no	.1	.1	.1	.1	.2	.1	3.4	
16	3456.5	3725.4	17.0	18c	.37	7.0	2.6	7.3	2.4	7.3	no	.1	.1	.1	.1	.1	.1	2.4	
17	4065.2	3944.3	17.0	18c	.37	7.1	3.3	7.4	3.3	7.4	no	.1	.1	.1	.1	.1	.1	3.3	
18	4179.2	4156.8	11.0	15c	.35	7.1	3.5	7.4	3.5	7.4	no	.1	.1	.1	.1	.1	.1	3.5	
19	4332.0	4628.6	9.0	15c	.35	7.1	3.6	7.3	3.6	7.1	no	.1	.1	.1	.1	.1	.1	3.6	
20	4218.0	4502.5	8.0	16c	.33	7.1	2.4	7.4	2.7	7.1	no	.1	.2	.2	.2	.2	.2	2.7	
21	3420.0	3540.7	10.0	16c	.33	7.2	3.0	7.6	3.9	7.3	no	.2	.2	.2	.2	.2	.2	3.9	
22	3705.0	3896.8	13.0	17c	.40	7.2	4.0	7.4	4.0	7.3	no	.2	.2	.2	.2	.2	.2	4.0	
23	4074.4	4190.3	10.0	17c	.40	7.1	3.9	7.4	4.0	7.2	no	.2	.2	.2	.2	.2	.1	4.0	
24	4104.0	4210.7	14.0	19c	.35	7.1	4.5	7.5	4.8	7.3	no	.2	.1	.1	.1	.1	.1	4.8	
25	3534.0	3492.2	17.0	18c	.37	7.2	3.6	7.2	3.6	7.2	no	.1	.1	.1	.1	.1	.1	3.6	
26	3552.0	3505.8	16.0	18c	.35	7.0	3.3	7.3	3.3	7.3	no	.1	.1	.1	.1	.1	.1	3.3	
27	4085.7	4176.1	16.0	18c	.35	7.1	3.6	7.3	3.0	7.2	no	.1	.1	.1	.1	.1	.1	3.0	
28	3990.0	4292.0	15.0	18c	.33	7.0	3.3	7.4	2.7	7.2	no	.1	.1	.1	.1	.2	.2	2.7	
29	4195.2	4314.1	14.0	18c	.33	7.1	2.1	7.4	3.6	7.3	no	.2	.1	.1	.1	.1	.1	3.6	
30	4218.0	4309.8	20.0	19c	.43	7.1	2.4	7.5	4.7	7.1	no	.1	.1	.1	.1	.1	.1	4.7	
31	4256.8	4275.4	10.0	20c	.35	7.3	4.7	7.6	4.8	7.4	no	.1	.1	.1	.1	.1	.1	4.8	
Total	122531.5	122912.6	Disinfectant No. 1:		0.2		* NOTE: ONLY use the time column to show the length												
Avg	3952.6	3964.9	Disinfectant No. 2:		0.5		of time that the disinfectant residual entering the												
Max	5016.0	4563.0	Disinfectant No. 3:		1.5		distribution system fell below acceptable levels.												
Min	2850.0	2899.0	Distribution Disinfectant:																

SUBMITTED BY: James Robert

Certificate No. and Grade: 466-82-5536 B DATE: 12-31-96

## WATER RIGHTS

<u>Water Source</u>	<u>Acre-Feet</u>
Ground Water <sup>1</sup>	0.00
Indirect Reuse of Wastewater Effluent <sup>2</sup>	0.00
Rio Grande River Surface Water via	
Hidalgo County Irrigation District No. 1	6,140.00
Hidalgo County Water Improvement District No. 2	<u>1,500.00</u>
	7,640.00
Hidalgo County Irrigation District No. 3	8,980.00
	<u>3,000.00</u>
	11,980.00
United Irrigation	5,000.00
Other Water	
Trade Zone	345.80
Texas State Bank Purchase	<u>832.50</u>
	<u>1,178.30</u>
<b>TOTAL</b>	<b>25,798.30</b>
 <u>Other Surface Water</u>	
Hidalgo County Irrigation District No. 3 (contract pending)	2,000
United Irrigation (under contract, option to be exercised by city)	<u>5,000</u>
	<u>7,000.00</u>
<b>GRAND TOTAL</b>	<b>32,798.30</b>

Note:

<sup>1</sup>Currently investigating ground water resources to supplement surface water use.

<sup>2</sup>Feasibility analysis being performed to evaluate indirect reuse wastewater effluent to blend with new surface water for potable purposes.

AC/FT OF RAW WATER

DATE	DIST 2	DIST 3	TOTAL			
01/94	0	1,609	1,609			
02/94	0	1,564	1,564			
03/94	0	1,559	1,559			
04/94	0	1,663	1,663			
05/94	27	2,187	2,214			
06/94	21	2,287	2,308			
07/94	132	2,476	2,608			
08/94	235	3,099	3,334			
09/94	49	1,790	1,839			
10/94	0	2,191	2,191			
11/94	0.47	2,065	2,065			
12/94	0	1,713	1,713			
				1994 TOTAL		
				DIST. 2	DIST. 3	DIST. 2&3
				464	24,203	24,667
01/95	0	1,626	1,626			
02/95	0	1,809	1,809			
03/95	2	1,499	1,501			
04/95	88	2,623	2,709			
05/95	51	2,106	2,157			
06/95	82	2,068	2,150			
07/95	165	2,249	2,414			
08/95	109	1,988	2,097			
09/95	265	1,474	1,739			
10/95	950	1,497	2,447			
				1995 TOTAL		
				DIST. 2	DIST. 3	DIST. 2&3
				4,276	20,176	24,452
12/95	1,384	559	1,943			
01/96	629	617	1,246			
02/96	554	1,038	1,592			
03/96	851	739	1,590			
04/96	600	756	1,356			
05/96	611	815	1,426			
06/96	603	1,860	2,463			
07/96	463	995	1,458			
08/96	355	1,479	1,834			
09/96	201	1,692	1,893			
10/96	200	1,392	1,592			
				1996 TOTAL		
				DIST. 2	DIST. 3	DIST. 2&3
				5,215	13,194	18,409
11/96	67	1,196	1,263			
12/96	81	615	696			

WATER ANALYSIS REPORT  
 TEXAS WATER COMMISSION  
 MONITORING AND ENFORCEMENT SECTION  
 WATER UTILITIES DIVISION  
 P.O. BOX 13087  
 AUSTIN, TEXAS 78711-3087

HIDALGO CITY OF  
 211 E ESERANZA

WATER SUPPLY #: 1080021  
 LABORATORY NO: EP517189  
 SAMPLE TYPE:

HIDALGO TX 78557

COLLECTOR REMARKS:

SOURCE:

ENTRY POINTS: 003

DATE COLLECTED 11/ 8/95 DATE RECEIVED 11/ 9/95 DATE REPORTED 11/29/95

CONSTITUENT NAME	RESULT	UNITS	+/-
CALCIUM	116	MG/L	
CHLORIDE	319	MG/L	
FLUORIDE	1.2	MG/L	
MAGNESIUM	42	MG/L	
NITRATE (AS N)	< 0.01	MG/L	
SODIUM	283	MG/L	
SULFATE	401	MG/L	
TOTAL HARDNESS/CAC03	463	MG/L	
PH	7.8		
DIL. CONDUCT (UMHGS/CM)	2512		
TOT. ALKA. AS CAC03	248	MG/L	
BICARBONATE	303	MG/L	
CARBONATE	0	MG/L	
DISSOLVED SOLIDS	1320	MG/L	
P. ALKALINITY /CAC03	0	MG/L	

WATER ANALYSIS REPORT  
TEXAS WATER COMMISSION  
MONITORING AND ENFORCEMENT SECTION  
WATER UTILITIES DIVISION  
P.O. BOX 13037  
AUSTIN, TEXAS 78711-3037

HIDALGO CITY OF  
211 E ESERANZA

WATER SUPPLY #: 1080021  
LABORATORY NO: EP517188  
SAMPLE TYPE:

HIDALGO TX 78557

COLLECTOR REMARKS:

SOURCE:

ENTRY POINTS: 001

DATE COLLECTED 11/ 8/95 DATE RECEIVED 11/ 9/95 DATE REPORTED 12/13/95

CONSTITUENT NAME	RESULT	UNITS	+/-
THALLIUM	< 0.0010	MG/L	

WATER ANALYSIS REPORT  
TEXAS WATER COMMISSION  
MONITORING AND ENFORCEMENT SECTION  
WATER UTILITIES DIVISION  
P.O. BOX 13027  
AUSTIN, TEXAS 78711-3037

HIDALGO CITY OF  
211 E ESERANZA

WATER SUPPLY #: 1080021  
LABORATORY NO: EPS17191  
SAMPLE TYPE:

HIDALGO TX 78557

COLLECTOR REMARKS:

SOURCE:

ENTRY POINTS: 003

DATE COLLECTED 11/ 8/95 DATE RECEIVED 11/ 9/95 DATE REPORTED 12/13/95

CONSTITUENT NAME	RESULT	UNITS	+/-
THALLIUM	< 0.0010	MG/L	

**TABLE OF CONTENTS  
APPENDIX C**

<b><u>Section</u></b>	<b><u>Page</u></b>
1.1 INTRODUCTION	C-1
1.2 INPUT DATA	C-1
1.3 MODEL CALIBRATION	C-2
1.4 RESULTS	C-3
1.5 CONCLUSION	C-3

**LIST OF TABLES**

<b><u>Table</u></b>		<b><u>Page</u></b>
C-1	Service Area Types an Associated Demand Per Acre Factors	C-5
C-2	Summary of Modeling Runs and File Names	C-6

**LIST OF FIGURES**

<b><u>Figure</u></b>		<b><u>Follows Page</u></b>
C-1 A&B	1996 Water Service Areas - McAllen Distribution Planning Area	C-6
C-2 A&B	2001 Water Service Areas - McAllen Distribution Planning Area	C-6
C-3 A&B	2016 Water Service Areas - McAllen Distribution Planning Area	C-6
C-4	Diurnal Demand Curve Utilized For Calibration Model	C-6



## 1.1 INTRODUCTION

This appendix summarizes the hydraulic analysis performed to simulate existing and improved future water system conditions. As part of the study effort, a computer model was prepared of the City of Mc Allen's water distribution system. The water system model was calibrated to simulate as closely as possible the actual performance and characteristics of the existing water system.

The use of a computer model will provide an effective method of performing the complex hydraulic computations required to analyze a complicated piping system. The calibrated model of Mc Allen's water system is useful in evaluating the operational characteristics of the existing system, as well as, analyzing proposed future water system improvements as outlined in Section 6.0.

In the future, the completed computer model will be useful for performing further evaluations of the existing water system, designing facility improvements, evaluating proposed water system expansion plans and related planning activities.

This appendix summarizes the parameters used to prepare the computer model input data files, method of model calibration, and analysis of results for years 1996, 2001, and 2016.

## 1.2 INPUT DATA

The Mc Allen computer model has been prepared using the pipe network analysis program Cybernet<sup>®</sup> developed by the Haestad Methods and also verified with EPANET developed by the USEPA. The Cybernet<sup>®</sup> program can be used to analyze water distribution systems under steady state and dynamic flow conditions. Cybernet<sup>®</sup> input data files are prepared by the user, and include such information as pipe geometry, pipe lengths and diameters, pipe roughness coefficients, pipe junction elevations, diurnal demand pattern, pump operating scheme, and other system information.

Pipes 12 inches and larger were included in the water system model. Where necessary, smaller pipes were included to complete loops and connect to served areas. All seven high service pumps at Plant No. 2 and the six elevated storage tanks were also included in the model to simulate dynamic flow conditions.

Mapping of the 1996 and projected 2001, 2016 water service areas for the McAllen distribution planning area are provided in Volume 3, as Figures C-1A, C-1B, C-2A, C-2B, C-3A, and C-3B, respectively. Average day demands, node numbers, and distribution pipes as indicated in model are shown in these figures.

Demands entered into model are based on type and size of service area acreage. An independent node was assigned to each service area shown on Figures C-1A, C-1B, C-2A, C-2B, C-3A, and C-3B. Future developments are shown by dashed lines on Figures C-2A, C-2B, C-3A, and C-3B. All existing and future service area boundaries are based on the City's records and projections, as well as, the use of aerial topography and field reconnaissance. An average day demand per acre factor was developed for years 1996, 2001, 2016 and is based on population and service area type (i.e. either residential or mixed development). This factor was then multiplied by the the service area acreage to derive a single demand per service area. Table C-1 shows the different factors that were utilized in calculating each service area demand.

In order to use the pipe network analysis program, a data file must be prepared which describes the characteristics of the piping system to be analyzed. The most important groups of information contained in the data file are the pipeline data and the junction node data. The pipeline data includes information concerning the length, diameter, roughness coefficient and geometry of each pipe segment. The node data includes the topographic elevation and demand information for each junction where two or more pipe segments are connected.

Selected pipe junction locations throughout the water system were assigned node numbers for identification and reference purposes. In this manner, the location of each pipe segment could be described by a beginning and ending node number. For the purpose of modeling the system, demands are assumed to occur at the junction nodes.

Mc Allen is situated on fairly flat terrain and piping consists of mostly asbestos-cement or polyvinyl chloride (PVC) pipe. Therefore, all node elevations are identical at 100 feet and a global Hazen-Williams pipe roughness coefficient for existing pipe of 120, respectively. Proposed capital improvements in years 2001 and 2106 were simulated with a Hazen-Williams pipe roughness coefficient of 140. Fire fighting analyses were based on the 6-80 edition of the ISO Fire Suppression Rating Schedule which the Texas State Board of Insurance is phasing into use statewide. Input data for available fire flow included maintaining a residual system pressure of 20 psi under a maximum day demand condition.

### **1.3 MODEL CALIBRATION**

Calibration of a water system computer model is required to ensure that the results obtained from computer simulations reliably reflect actual system operating characteristics. When setting up the initial computer model, the existing geometry and pipeline characteristics of the distribution system were established.

The 1996 model was calibrated so that it matched the dynamic diurnal demand pattern and pump operating scheme furnished by the City of Mc Allen. The August 27, 1997 diurnal demand curve is shown as Figure C-4.

## 1.4 RESULTS

The program output includes various summaries of piping system hydraulic characteristics under simulated conditions. A number of output options are available. In general, program output will include a summary of the system pressure, flow rate, velocity, and head loss in each pipe segment. Available fire flows at each node were obtained upon simulating specific ISO standards. The range of results for pressure and fire flow are summarized below for the years 1996, 2001, and 2016.

In 1996, the simulated system pressures ranged from 0 psi to 94 psi. Available fire flow simulated under a maximum day demand and maintaining a minimum system pressure of 20 psi ranged from 300 gpm to 7,500 gpm.

In 2001, the simulated system pressures ranged from 33 psi to 82 psi. Available fire flow simulated under a projected maximum day demand and maintaining a minimum system pressure of 20 psi ranged from 900 gpm to 7,500 gpm.

In 2016, the simulated system pressures ranged from 55 psi to 83 psi. Available fire flow simulated under a projected maximum day demand and maintaining a minimum system pressure of 20 psi ranged from 1000 gpm to 7,500 gpm.

In addition, the Cybernet® program is useful in creating pressure and available fire flow contour maps as shown in Figures 5-7A, 5-7B, 6-3A, 6-3B, 6-5A, 6-5B of Volume 3.

Pressure loss at Plant No. 2 was the most significant hydraulic deficiency identified from analyzing the output data of the 1996 model. That pressure loss is approximately 10 psi during peak demand. The causes for pressure loss include an inadequate header system and inadequately sized pipes to carry water away from the plant.

## 1.5 CONCLUSION

Based on modeling simulations existing fire flow and pressure deficiencies have been corrected through looping and increasing water main sizes at pinpointed areas. Projected growth for years 2001 and 2016 will increase demands on the existing system, which have been simulated in respective models, and were the basis for adding and sizing of new mains in the Mc Allen water system as shown in Figures 6-1 and 6-4.

EPANET and Cybernet® input and output data files for years 1996, 2001, and 2016 are included with the project. Currently, Cybernet® computer modeling software costs approximately \$3000 to \$5000 depending on software options selected, whereas, EPANET is public domain software and is free to the public.

The compact disk at the back of this section includes the EPANET and Cybernet® files created during this project. The compact disk also includes the EPANET program files.

**TABLE C-1  
SERVICE AREA TYPES AND  
ASSOCIATED AVERAGE DAY DEMAND (GPM / ACRE) FACTORS**

<b>Type of Service Area</b>	<b>1996</b>	<b>2001</b>	<b>2016</b>
Low Density - Residential	.90	.5	1.76
Small / Large Meter - Mixed Development	1.78	.98	3.49

**TABLE C-2  
SUMMARY OF MODELING RUNS  
AND FILE NAMES**

Cybenet Version 2 File	Year	Analysis	Description
1996.DWG	1996	Calibration	August 27, 1997 tower levels simulated with extended time period analysis, time of day demand curve developed from actual pumpage and tank volumes for August 27, 1997, Water Plant No. 2 pumps modeled as negative demands to match actual pumpage for August 27, 1997, demand factor of 1.26 applied to average day demands to match the actual demands of August 27, 1997, Trade Zone water tower taken off-line.
		Pressure	Peak hour demand (3 times average day), elevated tank levels at predicted levels during peak hour demand determined using extended time period simulation in EPANET.
		Fire Flow	Maximum day demand (1.9 times average day), elevated tanks 10 ft below overflow, 3,500 gpm requirement.
2001.DWG	2001	Pressure	Peak hour demand (3 times average day), elevated tank levels at predicted levels during peak hour demand determined using extended time period simulation in EPANET.
		Fire Flow	Maximum day demand (1.9 times average day), elevated tanks 10 ft below overflow, 3,500 gpm requirement.
2016.DWG	2016	Pressure	Peak hour demand (3 times average day), elevated tank levels at predicted levels during peak hour demand determined using extended time period simulation in EPANET.
		Fire Flow	Maximum day demand (1.9 times average day), elevated tanks 10 ft below overflow, 3,500 gpm requirement.

**1996 COMPUTER WATER MODEL  
INPUT DATA FILE**

\*\*\*\*\*  
 SUMMARY OF ORIGINAL DATA  
 \*\*\*\*\*

CyberNet Version 2.52.5. Copyright 1991,92 Haestad Methods Inc.

Run Description: Basic Network

Job: City of McAllen  
 1996 Water System Model

PIPELINE DATA

STATUS CODE: XX -CLOSED PIPE BN -BOUNDARY NODE PU -PUMP LINE  
 CV -CHECK VALVE RV -REGULATING VALVE

PIPE BND-HGL NUMBER	NODE NOS.		LENGTH (ft)	DIAMETER (in)	ROUGHNESS COEFF.	MINOR LOSS	
	#1	#2				COEFF.	COEFF. (ft)
20	4150	20	942.0	10.0	120.00		0.00
30	10	20	612.0	10.0	120.00		0.00
40	20	4420	1265.0	10.0	120.00		0.00
50	10	40	1377.0	10.0	120.00		0.00
80	50	4410	1211.0	12.0	120.00		0.00
90	70	80	1932.0	8.0	120.00		0.00
110	60	80	602.0	8.0	120.00		0.00
120	80	100	673.0	8.0	120.00		0.00
130	4140	110	1050.0	8.0	120.00		0.00
140	70	4380	2595.0	12.0	120.00		0.00
150	110	220	562.0	12.0	120.00		0.00
160	100	120	663.0	12.0	120.00		0.00
170	120	60	625.0	12.0	120.00		0.00
180	60	30	673.0	12.0	120.00		0.00
190	30	40	1261.0	12.0	120.00		0.00
200	40	4040	249.0	12.0	120.00		0.00
250	120	170	10018.0	16.0	120.00		0.00
260	170	4490	595.0	12.0	120.00		0.00
270	180	4570	1257.0	12.0	120.00		0.00
300	190	200	767.0	12.0	120.00		0.00
310	200	210	390.0	12.0	120.00		0.00
320	210	4450	1977.0	12.0	120.00		0.00
330	160	150	1201.0	12.0	120.00		0.00
340	150	140	717.0	12.0	120.00		0.00
350	140	130	599.0	12.0	120.00		0.00
360	220	4440	3210.0	12.0	120.00		0.00
370	130	220	1334.0	12.0	120.00		0.00
390	4180	240	736.0	8.0	120.00		0.00
400	240	4510	545.0	8.0	120.00		0.00
410	250	260	844.0	16.0	120.00		0.00
420	170	250	2080.0	16.0	120.00		0.00
430	230	270	2631.0	24.0	120.00		0.00
440	270	260	287.0	24.0	120.00		0.00



450	250	280	1401.0	8.0	120.00	0.00
460	280	4560	638.0	8.0	120.00	0.00
470	290	300	1325.0	8.0	120.00	0.00
490	300	4500	981.0	8.0	120.00	0.00
500	290	4520	757.0	8.0	120.00	0.00
510	320	330	754.0	16.0	120.00	0.00
520	320	310	714.0	12.0	120.00	0.00
530	310	340	1451.0	12.0	120.00	0.00
540	340	4580	1173.0	12.0	120.00	0.00
550	260	3790	1404.0	24.0	120.00	0.00
560	350	330	685.0	30.0	120.00	0.00
570	230	4590	1834.0	8.0	120.00	0.00
580	270	370	2177.0	12.0	120.00	0.00
590	370	4600	1857.0	12.0	120.00	0.00
600	370	390	1401.0	8.0	120.00	0.00
610	390	4680	1228.0	8.0	120.00	0.00
630	4190	420	880.0	8.0	120.00	0.00
640	420	4690	994.0	8.0	120.00	0.00
650	360	4750	1587.0	8.0	120.00	0.00
680	380	4710	797.0	8.0	120.00	0.00
690	400	4650	564.0	8.0	120.00	0.00
700	380	460	192.0	8.0	120.00	0.00
710	460	470	624.0	8.0	120.00	0.00
720	470	480	608.0	8.0	120.00	0.00
730	480	490	795.0	8.0	120.00	0.00
740	460	4790	507.0	8.0	120.00	0.00
750	500	440	186.0	8.0	120.00	0.00
760	490	510	596.0	8.0	120.00	0.00
770	510	520	826.0	8.0	120.00	0.00
780	520	530	1204.0	8.0	120.00	0.00
790	530	540	993.0	8.0	120.00	0.00
800	540	4810	799.0	8.0	120.00	0.00
810	540	550	994.0	8.0	120.00	0.00
820	550	560	726.0	24.0	120.00	0.00
830	560	570	910.0	24.0	120.00	0.00
860	440	600	1286.0	8.0	120.00	0.00
880	490	610	1350.0	8.0	120.00	0.00
890	610	620	477.0	12.0	120.00	0.00
900	550	630	2040.0	24.0	120.00	0.00
910	630	640	999.0	24.0	120.00	0.00
920	640	4870	1088.0	8.0	120.00	0.00
930	630	650	357.0	24.0	120.00	0.00
940	530	660	1345.0	8.0	120.00	0.00
950	660	670	688.0	8.0	120.00	0.00
960	670	650	1071.0	8.0	120.00	0.00
970	670	4910	597.0	8.0	120.00	0.00
980	680	690	689.0	8.0	120.00	0.00
990	660	690	1297.0	8.0	120.00	0.00
1000	340	700	3702.0	12.0	120.00	0.00
1010	700	710	407.0	12.0	120.00	0.00
1020	720	730	653.0	10.0	120.00	0.00
1030	730	710	379.0	10.0	120.00	0.00
1040	740	720	1111.0	10.0	120.00	0.00
1050	750	760	2231.0	10.0	120.00	0.00

1060	710	760	185.0	10.0	120.00	0.00
1070	760	770	1573.0	10.0	120.00	0.00
1080	320	780	1275.0	12.0	120.00	0.00
1090	780	740	1596.0	12.0	120.00	0.00
1100	740	790	1508.0	12.0	120.00	0.00
1110	770	800	1259.0	12.0	120.00	0.00
1120	770	810	921.0	12.0	120.00	0.00
1130	750	820	353.0	8.0	120.00	0.00
1140	820	800	117.0	12.0	120.00	0.00
1150	800	830	1355.0	12.0	120.00	0.00
1160	790	830	337.0	12.0	120.00	0.00
1170	830	840	479.0	12.0	120.00	0.00
1180	840	850	794.0	12.0	120.00	0.00
1190	850	860	637.0	12.0	120.00	0.00
1200	860	870	419.0	12.0	120.00	0.00
1210	870	880	1019.0	12.0	120.00	0.00
1220	880	890	644.0	12.0	120.00	0.00
1230	890	900	801.0	8.0	120.00	0.00
1240	900	910	1175.0	8.0	120.00	0.00
1250	910	5270	985.0	8.0	120.00	0.00
1260	810	930	1370.0	12.0	120.00	0.00
1270	930	940	294.0	12.0	120.00	0.00
1280	940	950	1968.0	12.0	120.00	0.00
1290	920	960	742.0	8.0	120.00	0.00
1300	950	960	1467.0	6.0	120.00	0.00
1310	960	970	225.0	6.0	120.00	0.00
1320	970	980	2037.0	8.0	120.00	0.00
1330	980	990	120.0	8.0	120.00	0.00
1340	990	1000	1677.0	8.0	120.00	0.00
1350	1000	4120	1970.0	12.0	120.00	0.00
1360	990	1010	1228.0	8.0	120.00	0.00
1370	980	1020	1203.0	8.0	120.00	0.00
1380	1020	1030	1160.0	8.0	120.00	0.00
1390	1030	1010	1048.0	12.0	120.00	0.00
1400	1010	4130	1641.0	12.0	120.00	0.00
1410	1040	5260	527.0	16.0	120.00	0.00
1420	1020	5250	2331.0	8.0	120.00	0.00
1430	1050	1040	1421.0	12.0	120.00	0.00
1440	880	1060	1379.0	8.0	120.00	0.00
1450	1060	1050	658.0	8.0	120.00	0.00
1460	1060	1070	1466.0	8.0	120.00	0.00
1470	1070	1080	285.0	16.0	120.00	0.00
1480	1080	1090	322.0	16.0	120.00	0.00
1490	1090	1040	457.0	16.0	120.00	0.00
1500	1070	1100	2363.0	12.0	120.00	0.00
1530	1100	1130	915.0	8.0	120.00	0.00
1540	1080	1130	1535.0	8.0	120.00	0.00
1550	1130	1140	390.0	8.0	120.00	0.00
1560	1090	1140	1589.0	8.0	120.00	0.00
1570	1140	1150	2321.0	8.0	120.00	0.00
1580	1150	1160	2006.0	8.0	120.00	0.00
1590	1160	1170	1274.0	8.0	120.00	0.00
1600	1170	1180	538.0	8.0	120.00	0.00
1610	1200	5360	1507.0	18.0	120.00	0.00

1620	1190	5380	1189.0	18.0	120.00	0.00
1630	1190	5710	1361.0	18.0	120.00	0.00
1640	1220	1230	1141.0	8.0	120.00	0.00
1650	1230	1240	484.0	8.0	120.00	0.00
1660	1240	5700	227.0	8.0	120.00	0.00
1670	1250	1220	494.0	8.0	120.00	0.00
1680	1110	1250	585.0	8.0	120.00	0.00
1690	1220	5660	618.0	8.0	120.00	0.00
1720	1260	1290	1399.0	8.0	120.00	0.00
1740	1110	5670	678.0	8.0	120.00	0.00
1750	1240	5680	635.0	8.0	120.00	0.00
1760	1230	1300	1188.0	8.0	120.00	0.00
1770	1300	1160	3663.0	8.0	120.00	0.00
1780	1300	1310	688.0	8.0	120.00	0.00
1790	1310	1180	1134.0	8.0	120.00	0.00
1800	1190	1320	637.0	8.0	120.00	0.00
1810	1310	5290	215.0	8.0	120.00	0.00
1820	1320	1330	684.0	8.0	120.00	0.00
1830	1340	1330	666.0	12.0	120.00	0.00
1840	1340	1190	619.0	18.0	120.00	0.00
1850	1330	5350	213.0	12.0	120.00	0.00
1860	840	1350	561.0	12.0	120.00	0.00
1870	1350	5330	778.0	6.0	120.00	0.00
1880	1360	5420	1210.0	6.0	120.00	0.00
1890	1340	5390	984.0	18.0	120.00	0.00
1930	1410	1380	211.0	8.0	120.00	0.00
1940	1420	3910	640.0	8.0	120.00	0.00
1950	1430	3940	330.0	10.0	120.00	0.00
1960	1420	1440	904.0	12.0	120.00	0.00
1970	1440	1450	453.0	12.0	120.00	0.00
1980	1450	3950	833.0	12.0	120.00	0.00
1990	1420	5540	356.0	8.0	120.00	0.00
2000	1400	1460	447.0	6.0	120.00	0.00
2010	1440	1470	1451.0	8.0	120.00	0.00
2020	1450	5580	627.0	8.0	120.00	0.00
2030	1470	1490	1448.0	8.0	120.00	0.00
2040	1490	1480	330.0	8.0	120.00	0.00
2050	1340	1500	1323.0	8.0	120.00	0.00
2060	1480	5640	492.0	8.0	120.00	0.00
2070	1510	5630	846.0	12.0	120.00	0.00
2080	1520	1530	167.0	12.0	120.00	0.00
2090	1530	1210	481.0	12.0	120.00	0.00
2100	1530	1480	832.0	12.0	120.00	0.00
2110	1490	1220	2779.0	8.0	120.00	0.00
2120	1540	5720	815.0	8.0	120.00	0.00
2130	1520	1550	2681.0	8.0	120.00	0.00
2140	1550	1560	1594.0	8.0	120.00	0.00
2150	1540	1570	1685.0	8.0	120.00	0.00
2170	1580	1540	2640.0	8.0	120.00	0.00
2180	1580	1590	1320.0	8.0	120.00	0.00
2190	1590	5760	320.0	8.0	120.00	0.00
2200	1600	1580	1195.0	8.0	120.00	0.00
2210	1600	5780	688.0	12.0	120.00	0.00
2220	1610	1620	665.0	12.0	120.00	0.00

2230	1620	1630	923.0	12.0	120.00	0.00
2240	1630	1640	433.0	12.0	120.00	0.00
2250	1640	1650	170.0	12.0	120.00	0.00
2260	1650	1660	1320.0	12.0	120.00	0.00
2270	1610	1590	1189.0	8.0	120.00	0.00
2280	430	350	1817.0	24.0	120.00	0.00
2300	1670	430	739.0	24.0	120.00	0.00
2340	1680	1700	593.0	8.0	120.00	0.00
2350	1700	1400	473.0	8.0	120.00	0.00
2360	780	1710	1155.0	12.0	120.00	0.00
2390	1730	5130	275.0	10.0	120.00	0.00
2400	560	1740	602.0	16.0	120.00	0.00
2410	1740	1750	751.0	16.0	120.00	0.00
2420	1750	4970	485.0	16.0	120.00	0.00
2430	1760	5140	208.0	16.0	120.00	0.00
2440	1770	5100	423.0	16.0	120.00	0.00
2450	640	6630	429.0	24.0	120.00	0.00
2460	1790	1800	1640.0	24.0	120.00	0.00
2470	1800	1810	1009.0	24.0	120.00	0.00
2480	1790	4940	704.0	16.0	120.00	0.00
2490	1830	1820	808.0	16.0	120.00	0.00
2500	1830	4100	351.0	12.0	120.00	0.00
2510	1840	5190	667.0	12.0	120.00	0.00
2520	1850	4980	630.0	12.0	120.00	0.00
2530	1840	6530	1852.0	12.0	120.00	0.00
2540	1870	1880	1260.0	8.0	120.00	0.00
2550	1880	1890	925.0	8.0	120.00	0.00
2560	1890	6520	950.0	12.0	120.00	0.00
2570	1900	1910	703.0	12.0	120.00	0.00
2580	1910	1830	819.0	12.0	120.00	0.00
2590	1890	1920	773.0	12.0	120.00	0.00
2600	1920	1930	562.0	12.0	120.00	0.00
2610	1840	1940	609.0	12.0	120.00	0.00
2620	1940	3160	699.0	12.0	120.00	0.00
2630	1790	1950	950.0	12.0	120.00	0.00
2640	1950	1960	680.0	12.0	120.00	0.00
2650	1960	4890	1024.0	12.0	120.00	0.00
2660	1970	1980	692.0	12.0	120.00	0.00
2670	1980	6600	1099.0	12.0	120.00	0.00
2680	1810	3500	897.0	12.0	120.00	0.00
2690	1960	2010	1372.0	8.0	120.00	0.00
2700	1950	5040	718.0	8.0	120.00	0.00
2710	2010	620	2228.0	8.0	120.00	0.00
2720	1900	3440	907.0	8.0	120.00	0.00
2730	2020	3530	1098.0	8.0	120.00	0.00
2740	2030	1920	1577.0	8.0	120.00	0.00
2750	2030	3590	1116.0	8.0	120.00	0.00
2760	1990	6560	1386.0	8.0	120.00	0.00
2770	1990	6500	357.0	12.0	120.00	0.00
2780	2040	2050	2102.0	12.0	120.00	0.00
2790	1930	6540	602.0	12.0	120.00	0.00
2800	2070	4110	703.0	24.0	120.00	0.00
2810	2060	3560	830.0	24.0	120.00	0.00
2820	2050	6390	3612.0	8.0	120.00	0.00

2830	2090	2790	520.0	16.0	120.00	0.00
2840	2100	2060	597.0	16.0	120.00	0.00
2850	2110	2120	1406.0	16.0	120.00	0.00
2860	2120	2090	375.0	16.0	120.00	0.00
2870	2110	2130	831.0	12.0	120.00	0.00
2880	2070	2130	262.0	12.0	120.00	0.00
2890	2060	2780	597.0	24.0	120.00	0.00
2900	2050	2150	4340.0	12.0	120.00	0.00
2910	2150	6360	1604.0	12.0	120.00	0.00
2920	2160	2170	2189.0	12.0	120.00	0.00
2930	2170	6370	358.0	12.0	120.00	0.00
2940	2180	6310	1040.0	12.0	120.00	0.00
2950	4210	2190	177.0	12.0	120.00	0.00
2960	2190	2200	1594.0	12.0	120.00	0.00
2970	2200	2210	596.0	12.0	120.00	0.00
2980	2210	2220	212.0	12.0	120.00	0.00
2990	2220	2170	1441.0	12.0	120.00	0.00
3000	2190	2230	1206.0	8.0	120.00	0.00
3010	2230	6340	331.0	8.0	120.00	0.00
3020	2240	2250	796.0	8.0	120.00	0.00
3030	2250	2220	1218.0	8.0	120.00	0.00
3040	2180	6300	1314.0	12.0	120.00	0.00
3050	2260	6280	1218.0	12.0	120.00	0.00
3060	2270	2280	423.0	8.0	120.00	0.00
3070	2280	2290	292.0	8.0	120.00	0.00
3080	2290	6270	684.0	12.0	120.00	0.00
3090	2300	2310	1476.0	12.0	120.00	0.00
3100	2310	4220	933.0	12.0	120.00	0.00
3110	2130	2320	2319.0	12.0	120.00	0.00
3120	2320	2330	1136.0	12.0	120.00	0.00
3130	2260	6290	1078.0	8.0	120.00	0.00
3140	2340	2290	1269.0	8.0	120.00	0.00
3150	2300	2350	1149.0	8.0	120.00	0.00
3160	2350	2340	1184.0	8.0	120.00	0.00
3170	2350	2360	305.0	8.0	120.00	0.00
3180	2360	2370	1311.0	8.0	120.00	0.00
3190	2370	2380	493.0	8.0	120.00	0.00
3200	2380	2330	2267.0	8.0	120.00	0.00
3210	2320	2370	3810.0	8.0	120.00	0.00
3220	2170	2390	1566.0	8.0	120.00	0.00
3230	2390	2400	1091.0	8.0	120.00	0.00
3240	2160	2400	1793.0	8.0	120.00	0.00
3250	2150	2400	1098.0	8.0	120.00	0.00
3260	2170	2410	1454.0	8.0	120.00	0.00
3270	2390	2410	246.0	8.0	120.00	0.00
3280	2410	6410	1123.0	8.0	120.00	0.00
3290	2360	6260	958.0	8.0	120.00	0.00
3300	2420	2430	210.0	8.0	120.00	0.00
3310	2430	2440	598.0	8.0	120.00	0.00
3320	2440	2450	2014.0	8.0	120.00	0.00
3330	2330	2460	650.0	12.0	120.00	0.00
3340	2460	2450	1051.0	12.0	120.00	0.00
3350	2450	2470	2179.0	12.0	120.00	0.00
3360	4230	7050	437.0	12.0	120.00	0.00

3370	2480	2490	761.0	12.0	120.00	0.00
3380	2490	2520	1033.0	12.0	120.00	0.00
3390	2500	2560	890.0	12.0	120.00	0.00
3400	2470	2510	778.0	12.0	120.00	0.00
3410	2500	2520	328.0	12.0	120.00	0.00
3420	2430	2530	1718.0	8.0	120.00	0.00
3430	2520	2530	2103.0	8.0	120.00	0.00
3440	2480	2530	2537.0	8.0	120.00	0.00
3450	2380	2440	1452.0	8.0	120.00	0.00
3470	2540	2490	1184.0	8.0	120.00	0.00
3480	2540	2550	854.0	8.0	120.00	0.00
3490	2500	2550	1115.0	8.0	120.00	0.00
3500	2510	2560	913.0	12.0	120.00	0.00
3510	2550	2560	2439.0	8.0	120.00	0.00
3520	2510	2570	2301.0	12.0	120.00	0.00
3530	2570	2580	656.0	12.0	120.00	0.00
3540	2580	2590	808.0	12.0	120.00	0.00
3550	2590	5980	916.0	12.0	120.00	0.00
3560	2600	2610	2781.0	12.0	120.00	0.00
3570	2600	2960	632.0	18.0	120.00	0.00
3580	2620	5960	789.0	24.0	120.00	0.00
3590	2610	6000	1152.0	8.0	120.00	0.00
3600	2630	2640	995.0	8.0	120.00	0.00
3610	2640	6120	5484.0	8.0	120.00	0.00
3620	2650	2510	1453.0	8.0	120.00	0.00
3630	2630	6010	1164.0	8.0	120.00	0.00
3640	2640	2660	1208.0	8.0	120.00	0.00
3650	2470	2670	1827.0	8.0	120.00	0.00
3660	2670	2680	1481.0	8.0	120.00	0.00
3670	2680	6080	863.0	8.0	120.00	0.00
3680	2680	6100	532.0	8.0	120.00	0.00
3690	2690	6090	717.0	8.0	120.00	0.00
3700	2700	6180	584.0	8.0	120.00	0.00
3710	2460	2710	1360.0	8.0	120.00	0.00
3720	2710	2700	1443.0	8.0	120.00	0.00
3730	2710	6200	686.0	8.0	120.00	0.00
3740	2720	5970	892.0	8.0	120.00	0.00
3750	2730	6150	247.0	8.0	120.00	0.00
3760	2720	2740	1044.0	8.0	120.00	0.00
3770	2740	2750	1289.0	8.0	120.00	0.00
3780	2750	6190	947.0	8.0	120.00	0.00
3790	2760	6050	428.0	24.0	120.00	0.00
3800	2730	6140	250.0	8.0	120.00	0.00
3810	2140	2770	595.0	24.0	120.00	0.00
3820	2740	2770	1277.0	8.0	120.00	0.00
3830	2120	2750	2830.0	8.0	120.00	0.00
3840	2140	2780	1656.0	24.0	120.00	0.00
3850	2790	2800	819.0	16.0	120.00	0.00
3860	2780	2810	976.0	8.0	120.00	0.00
3870	2100	2800	500.0	16.0	120.00	0.00
3880	2790	2810	1387.0	8.0	120.00	0.00
3890	2800	2810	579.0	8.0	120.00	0.00
3900	2110	6210	2618.0	8.0	120.00	0.00
3910	2770	2820	2660.0	8.0	120.00	0.00

3920	2820	2830	1300.0	8.0	120.00	0.00
3930	2760	2840	1355.0	8.0	120.00	0.00
3940	2840	2850	1297.0	8.0	120.00	0.00
3950	2830	2850	917.0	8.0	120.00	0.00
3960	2770	2860	1433.0	24.0	120.00	0.00
3970	2830	6030	750.0	8.0	120.00	0.00
3980	2620	5990	224.0	8.0	120.00	0.00
3990	2840	5950	618.0	8.0	120.00	0.00
4000	1870	2880	601.0	8.0	120.00	0.00
4010	2880	2890	705.0	8.0	120.00	0.00
4020	2890	2900	779.0	8.0	120.00	0.00
4030	2900	2910	756.0	8.0	120.00	0.00
4040	2910	2920	601.0	8.0	120.00	0.00
4050	2920	3170	876.0	8.0	120.00	0.00
4060	2930	2940	575.0	8.0	120.00	0.00
4070	2820	2880	1323.0	8.0	120.00	0.00
4080	2900	2830	1343.0	8.0	120.00	0.00
4090	2910	6020	650.0	8.0	120.00	0.00
4100	2940	2950	1800.0	8.0	120.00	0.00
4110	2620	2960	745.0	18.0	120.00	0.00
4120	2950	2960	2190.0	8.0	120.00	0.00
4130	2140	6480	1132.0	6.0	120.00	0.00
4140	2600	3010	673.0	12.0	120.00	0.00
4150	2970	2950	689.0	8.0	120.00	0.00
4160	2610	5940	920.0	8.0	120.00	0.00
4170	2980	2990	1308.0	8.0	120.00	0.00
4180	2990	3000	2612.0	8.0	120.00	0.00
4190	2970	3010	1582.0	12.0	120.00	0.00
4200	3000	3010	1130.0	8.0	120.00	0.00
4210	2940	3020	683.0	8.0	120.00	0.00
4220	3020	3030	957.0	12.0	120.00	0.00
4230	3020	3040	988.0	12.0	120.00	0.00
4240	2930	3050	1621.0	8.0	120.00	0.00
4250	3050	3040	611.0	8.0	120.00	0.00
4260	3040	3060	877.0	8.0	120.00	0.00
4270	3060	3070	220.0	8.0	120.00	0.00
4280	3070	3080	632.0	8.0	120.00	0.00
4290	3080	5890	648.0	8.0	120.00	0.00
4300	3090	5900	621.0	8.0	120.00	0.00
4310	3040	1630	1646.0	12.0	120.00	0.00
4320	1620	3070	1430.0	8.0	120.00	0.00
4330	1610	3080	1439.0	8.0	120.00	0.00
4340	1600	3090	1422.0	8.0	120.00	0.00
4350	1640	3050	1908.0	8.0	120.00	0.00
4360	1600	5790	533.0	8.0	120.00	0.00
4370	3100	5810	583.0	8.0	120.00	0.00
4380	3090	5800	1120.0	8.0	120.00	0.00
4390	3020	6850	930.0	8.0	120.00	0.00
4400	1780	3120	772.0	12.0	120.00	0.00
4410	3120	5170	478.0	12.0	120.00	0.00
4420	3130	3140	730.0	12.0	120.00	0.00
4430	3140	1650	824.0	12.0	120.00	0.00
4440	2920	5880	2013.0	8.0	120.00	0.00
4450	2910	3120	2644.0	6.0	120.00	0.00

4460	2900	1780	2673.0	8.0	120.00	0.00
4470	1940	2880	2669.0	8.0	120.00	0.00
4480	2890	3150	1297.0	8.0	120.00	0.00
4490	1780	3160	777.0	12.0	120.00	0.00
4500	3150	3160	1370.0	6.0	120.00	0.00
4510	2930	3170	196.0	8.0	120.00	0.00
4520	3140	3170	2668.0	6.0	120.00	0.00
4530	2870	6060	614.0	8.0	120.00	0.00
4540	3180	3170	1299.0	6.0	120.00	0.00
4550	1660	5860	482.0	12.0	120.00	0.00
4560	1660	3200	828.0	8.0	120.00	0.00
4570	3200	3210	156.0	8.0	120.00	0.00
4580	3210	3220	699.0	8.0	120.00	0.00
4590	3220	6660	657.0	8.0	120.00	0.00
4600	3130	5160	583.0	8.0	120.00	0.00
4610	3200	3140	1321.0	6.0	120.00	0.00
4620	1850	5060	597.0	8.0	120.00	0.00
4630	3190	3240	657.0	12.0	120.00	0.00
4640	1550	3240	760.0	8.0	120.00	0.00
4650	3240	5770	290.0	8.0	120.00	0.00
4660	3210	5870	704.0	8.0	120.00	0.00
4670	1760	3260	734.0	8.0	120.00	0.00
4680	3260	3230	1396.0	8.0	120.00	0.00
4690	1730	3270	1302.0	8.0	120.00	0.00
4700	3270	3250	542.0	8.0	120.00	0.00
4710	1770	3280	328.0	16.0	120.00	0.00
4720	3260	3280	907.0	8.0	120.00	0.00
4730	3280	3290	196.0	8.0	120.00	0.00
4740	3290	1730	567.0	8.0	120.00	0.00
4750	1750	3300	690.0	8.0	120.00	0.00
4760	3300	4080	206.0	8.0	120.00	0.00
4770	3300	4090	468.0	8.0	120.00	0.00
4780	3310	5570	461.0	8.0	120.00	0.00
4790	3320	3340	648.0	8.0	120.00	0.00
4800	1510	3330	896.0	10.0	120.00	0.00
4810	3320	3330	523.0	8.0	120.00	0.00
4820	3290	3340	763.0	8.0	120.00	0.00
4830	3330	3350	682.0	10.0	120.00	0.00
4840	3340	3350	533.0	12.0	120.00	0.00
4850	1750	3360	689.0	8.0	120.00	0.00
4860	690	3360	756.0	8.0	120.00	0.00
4870	1740	690	699.0	8.0	120.00	0.00
4880	680	4950	348.0	8.0	120.00	0.00
4890	3370	3380	834.0	8.0	120.00	0.00
4900	3380	4930	626.0	8.0	120.00	0.00
4910	3380	1860	212.0	8.0	120.00	0.00
4920	3370	6640	604.0	8.0	120.00	0.00
4930	3390	1820	848.0	12.0	120.00	0.00
4940	3390	5020	572.0	8.0	120.00	0.00
4950	3400	3410	709.0	8.0	120.00	0.00
4960	3410	1820	985.0	8.0	120.00	0.00
4970	1960	3420	1469.0	8.0	120.00	0.00
4980	1950	3430	1427.0	8.0	120.00	0.00
4990	3420	3430	677.0	8.0	120.00	0.00



5000	2020	3440	605.0	8.0	120.00	0.00
5010	3440	3450	818.0	8.0	120.00	0.00
5020	3430	3460	976.0	8.0	120.00	0.00
5030	3460	3450	804.0	8.0	120.00	0.00
5050	3470	2020	1175.0	8.0	120.00	0.00
5060	2020	1800	720.0	8.0	120.00	0.00
5070	1820	3480	265.0	16.0	120.00	0.00
5080	1910	6610	1240.0	8.0	120.00	0.00
5090	3470	3490	509.0	8.0	120.00	0.00
5110	3490	3520	1011.0	8.0	120.00	0.00
5120	1990	3510	1687.0	8.0	120.00	0.00
5130	3500	3520	1166.0	8.0	120.00	0.00
5140	3510	3520	1462.0	8.0	120.00	0.00
5150	2030	3530	906.0	8.0	120.00	0.00
5160	3490	3530	1679.0	8.0	120.00	0.00
5170	2100	3540	805.0	8.0	120.00	0.00
5180	3550	6450	547.0	24.0	120.00	0.00
5190	3540	3550	1262.0	8.0	120.00	0.00
5200	3550	3560	480.0	24.0	120.00	0.00
5210	3540	3560	681.0	8.0	120.00	0.00
5220	3550	6550	392.0	8.0	120.00	0.00
5230	3570	3580	1340.0	6.0	120.00	0.00
5240	3590	7040	238.0	8.0	120.00	0.00
5250	3580	3590	934.0	8.0	120.00	0.00
5260	1560	1540	1349.0	8.0	120.00	0.00
5270	140	3610	568.0	8.0	120.00	0.00
5280	3610	3720	830.0	8.0	120.00	0.00
5290	150	3630	250.0	8.0	120.00	0.00
5300	3610	130	1168.0	8.0	120.00	0.00
5310	160	3620	251.0	8.0	120.00	0.00
5320	3610	3630	1033.0	8.0	120.00	0.00
5330	3620	3650	773.0	8.0	120.00	0.00
5340	3600	3660	1141.0	8.0	120.00	0.00
5350	3640	3670	1343.0	8.0	120.00	0.00
5360	3630	3650	424.0	8.0	120.00	0.00
5370	3640	3660	1177.0	8.0	120.00	0.00
5380	3650	3710	1148.0	8.0	120.00	0.00
5390	3670	3730	1192.0	8.0	120.00	0.00
5400	3600	3680	1343.0	8.0	120.00	0.00
5420	3660	3690	1343.0	8.0	120.00	0.00
5430	3670	3690	1177.0	8.0	120.00	0.00
5440	3690	3680	1140.0	8.0	120.00	0.00
5450	3620	3700	1552.0	8.0	120.00	0.00
5460	3710	3740	1229.0	8.0	120.00	0.00
5470	3700	3710	1177.0	8.0	120.00	0.00
5480	3680	3720	2421.0	8.0	120.00	0.00
5490	3710	3720	1140.0	8.0	120.00	0.00
5500	3700	3730	1229.0	8.0	120.00	0.00
5510	3690	3740	1192.0	8.0	120.00	0.00
5520	3730	3740	1177.0	8.0	120.00	0.00
5530	230	3750	5089.0	8.0	120.00	0.00
5540	3750	3760	1731.0	8.0	120.00	0.00
5550	170	3770	643.0	8.0	120.00	0.00
5560	3770	3780	373.0	8.0	120.00	0.00

5570	3780	3760	1373.0	6.0	120.00	0.00	
5580	3770	4480	788.0	8.0	120.00	0.00	
5590	3790	4550	378.0	24.0	120.00	0.00	
5600	280	3790	844.0	8.0	120.00	0.00	
5610	3800	3810	798.0	8.0	120.00	0.00	
5620	450	6980	131.0	8.0	120.00	0.00	
5630	3810	3820	740.0	8.0	120.00	0.00	
5660	3840	3850	644.0	6.0	120.00	0.00	
5670	3850	3860	1359.0	6.0	120.00	0.00	
5680	1670	3870	2205.0	24.0	120.00	0.00	
5690	3820	3870	737.0	8.0	120.00	0.00	
5700	3870	3860	1361.0	8.0	120.00	0.00	
5710	1700	3880	362.0	8.0	120.00	0.00	
5720	3880	3890	426.0	8.0	120.00	0.00	
5730	3890	3860	387.0	8.0	120.00	0.00	
5740	1680	4660	395.0	8.0	120.00	0.00	
5750	1400	3900	704.0	12.0	120.00	0.00	
5760	3890	3900	407.0	8.0	120.00	0.00	
5770	1430	3910	359.0	8.0	120.00	0.00	
5780	3900	3990	1207.0	8.0	120.00	0.00	
5810	1410	3940	1335.0	10.0	120.00	0.00	
5820	3930	5550	799.0	8.0	120.00	0.00	
5830	1370	3950	357.0	12.0	120.00	0.00	
5840	3940	3950	900.0	8.0	120.00	0.00	
5850	3930	3960	386.0	8.0	120.00	0.00	
5860	3900	3970	355.0	12.0	120.00	0.00	
5870	3860	3970	465.0	8.0	120.00	0.00	
5880	3970	3960	1208.0	8.0	120.00	0.00	
5890	1460	3980	562.0	8.0	120.00	0.00	
5900	3990	5560	906.0	8.0	120.00	0.00	
5910	3980	3990	932.0	8.0	120.00	0.00	
5920	3990	3960	314.0	8.0	120.00	0.00	
5950	50	4020	633.0	12.0	120.00	0.00	
5960	50	4030	698.0	12.0	120.00	0.00	
5970	4040	4280	144.0	12.0	120.00	0.00	
5980-BN	4040	0	307.0	12.0	120.00	0.00	235.00
5990	570	4820	227.0	24.0	120.00	0.00	
6000	600	1680	1520.0	6.0	120.00	0.00	
6010	4050	6970	1918.0	8.0	120.00	0.00	
6020	450	4050	482.0	8.0	120.00	0.00	
6030	4050	4640	785.0	8.0	120.00	0.00	
6040	390	4050	1288.0	8.0	120.00	0.00	
6050	3840	4670	395.0	8.0	120.00	0.00	
6090	3970	6910	709.0	12.0	120.00	0.00	
6100	1710	1390	1711.0	12.0	120.00	0.00	
6110	1670	1390	2229.0	18.0	120.00	0.00	
6130	1370	5620	2179.0	12.0	120.00	0.00	
6140	3930	5610	1074.0	8.0	120.00	0.00	
6160	1700	4080	624.0	8.0	120.00	0.00	
6170-BN	0	4080	226.0	8.0	120.00	0.00	239.00
6180	4090	4840	335.0	8.0	120.00	0.00	
6190	1400	4090	846.0	12.0	120.00	0.00	
6200	1840	4100	1836.0	12.0	120.00	0.00	
6210-BN	4100	0	389.0	12.0	120.00	0.00	240.00

6220-BN	2620	0	429.0	8.0	120.00	0.00	240.00
6230	4110	6400	2085.0	24.0	120.00	0.00	
6240-BN	4110	0	354.0	12.0	120.00	0.00	237.00
6250	1290	5740	1745.0	18.0	120.00	0.00	
6260	1290	5730	678.0	18.0	120.00	0.00	
6270	1200	1110	4448.0	18.0	120.00	0.00	
6280	4150	4160	1367.0	8.0	120.00	0.00	
6290	4260	4320	301.0	10.0	120.00	0.00	
6300	4260	4270	445.0	10.0	120.00	0.00	
6310	70	4280	221.0	12.0	120.00	0.00	
6320	4280	4360	353.0	6.0	120.00	0.00	
6340	4260	4310	975.0	10.0	120.00	0.00	
6350	10	4320	391.0	10.0	120.00	0.00	
6360	4310	4430	838.0	8.0	120.00	0.00	
6390	4290	4350	383.0	8.0	120.00	0.00	
6400	4350	4300	936.0	8.0	120.00	0.00	
6410	4290	4360	1318.0	6.0	120.00	0.00	
6420	4360	4370	773.0	8.0	120.00	0.00	
6430	4350	4370	2442.0	8.0	120.00	0.00	
6440	4380	20000	2073.0	12.0	120.00	0.00	
6450	110	4390	1596.0	12.0	120.00	0.00	
6460	60	4400	876.0	12.0	120.00	0.00	
6470	4400	4410	667.0	12.0	120.00	0.00	
6480	30	4420	1987.0	10.0	120.00	0.00	
6490	4320	4430	970.0	8.0	120.00	0.00	
6500	100	4440	1356.0	12.0	120.00	0.00	
6510	160	4450	1588.0	12.0	120.00	0.00	
6520	210	4460	401.0	12.0	120.00	0.00	
6530	200	4470	381.0	12.0	120.00	0.00	
6540	4170	4480	767.0	8.0	120.00	0.00	
6550	180	4490	2753.0	12.0	120.00	0.00	
6560	180	4500	644.0	8.0	120.00	0.00	
6570	250	4510	619.0	8.0	120.00	0.00	
6580	310	4520	1963.0	8.0	120.00	0.00	
6590	350	4530	716.0	24.0	120.00	0.00	
6600	4530	4540	1028.0	24.0	120.00	0.00	
6610	4540	4550	466.0	24.0	120.00	0.00	
6620	290	4560	650.0	8.0	120.00	0.00	
6630	190	4570	1458.0	12.0	120.00	0.00	
6640	190	4580	686.0	12.0	120.00	0.00	
6650	4590	4610	1968.0	8.0	120.00	0.00	
6660	380	4600	768.0	12.0	120.00	0.00	
6670	4610	4700	476.0	8.0	120.00	0.00	
6680	400	4620	691.0	8.0	120.00	0.00	
6690	440	4630	1582.0	8.0	120.00	0.00	
6700	4630	4640	401.0	8.0	120.00	0.00	
6710	440	4650	727.0	8.0	120.00	0.00	
6720	3880	4660	614.0	8.0	120.00	0.00	
6730	4060	4670	614.0	8.0	120.00	0.00	
6740	4620	4680	783.0	8.0	120.00	0.00	
6750	360	4690	1720.0	8.0	120.00	0.00	
6760	360	4700	391.0	8.0	120.00	0.00	
6770	400	4710	603.0	8.0	120.00	0.00	
6780	470	4740	1948.0	8.0	120.00	0.00	

6790	4720	4730	1146.0	8.0	120.00	0.00
6800	4720	4760	583.0	8.0	120.00	0.00
6810	4730	4740	627.0	8.0	120.00	0.00
6820	380	4750	1037.0	8.0	120.00	0.00
6830	4740	4770	667.0	8.0	120.00	0.00
6840	4730	4760	658.0	8.0	120.00	0.00
6850	4750	4770	1130.0	8.0	120.00	0.00
6860	1970	4780	1686.0	12.0	120.00	0.00
6870	620	4780	2023.0	12.0	120.00	0.00
6880	4790	4800	753.0	8.0	120.00	0.00
6890	500	4800	1458.0	8.0	120.00	0.00
6900	500	4810	655.0	8.0	120.00	0.00
6910	3870	4820	1372.0	24.0	120.00	0.00
6920	4830	5080	1165.0	16.0	120.00	0.00
6930	4840	4850	446.0	8.0	120.00	0.00
6940	4850	5090	732.0	8.0	120.00	0.00
6950	530	4860	1307.0	8.0	120.00	0.00
6960	4860	4870	593.0	8.0	120.00	0.00
6970	1790	4880	659.0	24.0	120.00	0.00
6980	4780	4890	995.0	12.0	120.00	0.00
6990	1850	4900	1148.0	12.0	120.00	0.00
7000	680	4910	699.0	8.0	120.00	0.00
7010	3390	4920	330.0	8.0	120.00	0.00
7020	3360	4930	785.0	8.0	120.00	0.00
7030	4940	5010	392.0	16.0	120.00	0.00
7040	3390	5030	486.0	8.0	120.00	0.00
7050	3370	4950	332.0	8.0	120.00	0.00
7060	650	4950	1999.0	8.0	120.00	0.00
7070	4960	6620	249.0	8.0	120.00	0.00
7080	4830	4970	316.0	16.0	120.00	0.00
7090	4090	4970	688.0	12.0	120.00	0.00
7100	1860	4980	624.0	12.0	120.00	0.00
7110	4970	6650	1035.0	12.0	120.00	0.00
7120	4980	4990	984.0	12.0	120.00	0.00
7130	3400	5000	732.0	8.0	120.00	0.00
7140	4900	5000	497.0	8.0	120.00	0.00
7150	3480	5010	385.0	16.0	120.00	0.00
7160	3400	5020	433.0	8.0	120.00	0.00
7170	4960	5030	499.0	8.0	120.00	0.00
7180	2010	5040	1524.0	8.0	120.00	0.00
7190	4990	5070	645.0	6.0	120.00	0.00
7200	3230	5060	687.0	8.0	120.00	0.00
7210	5050	5060	1067.0	6.0	120.00	0.00
7220	5050	5070	466.0	6.0	120.00	0.00
7230	1760	5080	777.0	16.0	120.00	0.00
7240	3310	5090	730.0	8.0	120.00	0.00
7250	5100	5110	681.0	16.0	120.00	0.00
7260	5110	5120	1090.0	16.0	120.00	0.00
7270	5120	5240	1517.0	16.0	120.00	0.00
7280	3350	5130	423.0	10.0	120.00	0.00
7290	5140	5150	276.0	16.0	120.00	0.00
7300	5150	7030	415.0	16.0	120.00	0.00
7310	5160	5180	406.0	8.0	120.00	0.00
7320	3130	5170	278.0	12.0	120.00	0.00

7330	3220	5180	499.0	8.0	120.00	0.00
7340	4900	5190	1126.0	12.0	120.00	0.00
7350	5200	5240	1002.0	8.0	120.00	0.00
7360	1940	5210	1484.0	8.0	120.00	0.00
7370	5210	5220	315.0	6.0	120.00	0.00
7380	5220	5200	1253.0	6.0	120.00	0.00
7390	5210	5230	346.0	4.0	120.00	0.00
7400	5230	4900	599.0	4.0	120.00	0.00
7410	1780	5240	497.0	8.0	120.00	0.00
7420	1780	5240	490.0	16.0	120.00	0.00
7430	1050	5250	2172.0	8.0	120.00	0.00
7440	5260	5280	1776.0	16.0	120.00	0.00
7450	920	5270	887.0	8.0	120.00	0.00
7460	1030	5280	1785.0	16.0	120.00	0.00
7470	5290	5300	479.0	8.0	120.00	0.00
7480	5300	5370	411.0	8.0	120.00	0.00
7490	1320	5310	697.0	8.0	120.00	0.00
7500	880	5320	472.0	12.0	120.00	0.00
7510	1360	5330	295.0	6.0	120.00	0.00
7520	5320	5340	976.0	12.0	120.00	0.00
7530	5340	5350	253.0	12.0	120.00	0.00
7540	1070	5360	794.0	18.0	120.00	0.00
7550	5310	5370	364.0	8.0	120.00	0.00
7560	1200	5380	996.0	18.0	120.00	0.00
7570	5390	5600	539.0	18.0	120.00	0.00
7580	5400	5510	1294.0	18.0	120.00	0.00
7590	1370	5410	260.0	6.0	120.00	0.00
7600	5410	5420	527.0	6.0	120.00	0.00
7610	740	5460	911.0	6.0	120.00	0.00
7640	5430	5460	1110.0	6.0	120.00	0.00
7650	5450	5460	1923.0	6.0	120.00	0.00
7660	1380	5470	900.0	18.0	120.00	0.00
7670	5430	5470	857.0	6.0	120.00	0.00
7680	5430	5480	699.0	6.0	120.00	0.00
7700	5480	5490	653.0	6.0	120.00	0.00
7710	5450	790	651.0	8.0	120.00	0.00
7720	5450	5500	1074.0	8.0	120.00	0.00
7730	1380	5510	465.0	18.0	120.00	0.00
7740	5500	5510	979.0	8.0	120.00	0.00
7750	5330	5520	2006.0	6.0	120.00	0.00
7760	5520	5530	380.0	6.0	120.00	0.00
7770	5530	5350	855.0	8.0	120.00	0.00
7780	3980	5540	1641.0	8.0	120.00	0.00
7790	3940	5550	992.0	8.0	120.00	0.00
7800	3910	5560	884.0	8.0	120.00	0.00
7810	3320	5570	652.0	8.0	120.00	0.00
7820	5580	5590	751.0	8.0	120.00	0.00
7830	5590	5650	1152.0	8.0	120.00	0.00
7840	5400	5600	694.0	18.0	120.00	0.00
7850	1380	5610	2069.0	8.0	120.00	0.00
7860	5490	5620	1706.0	12.0	120.00	0.00
7870	5630	7020	512.0	12.0	120.00	0.00
7880	1500	5640	430.0	8.0	120.00	0.00
7890	1480	5650	567.0	8.0	120.00	0.00

7900	1260	5660	663.0	8.0	120.00	0.00
7910	4250	5670	1143.0	8.0	120.00	0.00
7920	4240	5680	1304.0	8.0	120.00	0.00
7930	1250	5690	569.0	8.0	120.00	0.00
7940	5690	5700	322.0	8.0	120.00	0.00
7950	1210	5710	1465.0	18.0	120.00	0.00
7960	1260	5720	1076.0	8.0	120.00	0.00
7970	1110	5730	833.0	18.0	120.00	0.00
7980	1570	5740	390.0	18.0	120.00	0.00
7990	1560	5750	1681.0	8.0	120.00	0.00
8000	5750	5760	633.0	8.0	120.00	0.00
8010	3250	5770	409.0	8.0	120.00	0.00
8020	1610	5780	599.0	12.0	120.00	0.00
8030	3100	5790	1266.0	8.0	120.00	0.00
8040	3110	5800	685.0	8.0	120.00	0.00
8050	3110	5810	480.0	8.0	120.00	0.00
8060	5810	5820	1523.0	8.0	120.00	0.00
8070	5820	3100	2148.0	8.0	120.00	0.00
8080	1660	5830	432.0	8.0	120.00	0.00
8090	5830	5840	488.0	8.0	120.00	0.00
8100	5840	6680	365.0	8.0	120.00	0.00
8110	5850	1590	446.0	8.0	120.00	0.00
8120	3190	5860	1567.0	12.0	120.00	0.00
8130	5870	6670	831.0	8.0	120.00	0.00
8140	3130	5880	826.0	8.0	120.00	0.00
8150	3090	5890	685.0	8.0	120.00	0.00
8160	5900	5910	635.0	8.0	120.00	0.00
8170	5910	5920	887.0	8.0	120.00	0.00
8180	2980	5920	585.0	8.0	120.00	0.00
8190	2980	5930	1132.0	8.0	120.00	0.00
8200	5930	5940	635.0	8.0	120.00	0.00
8210	2870	5950	858.0	8.0	120.00	0.00
8220	2760	5960	704.0	24.0	120.00	0.00
8230	2730	5970	549.0	8.0	120.00	0.00
8240	2600	5980	841.0	12.0	120.00	0.00
8250	5990	6070	361.0	8.0	120.00	0.00
8260	2630	6000	454.0	8.0	120.00	0.00
8270	2660	6010	968.0	8.0	120.00	0.00
8280	2850	6020	674.0	8.0	120.00	0.00
8290	6030	6040	1376.0	8.0	120.00	0.00
8300	2860	6040	555.0	8.0	120.00	0.00
8310	2860	6050	361.0	24.0	120.00	0.00
8320	3180	6060	717.0	8.0	120.00	0.00
8330	2870	6070	761.0	8.0	120.00	0.00
8340	2580	6080	531.0	8.0	120.00	0.00
8350	2700	6090	595.0	8.0	120.00	0.00
8360	6100	6110	506.0	8.0	120.00	0.00
8370	2690	6110	473.0	8.0	120.00	0.00
8380	2650	6120	644.0	8.0	120.00	0.00
8390	2760	6130	780.0	8.0	120.00	0.00
8400	6130	6140	518.0	8.0	120.00	0.00
8410	6150	6160	410.0	8.0	120.00	0.00
8420	2690	6160	385.0	8.0	120.00	0.00
8430	2450	6170	516.0	8.0	120.00	0.00

8440	6170	6180	234.0	8.0	120.00	0.00
8450	2710	6190	1026.0	8.0	120.00	0.00
8460	2720	6200	1657.0	8.0	120.00	0.00
8470	2330	6210	1623.0	8.0	120.00	0.00
8490	2480	6240	1423.0	12.0	120.00	0.00
8500	2420	6250	1142.0	8.0	120.00	0.00
8510	6250	6260	713.0	8.0	120.00	0.00
8520	2300	6270	606.0	12.0	120.00	0.00
8530	6280	6330	735.0	12.0	120.00	0.00
8540	2340	6290	1575.0	8.0	120.00	0.00
8550	2260	6300	713.0	12.0	120.00	0.00
8560	6310	6420	754.0	12.0	120.00	0.00
8570	2180	6320	289.0	12.0	120.00	0.00
8580	2270	6330	1044.0	12.0	120.00	0.00
8590	2240	6340	1274.0	8.0	120.00	0.00
8600	6320	6350	1376.0	12.0	120.00	0.00
8610	2160	6360	453.0	12.0	120.00	0.00
8620	6350	6370	684.0	12.0	120.00	0.00
8630	6380	6430	2184.0	24.0	120.00	0.00
8640	2090	6390	1696.0	8.0	120.00	0.00
8650	6380	6400	971.0	24.0	120.00	0.00
8660	2070	6410	2522.0	8.0	120.00	0.00
8670	2070	6420	1265.0	12.0	120.00	0.00
8680	6430	6440	1327.0	24.0	120.00	0.00
8690	2080	6440	713.0	24.0	120.00	0.00
8700	2080	6450	860.0	24.0	120.00	0.00
8710	6460	6470	1092.0	12.0	120.00	0.00
8720	2060	6470	304.0	12.0	120.00	0.00
8730	1870	6480	2849.0	6.0	120.00	0.00
8740	3510	6490	650.0	8.0	120.00	0.00
8750	6500	6510	927.0	12.0	120.00	0.00
8760	2040	6510	1935.0	12.0	120.00	0.00
8770	1900	6520	244.0	12.0	120.00	0.00
8780	1870	6530	807.0	12.0	120.00	0.00
8790	6460	6540	331.0	12.0	120.00	0.00
8800	3570	6550	1102.0	8.0	120.00	0.00
8810	6560	6570	1590.0	8.0	120.00	0.00
8820	6570	6580	380.0	8.0	120.00	0.00
8830	6580	6590	245.0	8.0	120.00	0.00
8840	4200	6590	156.0	8.0	120.00	0.00
8850	1990	6600	940.0	12.0	120.00	0.00
8860	3480	6610	683.0	8.0	120.00	0.00
8870	4940	6620	528.0	8.0	120.00	0.00
8880	4880	6630	407.0	24.0	120.00	0.00
8890	4920	6640	418.0	8.0	120.00	0.00
8900	4990	6650	451.0	12.0	120.00	0.00
8910	5200	6660	799.0	8.0	120.00	0.00
8920	3250	6670	956.0	8.0	120.00	0.00
8930	5850	6680	376.0	8.0	120.00	0.00
8960	6690	6710	12.6	24.0	120.00	0.30
8980	6710	6730	6.7	24.0	120.00	0.30
9000	1670	330	1814.0	20.0	120.00	0.00
9010	6730	330	100.0	24.0	120.00	1.60
9020	350	6760	810.0	24.0	120.00	0.50

9030	6760	6770	535.0	30.0	120.00	0.00	
9040	6830	6770	89.0	36.0	100.00	0.00	
9060	6750	6790	114.0	36.0	120.00	0.00	
9080	6790	6810	87.0	36.0	120.00	0.00	
9100	6810	6830	70.0	36.0	120.00	0.00	
9120	2480	6230	1166.0	8.0	120.00	0.00	
9130	6230	2540	748.0	8.0	120.00	0.00	
9140	4160	4310	528.0	10.0	120.00	0.00	
9150-BNPU	0	6690	27.0	14.0	120.00	2.90	89.00
9160-BNPU	0	6710	27.0	10.0	120.00	3.50	89.00
9170-BNPU	0	6730	27.0	12.0	120.00	2.90	89.00
9220	1470	5590	383.0	6.0	120.00	0.00	
9230	5590	5600	2526.0	6.0	120.00	0.00	
9240	5050	5080	1061.0	6.0	120.00	0.00	
9250	5080	5090	679.0	6.0	120.00	0.00	
9260	1580	1570	6880.0	8.0	120.00	0.00	
9270	3060	6850	1391.0	8.0	120.00	0.00	
9280	2990	6850	3165.0	8.0	120.00	0.00	
9290	1880	6520	1853.0	8.0	120.00	0.00	
9300	3240	1520	3465.0	12.0	120.00	0.00	
9310	840	6860	1351.0	6.0	120.00	0.00	
9320	800	6860	436.0	6.0	120.00	0.00	
9330	810	6860	1283.0	8.0	120.00	0.00	
9340	2240	2200	1218.0	7.0	120.00	0.00	
9410-BNPU	0	6750	18.0	16.0	120.00	2.60	120.00
9420-BNPU	0	6790	18.0	16.0	120.00	2.60	120.00
9430-BNPU	0	6810	18.0	14.0	120.00	2.60	120.00
9440-BNPU	0	6830	18.0	14.0	120.00	2.60	120.00
9460	6910	6920	644.0	12.0	120.00	0.00	
9470	3850	6910	1133.0	4.0	100.00	0.00	
9480	1390	6920	394.0	12.0	120.00	0.00	
9490	3840	6920	1133.0	4.0	100.00	0.00	
9500	5490	1390	976.0	12.0	100.00	0.00	
9510	5470	1390	1902.0	18.0	100.00	0.00	
9520	3800	6930	383.0	8.0	100.00	0.00	
9530	6930	6940	1063.0	4.0	120.00	0.00	
9540	6940	6950	539.0	6.0	120.00	0.00	
9550	6950	6990	414.0	8.0	120.00	0.00	
9560	6970	7000	250.0	8.0	120.00	0.00	
9570	6960	6970	521.0	4.0	120.00	0.00	
9580	6980	7010	251.0	8.0	120.00	0.00	
9590	6970	6980	640.0	4.0	120.00	0.00	
9600	6960	6990	250.0	8.0	120.00	0.00	
9610	430	7000	454.0	8.0	120.00	0.00	
9620	6990	7000	517.0	4.0	120.00	0.00	
9630	3800	7010	453.0	8.0	120.00	0.00	
9640	7000	7010	651.0	4.0	120.00	0.00	
9650	1440	1510	269.0	12.0	120.00	0.00	
9660	1520	7020	1509.0	12.0	120.00	0.00	
9670	1470	7020	194.0	8.0	120.00	0.00	
9680	3280	7030	719.0	16.0	120.00	0.00	
9690	3340	7030	206.0	12.0	120.00	0.00	
9700	3430	1810	230.0	8.0	120.00	0.00	
9710	1810	3470	643.0	8.0	120.00	0.00	



9720	6490	7040	388.0	8.0	120.00	0.00
9730	1810	7040	2637.0	24.0	120.00	0.00
9740	7040	2080	2691.0	24.0	120.00	0.00
9750	3570	6460	1411.0	6.0	120.00	0.00
9760	3570	1930	2090.0	8.0	120.00	0.00
9770	6240	7050	354.0	12.0	120.00	0.00
9780	2310	7050	3094.0	12.0	120.00	0.00
9810	7050	7080	4000.0	12.0	120.00	0.00
10000	4390	20000	408.0	12.0	120.00	0.00

P U M P D A T A

THERE IS A PUMP IN LINE 9150 DESCRIBED BY THE FOLLOWING DATA:

HEAD (ft)	FLOWRATE (gpm)
225.00	0.00
188.00	6300.00
140.00	8000.00

THERE IS A PUMP IN LINE 9160 DESCRIBED BY THE FOLLOWING DATA:

HEAD (ft)	FLOWRATE (gpm)
225.00	0.00
200.00	4200.00
170.00	5100.00

THERE IS A PUMP IN LINE 9170 DESCRIBED BY THE FOLLOWING DATA:

HEAD (ft)	FLOWRATE (gpm)
220.00	0.00
185.00	2100.00
117.00	3500.00

THERE IS A PUMP IN LINE 9410 DESCRIBED BY THE FOLLOWING DATA:

HEAD (ft)	FLOWRATE (gpm)
225.00	0.00
187.00	6300.00
140.00	8000.00

THERE IS A PUMP IN LINE 9420 DESCRIBED BY THE FOLLOWING DATA:

HEAD (ft)	FLOWRATE (gpm)
230.00	0.00
194.00	6300.00
135.00	8000.00

THERE IS A PUMP IN LINE 9430 DESCRIBED BY THE FOLLOWING DATA:

HEAD (ft)	FLOWRATE (gpm)
230.00	0.00
190.00	4200.00
117.00	7000.00

THERE IS A PUMP IN LINE 9440 DESCRIBED BY THE FOLLOWING DATA:

HEAD (ft)	FLOWRATE (gpm)
228.00	0.00
197.00	6300.00
152.00	9000.00

JUNCTION NODE DATA

JUNCTION NUMBER	JUNCTION TITLE	EXTERNAL DEMAND (gpm)	JUNCTION ELEVATION (ft)	CONNECTING PIPES			
10-1		28.40	100.00	30	50	6350	
20-1		0.00	100.00	20	30	40	
30-1		276.59	100.00	180	190	6480	
40-1		0.73	100.00	50	190	200	
50-1		0.00	100.00	80	5950	5960	
60-1		92.82	100.00	110	170	180	6460
70-1		0.00	100.00	90	140	6310	
80-1		0.61	100.00	90	110	120	
100-1		0.00	100.00	120	160	6500	
110-1		31.82	100.00	130	150	6450	
120-1		306.70	100.00	160	170	250	
130-1		0.89	100.00	350	370	5300	
140-1		0.00	100.00	340	350	5270	
150-1		0.00	100.00	330	340	5290	
160-1		0.00	100.00	330	5310	6510	
170-1		2.21	100.00	250	260	420	5550
180-1		16.52	100.00	270	6550	6560	
190-1		0.11	100.00	300	6630	6640	
200-1		60.46	100.00	300	310	6530	
210-1		18.89	100.00	310	320	6520	
220-1		2.85	100.00	150	360	370	
230-1		60.14	100.00	430	570	5530	
240-1		15.59	100.00	390	400		
250-1		92.74	100.00	410	420	450	6570
260-1		12.21	100.00	410	440	550	
270-1		11.32	100.00	430	440	580	
280-1		7.33	100.00	450	460	5600	
290-1		2.01	100.00	470	500	6620	
300-1		67.07	100.00	470	490		
310-1		45.92	100.00	520	530	6580	

320-1	0.00	100.00	510	520	1080	
330-1	0.00	100.00	510	560	9000	9010
340-1	8.51	100.00	530	540	1000	
350-1	114.91	100.00	560	2280	6590	9020
360-1	16.51	100.00	650	6750	6760	
370-1	11.41	100.00	580	590	600	
380-1	0.00	100.00	680	700	6660	6820
390-1	0.00	100.00	600	610	6040	
400-1	34.34	100.00	690	6680	6770	
420-1	40.42	100.00	630	640		
430-1	63.85	100.00	2280	2300	9610	
440-1	10.59	100.00	750	860	6690	6710
450-1	0.00	100.00	5620	6020		
460-1	0.89	100.00	700	710	740	
470-1	3.67	100.00	710	720	6780	
480-1	3.36	100.00	720	730		
490-1	28.88	100.00	730	760	880	
500-1	0.78	100.00	750	6890	6900	
510-1	84.75	100.00	760	770		
520-1	0.00	100.00	770	780		
530-1	7.96	100.00	780	790	940	6950
540-1	0.00	100.00	790	800	810	
550-1	0.12	100.00	810	820	900	
560-1	13.71	100.00	820	830	2400	
570-1	15.76	100.00	830	5990		
600-1	67.49	100.00	860	6000		
610-1	4.45	100.00	880	890		
620-1	74.25	100.00	890	2710	6870	
630-1	86.28	100.00	900	910	930	
640-1	0.00	100.00	910	920	2450	
650-1	3.90	100.00	930	960	7060	
660-1	1.40	100.00	940	950	990	
670-1	5.35	100.00	950	960	970	
680-1	15.56	100.00	980	4880	7000	
690-1	38.31	100.00	980	990	4860	4870
700-1	0.00	100.00	1000	1010		
710-1	0.00	100.00	1010	1030	1060	
720-1	11.31	100.00	1020	1040		
730-1	43.01	100.00	1020	1030		
740-1	3.19	100.00	1040	1090	1100	7610
750-1	59.36	100.00	1050	1130		
760-1	0.00	100.00	1050	1060	1070	
770-1	34.99	100.00	1070	1110	1120	
780-1	15.13	100.00	1080	1090	2360	
790-1	0.00	100.00	1100	1160	7710	
800-1	0.00	100.00	1110	1140	1150	9320
810-1	0.00	100.00	1120	1260	9330	
820-1	0.00	100.00	1130	1140		
830-1	0.00	100.00	1150	1160	1170	
840-1	10.04	100.00	1170	1180	1860	9310
850-1	17.12	100.00	1180	1190		
860-1	145.05	100.00	1190	1200		
870-1	0.34	100.00	1200	1210		
880-1	0.32	100.00	1210	1220	1440	7500

890-1	1.14	100.00	1220	1230		
900-1	4.91	100.00	1230	1240		
910-1	0.88	100.00	1240	1250		
920-1	6.24	100.00	1290	7450		
930-1	15.24	100.00	1260	1270		
940-1	1.91	100.00	1270	1280		
950-1	41.54	100.00	1280	1300		
960-1	5.28	100.00	1290	1300	1310	
970-1	35.84	100.00	1310	1320		
980-1	60.49	100.00	1320	1330	1370	
990-1	16.26	100.00	1330	1340	1360	
1000-1	3.06	100.00	1340	1350		
1010-1	94.76	100.00	1360	1390	1400	
1020-1	0.59	100.00	1370	1380	1420	
1030-1	168.46	100.00	1380	1390	7460	
1040-1	3.33	100.00	1410	1430	1490	
1050-1	89.29	100.00	1430	1450	7430	
1060-1	5.16	100.00	1440	1450	1460	
1070-1	25.03	100.00	1460	1470	1500	7540
1080-1	0.00	100.00	1470	1480	1540	
1090-1	118.10	100.00	1480	1490	1560	
1100-1	19.92	100.00	1500	1530		
1110-1	32.85	100.00	1680	1740	6270	7970
1130-1	14.14	100.00	1530	1540	1550	
1140-1	8.85	100.00	1550	1560	1570	
1150-1	1.03	100.00	1570	1580		
1160-1	1.51	100.00	1580	1590	1770	
1170-1	4.27	100.00	1590	1600		
1180-1	0.00	100.00	1600	1790		
1190-1	0.00	100.00	1620	1630	1800	1840
1200-1	2.81	100.00	1610	6270	7560	
1210-1	14.09	100.00	2090	7950		
1220-1	30.14	100.00	1640	1670	1690	2110
1230-1	11.11	100.00	1640	1650	1760	
1240-1	3.09	100.00	1650	1660	1750	
1250-1	8.10	100.00	1670	1680	7930	
1260-1	0.28	100.00	1720	7900	7960	
1290-1	44.34	100.00	1720	6250	6260	
1300-1	38.25	100.00	1760	1770	1780	
1310-1	0.00	100.00	1780	1790	1810	
1320-1	0.00	100.00	1800	1820	7490	
1330-1	0.00	100.00	1820	1830	1850	
1340-1	6.72	100.00	1830	1840	1890	2050
1350-1	91.13	100.00	1860	1870		
1360-1	3.22	100.00	1880	7510		
1370-1	6.42	100.00	5830	6130	7590	
1380-1	0.00	100.00	1930	7660	7730	7850
1390-1	1.29	100.00	6100	6110	9480	9500 9510
1400-1	1.18	100.00	2000	2350	5750	6190
1410-1	0.29	100.00	1930	5810		
1420-1	1.38	100.00	1940	1960	1990	
1430-1	0.00	100.00	1950	5770		
1440-1	7.80	100.00	1960	1970	2010	9650
1450-1	0.00	100.00	1970	1980	2020	

1460-1	0.00	100.00	2000	5890			
1470-1	34.67	100.00	2010	2030	9220	9670	
1480-1	3.29	100.00	2040	2060	2100	7890	
1490-1	0.00	100.00	2030	2040	2110		
1500-1	19.21	100.00	2050	7880			
1510-1	27.82	100.00	2070	4800	9650		
1520-1	23.56	100.00	2080	2130	9300	9660	
1530-1	52.25	100.00	2080	2090	2100		
1540-1	1.24	100.00	2120	2150	2170	5260	
1550-1	9.76	100.00	2130	2140	4640		
1560-1	58.03	100.00	2140	5260	7990		
1570-1	2.46	100.00	2150	7980	9260		
1580-1	61.24	100.00	2170	2180	2200	9260	
1590-1	0.82	100.00	2180	2190	2270	8110	
1600-1	0.00	100.00	2200	2210	4340	4360	
1610-1	0.00	100.00	2220	2270	4330	8020	
1620-1	40.30	100.00	2220	2230	4320		
1630-1	16.13	100.00	2230	2240	4310		
1640-1	0.00	100.00	2240	2250	4350		
1650-1	0.00	100.00	2250	2260	4430		
1660-1	15.08	100.00	2260	4550	4560	8080	
1670-1	0.00	100.00	2300	5680	6110	9000	
1680-1	7.35	100.00	2340	5740	6000		
1700-1	25.73	100.00	2340	2350	5710	6160	
1710-1	0.00	100.00	2360	6100			
1730-1	5.06	100.00	2390	4690	4740		
1740-1	3.00	100.00	2400	2410	4870		
1750-1	0.00	100.00	2410	2420	4750	4850	
1760-1	9.68	100.00	2430	4670	7230		
1770-1	2.67	100.00	2440	4710			
1780-1	7.87	100.00	4400	4460	4490	7410	7420
1790-1	0.00	100.00	2460	2480	2630	6970	
1800-1	0.00	100.00	2460	2470	5060		
1810-1	0.00	100.00	2470	2680	9700	9710	9730
1820-1	10.40	100.00	2490	4930	4960	5070	
1830-1	6.68	100.00	2490	2500	2580		
1840-1	30.68	100.00	2510	2530	2610	6200	
1850-1	4.38	100.00	2520	4620	6990		
1860-1	14.70	100.00	4910	7100			
1870-1	0.00	100.00	2540	4000	8730	8780	
1880-1	60.79	100.00	2540	2550	9290		
1890-1	0.00	100.00	2550	2560	2590		
1900-1	2.03	100.00	2570	2720	8770		
1910-1	7.46	100.00	2570	2580	5080		
1920-1	26.25	100.00	2590	2600	2740		
1930-1	26.45	100.00	2600	2790	9760		
1940-1	38.79	100.00	2610	2620	4470	7360	
1950-1	0.00	100.00	2630	2640	2700	4980	
1960-1	0.00	100.00	2640	2650	2690	4970	
1970-1	11.14	100.00	2660	6860			
1980-1	17.72	100.00	2660	2670			
1990-1	16.38	100.00	2760	2770	5120	8850	
2010-1	32.28	100.00	2690	2710	7180		
2020-1	1.39	100.00	2730	5000	5050	5060	

2030-1	0.00	100.00	2740	2750	5150	
2040-1	8.98	100.00	2780	8760		
2050-1	68.68	100.00	2780	2820	2900	
2060-1	15.73	100.00	2810	2840	2890	8720
2070-1	119.57	100.00	2800	2880	8660	8670
2080-1	36.19	100.00	8690	8700	9740	
2090-1	9.44	100.00	2830	2860	8640	
2100-1	3.74	100.00	2840	3870	5170	
2110-1	41.05	100.00	2850	2870	3900	
2120-1	0.20	100.00	2850	2860	3830	
2130-1	0.00	100.00	2870	2880	3110	
2140-1	12.49	100.00	3810	3840	4130	
2150-1	0.79	100.00	2900	2910	3250	
2160-1	27.78	100.00	2920	3240	8610	
2170-1	3.48	100.00	2920	2930	2990	3220 3260
2180-1	2.44	100.00	2940	3040	8570	
2190-1	28.40	100.00	2950	2960	3000	
2200-1	22.88	100.00	2960	2970	9340	
2210-1	0.00	100.00	2970	2980		
2220-1	0.00	100.00	2980	2990	3030	
2230-1	8.72	100.00	3000	3010		
2240-1	10.14	100.00	3020	8590	9340	
2250-1	36.72	100.00	3020	3030		
2260-1	31.37	100.00	3050	3130	8550	
2270-1	81.74	100.00	3060	8580		
2280-1	0.00	100.00	3060	3070		
2290-1	0.00	100.00	3070	3080	3140	
2300-1	4.54	100.00	3090	3150	8520	
2310-1	70.41	100.00	3090	3100	9780	
2320-1	34.04	100.00	3110	3120	3210	
2330-1	12.87	100.00	3120	3200	3330	8470
2340-1	29.37	100.00	3140	3160	8540	
2350-1	0.00	100.00	3150	3160	3170	
2360-1	40.89	100.00	3170	3180	3290	
2370-1	0.04	100.00	3180	3190	3210	
2380-1	70.55	100.00	3190	3200	3450	
2390-1	0.00	100.00	3220	3230	3270	
2400-1	94.07	100.00	3230	3240	3250	
2410-1	50.87	100.00	3260	3270	3280	
2420-1	22.24	100.00	3300	8500		
2430-1	0.00	100.00	3300	3310	3420	
2440-1	58.13	100.00	3310	3320	3450	
2450-1	0.43	100.00	3320	3340	3350	8430
2460-1	0.00	100.00	3330	3340	3710	
2470-1	32.48	100.00	3350	3400	3650	
2480-1	72.77	100.00	3370	3440	8490	9120
2490-1	0.00	100.00	3370	3380	3470	
2500-1	0.00	100.00	3390	3410	3490	
2510-1	0.00	100.00	3400	3500	3520	3620
2520-1	0.00	100.00	3380	3410	3430	
2530-1	93.08	100.00	3420	3430	3440	
2540-1	3.23	100.00	3470	3480	9130	
2550-1	0.00	100.00	3480	3490	3510	
2560-1	68.48	100.00	3390	3500	3510	

2570-1	20.51	100.00	3520	3530		
2580-1	0.00	100.00	3530	3540	8340	
2590-1	49.28	100.00	3540	3550		
2600-1	8.75	100.00	3560	3570	4140	8240
2610-1	19.18	100.00	3560	3590	4160	
2620-1	60.14	100.00	3580	3980	4110	6220
2630-1	0.00	100.00	3600	3630	8260	
2640-1	164.45	100.00	3600	3610	3640	
2650-1	7.58	100.00	3620	8380		
2660-1	1.22	100.00	3640	8270		
2670-1	20.79	100.00	3650	3660		
2680-1	2.96	100.00	3660	3670	3680	
2690-1	10.19	100.00	3690	8370	8420	
2700-1	13.94	100.00	3700	3720	8350	
2710-1	17.84	100.00	3710	3720	3730	8450
2720-1	21.68	100.00	3740	3760	8460	
2730-1	17.75	100.00	3750	3800	8230	
2740-1	81.36	100.00	3760	3770	3820	
2750-1	0.00	100.00	3770	3780	3830	
2760-1	2.66	100.00	3790	3930	8220	8390
2770-1	7.33	100.00	3810	3820	3910	3960
2780-1	30.25	100.00	2890	3840	3860	
2790-1	120.86	100.00	2830	3850	3880	
2800-1	5.33	100.00	3850	3870	3890	
2810-1	42.79	100.00	3860	3880	3890	
2820-1	104.77	100.00	3910	3920	4070	
2830-1	0.29	100.00	3920	3950	3970	4080
2840-1	34.94	100.00	3930	3940	3990	
2850-1	7.66	100.00	3940	3950	8280	
2860-1	27.04	100.00	3960	8300	8310	
2870-1	28.61	100.00	4530	8210	8330	
2880-1	0.88	100.00	4000	4010	4070	4470
2890-1	28.43	100.00	4010	4020	4480	
2900-1	40.86	100.00	4020	4030	4080	4460
2910-1	8.44	100.00	4030	4040	4090	4450
2920-1	22.57	100.00	4040	4050	4440	
2930-1	22.02	100.00	4060	4240	4510	
2940-1	1.79	100.00	4060	4100	4210	
2950-1	9.22	100.00	4100	4120	4150	
2960-1	0.00	100.00	3570	4110	4120	
2970-1	38.19	100.00	4150	4190		
2980-1	10.60	100.00	4170	8180	8190	
2990-1	0.00	100.00	4170	4180	9280	
3000-1	0.63	100.00	4180	4200		
3010-1	29.83	100.00	4140	4190	4200	
3020-1	0.00	100.00	4210	4220	4230	4390
3030-1	40.82	100.00	4220			
3040-1	37.13	100.00	4230	4250	4260	4310
3050-1	30.27	100.00	4240	4250	4350	
3060-1	0.00	100.00	4260	4270	9270	
3070-1	31.45	100.00	4270	4280	4320	
3080-1	0.00	100.00	4280	4290	4330	
3090-1	10.21	100.00	4300	4340	4380	8150
3100-1	1.50	100.00	4370	8030	8070	

3110-1	17.01	100.00	8040	8050		
3120-1	36.86	100.00	4400	4410	4450	
3130-1	8.11	100.00	4420	4600	7320	8140
3140-1	61.24	100.00	4420	4430	4520	4610
3150-1	47.29	100.00	4480	4500		
3160-1	0.00	100.00	2620	4490	4500	
3170-1	0.00	100.00	4050	4510	4520	4540
3180-1	0.00	100.00	4540	8320		
3190-1	58.98	100.00	4630	8120		
3200-1	40.51	100.00	4560	4570	4610	
3210-1	0.00	100.00	4570	4580	4660	
3220-1	23.85	100.00	4580	4590	7330	
3230-1	10.08	100.00	4680	7200		
3240-1	66.04	100.00	4630	4640	4650	9300
3250-1	13.51	100.00	4700	8010	8920	
3260-1	48.18	100.00	4670	4680	4720	
3270-1	47.33	100.00	4690	4700		
3280-1	47.70	100.00	4710	4720	4730	9680
3290-1	0.00	100.00	4730	4740	4820	
3300-1	15.44	100.00	4750	4760	4770	
3310-1	1.50	100.00	4780	7240		
3320-1	25.32	100.00	4790	4810	7810	
3330-1	7.10	100.00	4800	4810	4830	
3340-1	0.00	100.00	4790	4820	4840	9690
3350-1	1.35	100.00	4830	4840	7280	
3360-1	0.00	100.00	4850	4860	7020	
3370-1	0.16	100.00	4890	4920	7050	
3380-1	0.23	100.00	4890	4900	4910	
3390-1	11.35	100.00	4930	4940	7010	7040
3400-1	5.42	100.00	4950	7130	7160	
3410-1	0.00	100.00	4950	4960		
3420-1	0.00	100.00	4970	4990		
3430-1	85.10	100.00	4980	4990	5020	9700
3440-1	8.65	100.00	2720	5000	5010	
3450-1	27.25	100.00	5010	5030		
3460-1	0.00	100.00	5020	5030		
3470-1	3.40	100.00	5050	5090	9710	
3480-1	0.18	100.00	5070	7150	8860	
3490-1	0.00	100.00	5090	5110	5160	
3500-1	0.00	100.00	2680	5130		
3510-1	1.84	100.00	5120	5140	8740	
3520-1	2.03	100.00	5110	5130	5140	
3530-1	77.84	100.00	2730	5150	5160	
3540-1	1.77	100.00	5170	5190	5210	
3550-1	0.00	100.00	5180	5190	5200	5220
3560-1	38.61	100.00	2810	5200	5210	
3570-1	73.22	100.00	5230	8800	9750	9760
3580-1	0.00	100.00	5230	5250		
3590-1	41.46	100.00	2750	5240	5250	
3600-1	0.00	100.00	5340	5400		
3610-1	7.88	100.00	5270	5280	5300	5320
3620-1	208.93	100.00	5310	5330	5450	
3630-1	5.57	100.00	5290	5320	5360	
3640-1	0.00	100.00	5350	5370		



3650-1	9.74	100.00	5330	5360	5380	
3660-1	6.99	100.00	5340	5370	5420	
3670-1	0.00	100.00	5350	5390	5430	
3680-1	0.00	100.00	5400	5440	5480	
3690-1	0.00	100.00	5420	5430	5440	5510
3700-1	0.81	100.00	5450	5470	5500	
3710-1	0.00	100.00	5380	5460	5470	5490
3720-1	0.00	100.00	5280	5480	5490	
3730-1	0.00	100.00	5390	5500	5520	
3740-1	0.00	100.00	5460	5510	5520	
3750-1	4.66	100.00	5530	5540		
3760-1	2.82	100.00	5540	5570		
3770-1	4.60	100.00	5550	5560	5580	
3780-1	0.00	100.00	5560	5570		
3790-1	0.00	100.00	550	5590	5600	
3800-1	12.92	100.00	5610	9520	9630	
3810-1	0.00	100.00	5610	5630		
3820-1	0.16	100.00	5630	5690		
3840-1	12.81	100.00	5660	6050	9490	
3850-1	5.47	100.00	5660	5670	9470	
3860-1	0.00	100.00	5670	5700	5730	5870
3870-1	42.70	100.00	5680	5690	5700	6910
3880-1	0.16	100.00	5710	5720	6720	
3890-1	0.00	100.00	5720	5730	5760	
3900-1	0.00	100.00	5750	5760	5780	5860
3910-1	24.15	100.00	1940	5770	7800	
3930-1	0.05	100.00	5820	5850	6140	
3940-1	236.77	100.00	1950	5810	5840	7790
3950-1	6.09	100.00	1980	5830	5840	
3960-1	0.57	100.00	5850	5880	5920	
3970-1	0.00	100.00	5860	5870	5880	6090
3980-1	1.84	100.00	5890	5910	7780	
3990-1	13.51	100.00	5780	5900	5910	5920
4020-1	0.00	100.00	5950			
4030-1	0.00	100.00	5960			
4040-1	0.00	100.00	200	5970	5980	
4050-1	13.03	100.00	6010	6020	6030	6040
4060-1	19.56	100.00	6730			
4080-1	0.00	100.00	4760	6160	6170	
4090-1	9.81	100.00	4770	6180	6190	7090
4100-1	68.51	100.00	2500	6200	6210	
4110-1	9.24	100.00	2800	6230	6240	
4120-1	53.97	100.00	1350			
4130-1	30.91	100.00	1400			
4140-1	17.89	100.00	130			
4150-1	0.00	100.00	20	6280		
4160-1	0.77	100.00	6280	9140		
4170-1	10.82	100.00	6540			
4180-1	28.17	100.00	390			
4190-1	13.31	100.00	630			
4200-1	51.91	100.00	8840			
4210-1	2.77	100.00	2950			
4220-1	11.30	100.00	3100			
4230-1	99.12	100.00	3360			

4240-1	93.46	100.00	7920		
4250-1	2.00	100.00	7910		
4260-1	8.53	100.00	6290	6300	6340
4270-1	1.99	100.00	6300		
4280-1	0.90	100.00	5970	6310	6320
4290-1	13.52	100.00	6390	6410	
4300-1	0.09	100.00	6400		
4310-1	28.99	100.00	6340	6360	9140
4320-1	2.04	100.00	6290	6350	6490
4350-1	5.72	100.00	6390	6400	6430
4360-1	3.45	100.00	6320	6410	6420
4370-1	0.38	100.00	6420	6430	
4380-1	66.46	100.00	140	6440	
4390-1	37.28	100.00	6450	10000	
4400-1	0.62	100.00	6460	6470	
4410-1	80.04	100.00	80	6470	
4420-1	5.80	100.00	40	6480	
4430-1	25.06	100.00	6360	6490	
4440-1	0.00	100.00	360	6500	
4450-1	0.64	100.00	320	6510	
4460-1	0.00	100.00	6520		
4470-1	0.00	100.00	6530		
4480-1	0.00	100.00	5580	6540	
4490-1	13.69	100.00	260	6550	
4500-1	0.00	100.00	490	6560	
4510-1	3.03	100.00	400	6570	
4520-1	16.46	100.00	500	6580	
4530-1	11.85	100.00	6590	6600	
4540-1	17.93	100.00	6600	6610	
4550-1	1.90	100.00	5590	6610	
4560-1	6.74	100.00	460	6620	
4570-1	6.77	100.00	270	6630	
4580-1	17.53	100.00	540	6640	
4590-1	41.57	100.00	570	6650	
4600-1	10.82	100.00	590	6660	
4610-1	6.59	100.00	6650	6670	
4620-1	10.12	100.00	6680	6740	
4630-1	14.40	100.00	6690	6700	
4640-1	0.00	100.00	6030	6700	
4650-1	14.09	100.00	690	6710	
4660-1	8.95	100.00	5740	6720	
4670-1	1.96	100.00	6050	6730	
4680-1	44.01	100.00	610	6740	
4690-1	4.18	100.00	640	6750	
4700-1	9.79	100.00	6670	6760	
4710-1	14.07	100.00	680	6770	
4720-1	40.83	100.00	6790	6800	
4730-1	29.50	100.00	6790	6810	6840
4740-1	1.69	100.00	6780	6810	6830
4750-1	1.93	100.00	650	6820	6850
4760-1	6.24	100.00	6800	6840	
4770-1	5.07	100.00	6830	6850	
4780-1	6.05	100.00	6860	6870	6980
4790-1	8.63	100.00	740	6880	

4800-1	0.01	100.00	6880	6890		
4810-1	16.03	100.00	800	6900		
4820-1	0.00	100.00	5990	6910		
4830-1	1.88	100.00	6920	7080		
4840-1	0.26	100.00	6180	6930		
4850-1	1.72	100.00	6930	6940		
4860-1	0.00	100.00	6950	6960		
4870-1	14.86	100.00	920	6960		
4880-1	6.36	100.00	6970	8880		
4890-1	21.13	100.00	2650	6980		
4900-1	2.42	100.00	6990	7140	7340	7400
4910-1	0.00	100.00	970	7000		
4920-1	11.98	100.00	7010	8890		
4930-1	0.00	100.00	4900	7020		
4940-1	8.47	100.00	2480	7030	8870	
4950-1	0.00	100.00	4880	7050	7060	
4960-1	27.44	100.00	7070	7170		
4970-1	104.02	100.00	2420	7080	7090	7110
4980-1	24.30	100.00	2520	7100	7120	
4990-1	0.00	100.00	7120	7190	8900	
5000-1	35.61	100.00	7130	7140		
5010-1	0.00	100.00	7030	7150		
5020-1	2.94	100.00	4940	7160		
5030-1	10.29	100.00	7040	7170		
5040-1	24.33	100.00	2700	7180		
5050-1	0.41	100.00	7210	7220	9240	
5060-1	44.94	100.00	4620	7200	7210	
5070-1	1.54	100.00	7190	7220		
5080-1	0.57	100.00	6920	7230	9240	9250
5090-1	37.89	100.00	6940	7240	9250	
5100-1	21.50	100.00	2440	7250		
5110-1	11.46	100.00	7250	7260		
5120-1	0.00	100.00	7260	7270		
5130-1	1.68	100.00	2390	7280		
5140-1	0.18	100.00	2430	7290		
5150-1	2.04	100.00	7290	7300		
5160-1	0.02	100.00	4600	7310		
5170-1	0.00	100.00	4410	7320		
5180-1	0.67	100.00	7310	7330		
5190-1	1.82	100.00	2510	7340		
5200-1	12.23	100.00	7350	7380	8910	
5210-1	2.99	100.00	7360	7370	7390	
5220-1	3.86	100.00	7370	7380		
5230-1	0.00	100.00	7390	7400		
5240-1	42.21	100.00	7270	7350	7410	7420
5250-1	31.86	100.00	1420	7430		
5260-1	2.29	100.00	1410	7440		
5270-1	16.94	100.00	1250	7450		
5280-1	18.26	100.00	7440	7460		
5290-1	0.00	100.00	1810	7470		
5300-1	3.17	100.00	7470	7480		
5310-1	1.43	100.00	7490	7550		
5320-1	4.04	100.00	7500	7520		
5330-1	3.94	100.00	1870	7510	7750	

5340-1	4.71	100.00	7520	7530		
5350-1	84.07	100.00	1850	7530	7770	
5360-1	121.55	100.00	1610	7540		
5370-1	1.08	100.00	7480	7550		
5380-1	0.00	100.00	1620	7560		
5390-1	76.38	100.00	1890	7570		
5400-1	19.94	100.00	7580	7840		
5410-1	1.93	100.00	7590	7600		
5420-1	16.52	100.00	1880	7600		
5430-1	5.48	100.00	7640	7670	7680	
5450-1	9.73	100.00	7650	7710	7720	
5460-1	8.25	100.00	7610	7640	7650	
5470-1	0.43	100.00	7660	7670	9510	
5480-1	34.05	100.00	7680	7700		
5490-1	2.15	100.00	7700	7860	9500	
5500-1	44.65	100.00	7720	7740		
5510-1	14.79	100.00	7580	7730	7740	
5520-1	21.89	100.00	7750	7760		
5530-1	0.62	100.00	7760	7770		
5540-1	51.89	100.00	1990	7780		
5550-1	0.05	100.00	5820	7790		
5560-1	0.76	100.00	5900	7800		
5570-1	3.61	100.00	4780	7810		
5580-1	22.02	100.00	2020	7820		
5590-1	5.53	100.00	7820	7830	9220	9230
5600-1	2.21	100.00	7570	7840	9230	
5610-1	0.55	100.00	6140	7850		
5620-1	1.43	100.00	6130	7860		
5630-1	1.48	100.00	2070	7870		
5640-1	1.57	100.00	2060	7880		
5650-1	5.05	100.00	7830	7890		
5660-1	46.53	100.00	1690	7900		
5670-1	0.72	100.00	1740	7910		
5680-1	18.62	100.00	1750	7920		
5690-1	0.00	100.00	7930	7940		
5700-1	5.74	100.00	1660	7940		
5710-1	96.39	100.00	1630	7950		
5720-1	50.96	100.00	2120	7960		
5730-1	14.55	100.00	6260	7970		
5740-1	142.09	100.00	6250	7980		
5750-1	78.77	100.00	7990	8000		
5760-1	2.29	100.00	2190	8000		
5770-1	3.24	100.00	4650	8010		
5780-1	1.37	100.00	2210	8020		
5790-1	6.33	100.00	4360	8030		
5800-1	9.59	100.00	4380	8040		
5810-1	18.84	100.00	4370	8050	8060	
5820-1	14.33	100.00	8060	8070		
5830-1	1.14	100.00	8080	8090		
5840-1	24.36	100.00	8090	8100		
5850-1	2.04	100.00	8110	8930		
5860-1	1.72	100.00	4550	8120		
5870-1	2.07	100.00	4660	8130		
5880-1	2.66	100.00	4440	8140		

5890-1	26.51	100.00	4290	8150
5900-1	42.22	100.00	4300	8160
5910-1	19.96	100.00	8160	8170
5920-1	73.62	100.00	8170	8180
5930-1	64.57	100.00	8190	8200
5940-1	23.91	100.00	4160	8200
5950-1	0.00	100.00	3990	8210
5960-1	9.48	100.00	3580	8220
5970-1	35.88	100.00	3740	8230
5980-1	66.21	100.00	3550	8240
5990-1	17.27	100.00	3980	8250
6000-1	0.63	100.00	3590	8260
6010-1	45.94	100.00	3630	8270
6020-1	1.20	100.00	4090	8280
6030-1	1.66	100.00	3970	8290
6040-1	6.90	100.00	8290	8300
6050-1	0.29	100.00	3790	8310
6060-1	121.31	100.00	4530	8320
6070-1	1.56	100.00	8250	8330
6080-1	4.46	100.00	3670	8340
6090-1	0.00	100.00	3690	8350
6100-1	29.94	100.00	3680	8360
6110-1	13.67	100.00	8360	8370
6120-1	65.35	100.00	3610	8380
6130-1	0.00	100.00	8390	8400
6140-1	0.00	100.00	3800	8400
6150-1	0.00	100.00	3750	8410
6160-1	6.35	100.00	8410	8420
6170-1	1.57	100.00	8430	8440
6180-1	2.89	100.00	3700	8440
6190-1	0.00	100.00	3780	8450
6200-1	67.84	100.00	3730	8460
6210-1	44.28	100.00	3900	8470
6230-1	0.00	100.00	9120	9130
6240-1	33.52	100.00	8490	9770
6250-1	28.41	100.00	8500	8510
6260-1	4.64	100.00	3290	8510
6270-1	4.73	100.00	3080	8520
6280-1	50.57	100.00	3050	8530
6290-1	9.24	100.00	3130	8540
6300-1	85.35	100.00	3040	8550
6310-1	41.04	100.00	2940	8560
6320-1	28.01	100.00	8570	8600
6330-1	0.00	100.00	8530	8580
6340-1	0.00	100.00	3010	8590
6350-1	0.50	100.00	8600	8620
6360-1	40.77	100.00	2910	8610
6370-1	6.19	100.00	2930	8620
6380-1	0.02	100.00	8630	8650
6390-1	2.75	100.00	2820	8640
6400-1	0.00	100.00	6230	8650
6410-1	1.59	100.00	3280	8660
6420-1	0.00	100.00	8560	8670
6430-1	3.71	100.00	8630	8680

6440-1	36.56	100.00	8680	8690		
6450-1	0.00	100.00	5180	8700		
6460-1	20.46	100.00	8710	8790	9750	
6470-1	3.75	100.00	8710	8720		
6480-1	10.64	100.00	4130	8730		
6490-1	33.45	100.00	8740	9720		
6500-1	1.64	100.00	2770	8750		
6510-1	34.78	100.00	8750	8760		
6520-1	2.09	100.00	2560	8770	9290	
6530-1	37.23	100.00	2530	8780		
6540-1	58.48	100.00	2790	8790		
6550-1	0.00	100.00	5220	8800		
6560-1	50.92	100.00	2760	8810		
6570-1	15.78	100.00	8810	8820		
6580-1	0.00	100.00	8820	8830		
6590-1	0.00	100.00	8830	8840		
6600-1	9.09	100.00	2670	8850		
6610-1	15.10	100.00	5080	8860		
6620-1	6.50	100.00	7070	8870		
6630-1	7.17	100.00	2450	8880		
6640-1	12.67	100.00	4920	8890		
6650-1	1.83	100.00	7110	8900		
6660-1	11.22	100.00	4590	8910		
6670-1	16.22	100.00	8130	8920		
6680-1	1.45	100.00	8100	8930		
6690-1	0.00	100.00	8960	9150		
6710-1	0.00	100.00	8960	8980	9160	
6730-1	0.00	100.00	8980	9010	9170	
6750-1	0.00	100.00	9060	9410		
6760-1	0.00	100.00	9020	9030		
6770-1	0.00	100.00	9030	9040		
6790-1	0.00	100.00	9060	9080	9420	
6810-1	0.00	100.00	9080	9100	9430	
6830-1	0.00	100.00	9040	9100	9440	
6850-1	0.00	100.00	4390	9270	9280	
6860-1	45.87	100.00	9310	9320	9330	
6910-1	78.05	100.00	6090	9460	9470	
6920-1	0.00	100.00	9460	9480	9490	
6930-1	0.00	100.00	9520	9530		
6940-1	0.00	100.00	9530	9540		
6950-1	0.00	100.00	9540	9550		
6960-1	0.00	100.00	9570	9600		
6970-1	0.00	100.00	6010	9560	9570	9590
6980-1	0.00	100.00	5620	9580	9590	
6990-1	0.00	100.00	9550	9600	9620	
7000-1	0.00	100.00	9560	9610	9620	9640
7010-1	0.00	100.00	9580	9630	9640	
7020-1	0.00	100.00	7870	9660	9670	
7030-1	5.59	100.00	7300	9680	9690	
7040-1	0.00	100.00	5240	9720	9730	9740
7050-1	0.00	100.00	3360	9770	9780	9810
7080-1	868.00	100.00	9810			
20000-1	0.00	0.00	6440	10000		

**2001 COMPUTER WATER MODEL  
INPUT DATA FILE**

\*\*\*\*\*  
 SUMMARY OF ORIGINAL DATA  
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CyberNet Version 2.52.5. Copyright 1991,92 Haestad Methods Inc.

Run Description: Basic Network

Job: City of McAllen  
 2001 Water System Model

PIPELINE DATA

STATUS CODE: XX -CLOSED PIPE      BN -BOUNDARY NODE      PU -PUMP LINE  
 CV -CHECK VALVE      RV -REGULATING VALVE

PIPE BND-HGL NUMBER	NODE NOS.		LENGTH (ft)	DIAMETER (in)	ROUGHNESS COEFF.	MINOR LOSS	
	#1	#2				COEFF.	(ft)
20	4150	20	942.0	10.0	120.00	0.00	
30	10	20	612.0	10.0	120.00	0.00	
40	20	4420	1265.0	10.0	120.00	0.00	
50	10	40	1377.0	10.0	120.00	0.00	
80	50	4410	1211.0	12.0	120.00	0.00	
90	70	80	1932.0	8.0	120.00	0.00	
110	60	80	602.0	8.0	120.00	0.00	
120	80	100	673.0	8.0	120.00	0.00	
130	4140	110	1050.0	8.0	120.00	0.00	
140	70	4380	2595.0	12.0	120.00	0.00	
150	110	220	562.0	12.0	120.00	0.00	
160	100	120	663.0	12.0	120.00	0.00	
170	120	60	625.0	12.0	120.00	0.00	
180	60	30	673.0	12.0	120.00	0.00	
190	30	40	1261.0	12.0	120.00	0.00	
200	40	4040	249.0	12.0	120.00	0.00	
250	120	10680	2053.0	16.0	120.00	0.00	
260	170	4490	595.0	12.0	120.00	0.00	
270	180	4570	1257.0	12.0	120.00	0.00	
300	190	200	767.0	12.0	120.00	0.00	
310	200	210	390.0	12.0	120.00	0.00	
320	210	4450	1977.0	12.0	120.00	0.00	
330	160	150	1201.0	12.0	120.00	0.00	
340	150	140	717.0	12.0	120.00	0.00	
350	140	130	599.0	12.0	120.00	0.00	
360	220	4440	3210.0	12.0	120.00	0.00	
370	130	220	1334.0	12.0	120.00	0.00	
390	4180	240	736.0	8.0	120.00	0.00	
400	240	4510	545.0	8.0	120.00	0.00	
410	250	260	844.0	16.0	120.00	0.00	
420	170	250	2080.0	16.0	120.00	0.00	



430	230	270	2631.0	24.0	120.00	0.00
440	270	260	287.0	24.0	120.00	0.00
450	250	280	1401.0	8.0	120.00	0.00
460	280	4560	638.0	8.0	120.00	0.00
470	290	300	1325.0	8.0	120.00	0.00
490	300	4500	981.0	8.0	120.00	0.00
500	290	4520	757.0	8.0	120.00	0.00
510	320	330	754.0	16.0	120.00	0.00
520	320	310	714.0	36.0	120.00	0.00
530	310	340	1451.0	12.0	120.00	0.00
540	340	4580	1173.0	12.0	120.00	0.00
550	260	3790	1404.0	24.0	120.00	0.00
560	350	330	685.0	30.0	120.00	0.00
570-XX	230	4590	1834.0	24.0	140.00	0.00
580	270	370	2177.0	12.0	120.00	0.00
590	370	4600	1857.0	12.0	120.00	0.00
600	370	390	1401.0	8.0	120.00	0.00
610	390	4680	1228.0	8.0	120.00	0.00
630	4190	420	880.0	8.0	120.00	0.00
640	420	4690	994.0	8.0	120.00	0.00
650	360	4750	1587.0	16.0	120.00	0.00
680	380	4710	797.0	16.0	120.00	0.00
690	400	4650	564.0	16.0	120.00	0.00
700	380	460	192.0	8.0	140.00	0.00
710	460	470	624.0	8.0	140.00	0.00
720	470	480	608.0	8.0	140.00	0.00
730	480	490	795.0	8.0	140.00	0.00
740	460	4790	507.0	8.0	120.00	0.00
750	500	440	186.0	8.0	120.00	0.00
760	490	510	596.0	8.0	120.00	0.00
770	510	520	826.0	8.0	120.00	0.00
780	520	530	1204.0	8.0	120.00	0.00
790	530	540	993.0	8.0	120.00	0.00
800	540	4810	799.0	8.0	120.00	0.00
810	540	550	994.0	8.0	120.00	0.00
820	550	560	726.0	24.0	120.00	0.00
830	560	570	910.0	24.0	120.00	0.00
860	440	600	1286.0	16.0	120.00	0.00
880	490	610	1350.0	8.0	140.00	0.00
890	610	620	477.0	12.0	120.00	0.00
900	550	630	2040.0	24.0	120.00	0.00
910	630	640	999.0	24.0	120.00	0.00
920	640	4870	1088.0	8.0	120.00	0.00
930	630	650	357.0	24.0	120.00	0.00
940	530	660	1345.0	8.0	120.00	0.00
950	660	670	688.0	8.0	120.00	0.00
960	670	650	1071.0	8.0	120.00	0.00
970	670	4910	597.0	8.0	120.00	0.00
980	680	690	689.0	8.0	120.00	0.00
990	660	690	1297.0	8.0	120.00	0.00
1000	340	700	3702.0	12.0	120.00	0.00
1010	700	710	407.0	12.0	120.00	0.00
1020	720	730	653.0	10.0	120.00	0.00
1030	730	710	379.0	10.0	120.00	0.00

1040	740	720	1111.0	10.0	120.00	0.00
1050	750	760	2231.0	10.0	120.00	0.00
1060	710	760	185.0	10.0	120.00	0.00
1070	760	770	1573.0	10.0	120.00	0.00
1080	320	780	1275.0	36.0	140.00	0.00
1090	780	10940	905.0	36.0	120.00	0.00
1100	740	790	1508.0	12.0	120.00	0.00
1110	770	800	1259.0	12.0	120.00	0.00
1120	770	810	921.0	12.0	120.00	0.00
1130	750	820	353.0	8.0	120.00	0.00
1140	820	800	117.0	12.0	120.00	0.00
1150	800	830	1355.0	12.0	120.00	0.00
1160	790	830	337.0	12.0	120.00	0.00
1170	830	840	479.0	12.0	120.00	0.00
1180	840	850	794.0	12.0	120.00	0.00
1190	850	860	637.0	12.0	120.00	0.00
1200	860	870	419.0	12.0	120.00	0.00
1210	870	10720	589.0	12.0	120.00	0.00
1220	880	890	644.0	12.0	120.00	0.00
1230	890	10730	211.0	12.0	120.00	0.00
1240	900	910	1175.0	12.0	120.00	0.00
1250	910	5270	985.0	12.0	120.00	0.00
1260	810	930	1370.0	12.0	120.00	0.00
1270	930	940	294.0	12.0	120.00	0.00
1280	940	950	1968.0	12.0	120.00	0.00
1290	920	960	742.0	12.0	120.00	0.00
1300	950	960	1467.0	12.0	120.00	0.00
1310	960	970	225.0	12.0	120.00	0.00
1320	10310	980	1560.0	12.0	140.00	0.00
1330	980	990	120.0	12.0	120.00	0.00
1340	990	1000	1677.0	8.0	120.00	0.00
1350	1000	4120	1970.0	12.0	120.00	0.00
1360	990	1010	1228.0	12.0	120.00	0.00
1370	980	1020	1203.0	8.0	120.00	0.00
1380	1020	1030	1160.0	8.0	120.00	0.00
1390	1030	1010	1048.0	12.0	120.00	0.00
1400	1010	4130	1641.0	12.0	120.00	0.00
1410	1040	5260	527.0	16.0	120.00	0.00
1420	1020	5250	2331.0	8.0	120.00	0.00
1430	1050	1040	1421.0	12.0	120.00	0.00
1440	880	1060	1379.0	8.0	120.00	0.00
1450	1060	1050	658.0	8.0	120.00	0.00
1460	1060	1070	1466.0	8.0	140.00	0.00
1470	1070	1080	285.0	16.0	120.00	0.00
1480	1080	1090	322.0	16.0	120.00	0.00
1490	1090	1040	457.0	16.0	120.00	0.00
1500	1070	1100	2363.0	12.0	120.00	0.00
1540	1080	1130	1535.0	8.0	120.00	0.00
1550	1130	1140	390.0	8.0	120.00	0.00
1560	1090	1140	1589.0	8.0	120.00	0.00
1570	1140	10530	411.0	8.0	120.00	0.00
1580	1150	10790	82.0	12.0	120.00	0.00
1590	1160	1170	1274.0	12.0	120.00	0.00
1600	1170	1180	538.0	12.0	120.00	0.00

1610	1310	5360	834.0	18.0	140.00	0.00
1620	1190	5380	1189.0	18.0	120.00	0.00
1630	1190	5710	1361.0	18.0	120.00	0.00
1650	1230	1240	484.0	8.0	120.00	0.00
1660	1240	5700	227.0	8.0	120.00	0.00
1670	1250	1220	494.0	8.0	140.00	0.00
1680	1110	1250	585.0	8.0	140.00	0.00
1720	1260	1290	1399.0	8.0	120.00	0.00
1740	1110	5670	678.0	8.0	120.00	0.00
1750	1240	5680	635.0	8.0	120.00	0.00
1770	1200	1160	3606.0	8.0	120.00	0.00
1780	1200	1310	653.0	8.0	140.00	0.00
1790	1310	1180	1134.0	12.0	120.00	0.00
1800	1190	1320	637.0	8.0	120.00	0.00
1810	1310	5290	215.0	8.0	120.00	0.00
1820	1320	1330	684.0	8.0	120.00	0.00
1830	1340	1330	666.0	12.0	120.00	0.00
1840	1340	1190	619.0	18.0	120.00	0.00
1850	1330	5350	213.0	12.0	120.00	0.00
1860	840	1350	561.0	12.0	120.00	0.00
1870	1350	5330	778.0	6.0	120.00	0.00
1880	1360	5420	1210.0	6.0	140.00	0.00
1890	1340	5390	984.0	18.0	120.00	0.00
1930	1410	1380	211.0	8.0	120.00	0.00
1940	1420	3910	640.0	8.0	120.00	0.00
1950	1430	3940	330.0	10.0	120.00	0.00
1960	1420	1440	904.0	12.0	140.00	0.00
1970	1440	1450	453.0	12.0	120.00	0.00
1980	1450	3950	833.0	12.0	120.00	0.00
1990	1420	5540	356.0	16.0	140.00	0.00
2000	1400	1460	447.0	16.0	140.00	0.00
2010	1440	1470	1451.0	8.0	140.00	0.00
2020	1450	5580	627.0	12.0	120.00	0.00
2030	1470	1490	1448.0	8.0	140.00	0.00
2040	1490	1480	330.0	8.0	120.00	0.00
2050	1340	1500	1323.0	8.0	120.00	0.00
2060	1480	5640	492.0	8.0	120.00	0.00
2070	1510	5630	846.0	12.0	120.00	0.00
2080	1520	1530	167.0	12.0	120.00	0.00
2090	1530	1210	481.0	12.0	120.00	0.00
2100	1530	1480	832.0	12.0	120.00	0.00
2110	1490	1220	2779.0	8.0	140.00	0.00
2130	1520	1550	2681.0	8.0	120.00	0.00
2140	1550	1560	1594.0	8.0	120.00	0.00
2150	1540	1570	1685.0	8.0	140.00	0.00
2170	1580	1540	2640.0	8.0	140.00	0.00
2180	1580	1590	1320.0	8.0	120.00	0.00
2190	1590	5760	320.0	8.0	120.00	0.00
2200	1600	1580	1195.0	8.0	140.00	0.00
2210	1600	5780	688.0	12.0	120.00	0.00
2220	1610	1620	665.0	12.0	120.00	0.00
2230	1620	1630	923.0	12.0	120.00	0.00
2240	1630	1640	433.0	12.0	120.00	0.00
2250	1640	1650	170.0	12.0	120.00	0.00

2260	1650	1660	1320.0	12.0	120.00	0.00
2270	1610	1590	1189.0	8.0	120.00	0.00
2280	350	10860	446.0	24.0	120.00	0.00
2281	6950	430	526.0	24.0	120.00	0.00
2300	1670	430	739.0	24.0	120.00	0.00
2340	1680	1700	593.0	16.0	140.00	0.00
2350	1700	1400	473.0	16.0	140.00	0.00
2360	780	10840	470.0	12.0	120.00	0.00
2390	1730	5130	275.0	10.0	120.00	0.00
2400	560	1740	602.0	16.0	120.00	0.00
2410	1740	1750	751.0	16.0	120.00	0.00
2420	1750	4970	485.0	16.0	120.00	0.00
2430	1760	5140	208.0	16.0	120.00	0.00
2440	1770	5100	423.0	16.0	120.00	0.00
2450	640	6630	429.0	24.0	120.00	0.00
2460	1790	1800	1640.0	24.0	120.00	0.00
2470	1800	1810	1009.0	24.0	120.00	0.00
2480	1790	4940	704.0	16.0	120.00	0.00
2490	1830	1820	808.0	16.0	120.00	0.00
2500	1830	4100	351.0	20.0	120.00	0.00
2510	1840	5190	667.0	12.0	120.00	0.00
2520	1850	4980	630.0	12.0	120.00	0.00
2530	1840	6530	1852.0	12.0	120.00	0.00
2540	1870	1880	1260.0	8.0	120.00	0.00
2550	1880	1890	925.0	8.0	120.00	0.00
2560	1890	6520	950.0	12.0	120.00	0.00
2570	1900	1910	703.0	12.0	120.00	0.00
2580	1910	1830	819.0	12.0	120.00	0.00
2590	1890	1920	773.0	12.0	120.00	0.00
2600	1920	1930	562.0	12.0	120.00	0.00
2610	1840	1940	609.0	16.0	120.00	0.00
2620	1940	3160	699.0	16.0	120.00	0.00
2630	1790	1950	950.0	12.0	120.00	0.00
2640	1950	1960	680.0	12.0	120.00	0.00
2650	1960	4890	1024.0	12.0	120.00	0.00
2660	1970	1980	692.0	12.0	120.00	0.00
2670	1980	6600	1099.0	12.0	120.00	0.00
2680	1810	3500	897.0	12.0	120.00	0.00
2690	1960	2010	1372.0	8.0	120.00	0.00
2700	1950	5040	718.0	8.0	120.00	0.00
2710	2010	620	2228.0	8.0	120.00	0.00
2720	1900	3440	907.0	8.0	120.00	0.00
2730	2020	3530	1098.0	8.0	120.00	0.00
2740	2030	1920	1577.0	8.0	120.00	0.00
2750	2030	3590	1116.0	8.0	120.00	0.00
2760	1990	6560	1386.0	8.0	120.00	0.00
2770	1990	6500	357.0	12.0	120.00	0.00
2780	2040	2050	2102.0	12.0	120.00	0.00
2790	1930	6540	602.0	12.0	120.00	0.00
2800	2070	4110	703.0	24.0	120.00	0.00
2810	2060	3560	830.0	24.0	120.00	0.00
2820	2050	6390	3612.0	8.0	120.00	0.00
2830	2090	2790	520.0	16.0	120.00	0.00
2840	2100	2060	597.0	16.0	120.00	0.00

2850	2110	2120	1406.0	16.0	120.00	0.00
2860	2120	2090	375.0	16.0	120.00	0.00
2870	2110	2130	831.0	12.0	120.00	0.00
2880	2070	2130	262.0	12.0	120.00	0.00
2890	2060	2780	597.0	24.0	120.00	0.00
2900	2050	2150	4340.0	12.0	120.00	0.00
2910	2150	6360	1604.0	12.0	120.00	0.00
2920	2160	2170	2189.0	12.0	120.00	0.00
2930	2170	6370	358.0	12.0	120.00	0.00
2940	2180	6310	1040.0	12.0	120.00	0.00
2950	4210	2190	177.0	12.0	120.00	0.00
2960	2190	2200	1594.0	12.0	120.00	0.00
2970	2200	2210	596.0	12.0	120.00	0.00
2980	2210	2220	212.0	12.0	120.00	0.00
2990	2220	2170	1441.0	12.0	120.00	0.00
3000	2190	2230	1206.0	8.0	120.00	0.00
3010	2230	6340	331.0	8.0	120.00	0.00
3020	2240	2250	796.0	8.0	120.00	0.00
3030	2250	2220	1218.0	8.0	120.00	0.00
3040	2180	6300	1314.0	12.0	120.00	0.00
3050	2260	6280	1218.0	12.0	120.00	0.00
3060	2270	2280	423.0	8.0	120.00	0.00
3070	2280	2290	292.0	12.0	120.00	0.00
3080	2290	6270	684.0	12.0	120.00	0.00
3090	2300	2310	1476.0	12.0	120.00	0.00
3100	2310	4220	933.0	12.0	120.00	0.00
3110	2130	2320	2319.0	12.0	120.00	0.00
3120	2320	2330	1136.0	12.0	120.00	0.00
3130	2260	6290	1078.0	8.0	120.00	0.00
3140	2340	2290	1269.0	8.0	120.00	0.00
3150	2300	2350	1149.0	8.0	120.00	0.00
3160	2350	2340	1184.0	8.0	120.00	0.00
3170	2350	2360	305.0	8.0	120.00	0.00
3180	2360	2370	1311.0	8.0	120.00	0.00
3190	2370	2380	493.0	8.0	120.00	0.00
3200	2380	2330	2267.0	8.0	120.00	0.00
3210	2320	2370	3810.0	8.0	120.00	0.00
3220	2170	2390	1566.0	8.0	120.00	0.00
3230	2390	2400	1091.0	8.0	120.00	0.00
3240	2160	2400	1793.0	8.0	120.00	0.00
3250	2150	2400	1098.0	8.0	120.00	0.00
3260	2170	2410	1454.0	8.0	120.00	0.00
3270	2390	2410	246.0	8.0	120.00	0.00
3280	2410	6410	1123.0	8.0	120.00	0.00
3290	2360	6260	958.0	8.0	120.00	0.00
3300	2420	2430	210.0	20.0	120.00	0.00
3310	2430	2440	598.0	20.0	120.00	0.00
3320	2440	2450	2014.0	20.0	120.00	0.00
3330	2330	2460	650.0	12.0	120.00	0.00
3340	2460	2450	1051.0	12.0	120.00	0.00
3350	2450	2470	2179.0	12.0	120.00	0.00
3360	4230	6240	791.0	16.0	120.00	0.00
3370	2480	2490	761.0	16.0	120.00	0.00
3380	2490	2520	1033.0	16.0	120.00	0.00

3390	2500	2560	890.0	16.0	120.00	0.00
3400	2470	2510	778.0	12.0	120.00	0.00
3410	2500	2520	328.0	24.0	120.00	0.00
3420	2430	2530	1718.0	8.0	120.00	0.00
3430	2520	2530	2103.0	8.0	120.00	0.00
3440	2480	2530	2537.0	8.0	120.00	0.00
3450	2380	2440	1452.0	8.0	120.00	0.00
3470	2540	2490	1184.0	8.0	120.00	0.00
3480	2540	2550	854.0	8.0	120.00	0.00
3490	2500	2550	1115.0	8.0	120.00	0.00
3500	2510	2560	913.0	16.0	120.00	0.00
3510	2550	2560	2439.0	8.0	120.00	0.00
3520	2510	2570	2301.0	12.0	120.00	0.00
3530	2570	2580	656.0	12.0	120.00	0.00
3540	2580	2590	808.0	12.0	120.00	0.00
3550	2590	5980	916.0	12.0	120.00	0.00
3560	2600	2610	2781.0	12.0	120.00	0.00
3570	2600	2960	632.0	18.0	120.00	0.00
3580	2620	5960	789.0	24.0	120.00	0.00
3590	2610	6000	1152.0	8.0	140.00	0.00
3600	2630	2640	995.0	8.0	140.00	0.00
3630	2630	6010	1164.0	8.0	120.00	0.00
3640	2640	2660	1208.0	8.0	120.00	0.00
3650	2470	2670	1827.0	8.0	120.00	0.00
3660	2670	2680	1481.0	8.0	120.00	0.00
3670	2680	6080	863.0	8.0	120.00	0.00
3680	2680	6100	532.0	8.0	120.00	0.00
3690	2690	6090	717.0	20.0	120.00	0.00
3700	2700	6180	584.0	20.0	120.00	0.00
3710	2460	2710	1360.0	8.0	120.00	0.00
3720	2710	2700	1443.0	8.0	120.00	0.00
3730	2710	6200	686.0	8.0	120.00	0.00
3740	2720	5970	892.0	8.0	120.00	0.00
3750	2730	6150	247.0	20.0	120.00	0.00
3760	2720	2740	1044.0	8.0	120.00	0.00
3770	2740	2750	1289.0	8.0	120.00	0.00
3780	2750	6190	947.0	8.0	120.00	0.00
3790	2760	6050	428.0	24.0	120.00	0.00
3800	2730	6140	250.0	20.0	120.00	0.00
3810	2140	2770	595.0	24.0	120.00	0.00
3820	2740	2770	1277.0	8.0	120.00	0.00
3830	2120	2750	2830.0	8.0	120.00	0.00
3840	2140	2780	1656.0	24.0	120.00	0.00
3850	2790	2800	819.0	16.0	120.00	0.00
3860	2780	2810	976.0	8.0	120.00	0.00
3870	2100	2800	500.0	16.0	120.00	0.00
3880	2790	2810	1387.0	8.0	120.00	0.00
3890	2800	2810	579.0	8.0	120.00	0.00
3900	2110	6210	2618.0	8.0	120.00	0.00
3910	2770	2820	2660.0	8.0	120.00	0.00
3920	2820	2830	1300.0	8.0	120.00	0.00
3930	2760	2840	1355.0	16.0	120.00	0.00
3940	2840	2850	1297.0	16.0	120.00	0.00
3950	2830	2850	917.0	8.0	120.00	0.00

3960	2770	2860	1433.0	24.0	120.00	0.00
3970	2830	6030	750.0	8.0	120.00	0.00
3980	2620	5990	224.0	8.0	120.00	0.00
3990	2840	5950	618.0	8.0	120.00	0.00
4000	1870	2880	601.0	8.0	120.00	0.00
4010	2880	2890	705.0	8.0	120.00	0.00
4020	2890	2900	779.0	8.0	120.00	0.00
4030	2900	2910	756.0	8.0	120.00	0.00
4040	2910	2920	601.0	8.0	120.00	0.00
4050	2920	3170	876.0	8.0	120.00	0.00
4060	2930	2940	575.0	8.0	120.00	0.00
4070	2820	2880	1323.0	8.0	120.00	0.00
4080	2900	2830	1343.0	8.0	120.00	0.00
4090	2910	6020	650.0	16.0	120.00	0.00
4100	2940	2950	1800.0	8.0	120.00	0.00
4110	2620	2960	745.0	18.0	120.00	0.00
4120	2950	2960	2190.0	8.0	120.00	0.00
4130	2140	6480	1132.0	12.0	120.00	0.00
4140	2600	3010	673.0	12.0	120.00	0.00
4150	2970	2950	689.0	8.0	120.00	0.00
4160	2610	5940	920.0	8.0	140.00	0.00
4170	2980	2990	1308.0	8.0	120.00	0.00
4180	2990	3000	2612.0	8.0	120.00	0.00
4190	2970	3010	1582.0	12.0	120.00	0.00
4200	3000	3010	1130.0	8.0	120.00	0.00
4210	2940	3020	683.0	8.0	120.00	0.00
4220	3020	3030	957.0	12.0	120.00	0.00
4230	3020	3040	988.0	12.0	120.00	0.00
4240	2930	3050	1621.0	8.0	120.00	0.00
4250	3050	3040	611.0	8.0	120.00	0.00
4260	3040	3060	877.0	8.0	120.00	0.00
4270	3060	3070	220.0	8.0	120.00	0.00
4280	3070	3080	632.0	8.0	120.00	0.00
4290	3080	5890	648.0	8.0	120.00	0.00
4300	3090	5900	621.0	8.0	140.00	0.00
4310	3040	1630	1646.0	12.0	120.00	0.00
4320	1620	3070	1430.0	8.0	120.00	0.00
4330	1610	3080	1439.0	8.0	120.00	0.00
4340	1600	3090	1422.0	8.0	140.00	0.00
4350	1640	3050	1908.0	8.0	120.00	0.00
4360	1600	5790	533.0	8.0	120.00	0.00
4370	3100	5810	583.0	8.0	120.00	0.00
4380	3090	5800	1120.0	8.0	120.00	0.00
4390	3020	6850	930.0	8.0	120.00	0.00
4400	1780	3120	772.0	16.0	120.00	0.00
4410	3120	5170	478.0	12.0	120.00	0.00
4420	3130	3140	730.0	12.0	120.00	0.00
4430	3140	1650	824.0	12.0	120.00	0.00
4440	2920	5880	2013.0	8.0	120.00	0.00
4450	2910	3120	2644.0	16.0	120.00	0.00
4460	2900	1780	2673.0	8.0	120.00	0.00
4470	1940	2880	2669.0	8.0	120.00	0.00
4480	2890	3150	1297.0	8.0	120.00	0.00
4490	1780	3160	777.0	16.0	120.00	0.00





4500	3150	3160	1370.0	8.0	120.00	0.00
4510	2930	3170	196.0	8.0	120.00	0.00
4520	3140	3170	2668.0	6.0	120.00	0.00
4530	2870	6060	614.0	8.0	120.00	0.00
4540	3180	3170	1299.0	8.0	120.00	0.00
4550	1660	5860	482.0	12.0	120.00	0.00
4560	1660	3200	828.0	8.0	120.00	0.00
4570	3200	3210	156.0	8.0	120.00	0.00
4580	3210	3220	699.0	8.0	120.00	0.00
4590	3220	6660	657.0	8.0	120.00	0.00
4600	3130	5160	583.0	8.0	120.00	0.00
4610	3200	3140	1321.0	6.0	120.00	0.00
4620	1850	5060	597.0	8.0	120.00	0.00
4630	3190	3240	657.0	12.0	120.00	0.00
4640	1550	3240	760.0	8.0	120.00	0.00
4650	3240	5770	290.0	8.0	120.00	0.00
4660	3210	5870	704.0	8.0	120.00	0.00
4670	1760	3260	734.0	8.0	120.00	0.00
4680	3260	3230	1396.0	8.0	120.00	0.00
4690	1730	3270	1302.0	8.0	120.00	0.00
4700	3270	3250	542.0	8.0	120.00	0.00
4710	1770	3280	328.0	16.0	120.00	0.00
4720	3260	3280	907.0	8.0	120.00	0.00
4730	3280	3290	196.0	8.0	120.00	0.00
4740	3290	1730	567.0	8.0	120.00	0.00
4750	1750	3300	690.0	8.0	140.00	0.00
4760	3300	4080	206.0	8.0	140.00	0.00
4770	3300	4090	468.0	8.0	120.00	0.00
4780	3310	5570	461.0	8.0	120.00	0.00
4790	3320	3340	648.0	8.0	120.00	0.00
4800	1510	3330	896.0	10.0	120.00	0.00
4810	3320	3330	523.0	8.0	120.00	0.00
4820	3290	3340	763.0	8.0	120.00	0.00
4830	3350	10760	261.0	10.0	120.00	0.00
4840	3340	3350	533.0	12.0	120.00	0.00
4850	1750	3360	689.0	8.0	120.00	0.00
4860	690	3360	756.0	8.0	120.00	0.00
4870	1740	690	699.0	8.0	120.00	0.00
4880	680	4950	348.0	8.0	120.00	0.00
4890	3370	3380	834.0	8.0	120.00	0.00
4900	3380	4930	626.0	8.0	120.00	0.00
4910	3380	1860	212.0	8.0	120.00	0.00
4920	3370	6640	604.0	8.0	120.00	0.00
4930	3390	1820	848.0	12.0	120.00	0.00
4940	3390	5020	572.0	8.0	120.00	0.00
4950	3400	3410	709.0	8.0	120.00	0.00
4960	3410	1820	985.0	8.0	120.00	0.00
4970	1960	3420	1469.0	8.0	120.00	0.00
4980	1950	3430	1427.0	8.0	120.00	0.00
4990	3420	3430	677.0	8.0	120.00	0.00
5000	2020	3440	605.0	8.0	120.00	0.00
5010	3440	3450	818.0	8.0	120.00	0.00
5020	3430	3460	976.0	8.0	120.00	0.00
5030	3460	3450	804.0	8.0	120.00	0.00

5050	3470	2020	1175.0	8.0	120.00	0.00
5060	2020	1800	720.0	8.0	120.00	0.00
5070	1820	3480	265.0	16.0	120.00	0.00
5080	1910	6610	1240.0	8.0	120.00	0.00
5090	3470	3490	509.0	8.0	120.00	0.00
5110	3490	3520	1011.0	8.0	120.00	0.00
5120	1990	3510	1687.0	8.0	120.00	0.00
5130	3500	3520	1166.0	8.0	120.00	0.00
5140	3510	3520	1462.0	8.0	120.00	0.00
5150	2030	3530	906.0	8.0	120.00	0.00
5160	3490	3530	1679.0	8.0	120.00	0.00
5170	2100	3540	805.0	8.0	120.00	0.00
5180	3550	6450	547.0	24.0	120.00	0.00
5190	3540	3550	1262.0	8.0	120.00	0.00
5200	3550	3560	480.0	24.0	120.00	0.00
5210	3540	3560	681.0	8.0	120.00	0.00
5220	3550	6550	392.0	8.0	120.00	0.00
5230	3570	3580	1340.0	6.0	120.00	0.00
5240	3590	7040	238.0	8.0	120.00	0.00
5250	3580	3590	934.0	8.0	120.00	0.00
5260	1560	1540	1349.0	8.0	120.00	0.00
5270	140	3610	568.0	8.0	120.00	0.00
5280	3610	3720	830.0	8.0	120.00	0.00
5290	150	3630	250.0	8.0	120.00	0.00
5300	3610	130	1168.0	8.0	120.00	0.00
5310	160	3620	251.0	8.0	120.00	0.00
5320	3610	3630	1033.0	8.0	120.00	0.00
5330	3620	3650	773.0	8.0	120.00	0.00
5340	3600	3660	1141.0	8.0	120.00	0.00
5350	3640	3670	1343.0	8.0	120.00	0.00
5360	3630	3650	424.0	8.0	120.00	0.00
5370	3640	3660	1177.0	8.0	120.00	0.00
5380	3650	3710	1148.0	8.0	120.00	0.00
5390	3670	3730	1192.0	8.0	120.00	0.00
5400	3600	3680	1343.0	8.0	120.00	0.00
5420	3660	3690	1343.0	8.0	120.00	0.00
5430	3670	3690	1177.0	8.0	120.00	0.00
5440	3690	3680	1140.0	8.0	120.00	0.00
5450	3620	3700	1552.0	8.0	120.00	0.00
5460	3710	3740	1229.0	8.0	120.00	0.00
5470	3700	3710	1177.0	8.0	120.00	0.00
5480	3680	3720	2421.0	8.0	120.00	0.00
5490	3710	3720	1140.0	8.0	120.00	0.00
5500	3700	3730	1229.0	8.0	120.00	0.00
5510	3690	3740	1192.0	8.0	120.00	0.00
5520	3730	3740	1177.0	8.0	120.00	0.00
5530	3750	10690	1360.0	20.0	140.00	0.00
5540	3750	3760	1731.0	8.0	120.00	0.00
5550	170	3770	643.0	8.0	120.00	0.00
5560	3770	3780	373.0	8.0	120.00	0.00
5570	3780	3760	1373.0	6.0	120.00	0.00
5580	3770	4480	788.0	8.0	120.00	0.00
5590	3790	4550	378.0	24.0	120.00	0.00
5600	280	3790	844.0	8.0	120.00	0.00

5610	3800	3810	798.0	8.0	120.00	0.00	
5620	450	6980	131.0	8.0	120.00	0.00	
5630	3810	3820	740.0	8.0	120.00	0.00	
5660	3840	3850	644.0	6.0	140.00	0.00	
5670	3850	10910	406.0	6.0	140.00	0.00	
5680	3870	6930	1529.0	24.0	120.00	0.00	
5681	6930	1670	676.0	24.0	120.00	0.00	
5690	3820	3870	737.0	8.0	120.00	0.00	
5700	3870	3860	1361.0	8.0	120.00	0.00	
5710	1700	3880	362.0	8.0	120.00	0.00	
5720	3880	3890	426.0	8.0	120.00	0.00	
5730	3890	3860	387.0	8.0	120.00	0.00	
5740-XX	1680	4660	395.0	16.0	140.00	0.00	
5750	1400	3900	704.0	12.0	120.00	0.00	
5760	3890	3900	407.0	8.0	120.00	0.00	
5770	1430	3910	359.0	8.0	120.00	0.00	
5780	3900	3990	1207.0	8.0	120.00	0.00	
5810	1410	3940	1335.0	10.0	120.00	0.00	
5820	3930	5550	799.0	8.0	120.00	0.00	
5830	1370	3950	357.0	12.0	120.00	0.00	
5840	3940	3950	900.0	8.0	120.00	0.00	
5850	3930	3960	386.0	8.0	120.00	0.00	
5860	3900	3970	355.0	12.0	120.00	0.00	
5870	3860	3970	465.0	8.0	120.00	0.00	
5880	3970	3960	1208.0	8.0	120.00	0.00	
5890	1460	3980	562.0	16.0	120.00	0.00	
5900	3990	5560	906.0	8.0	120.00	0.00	
5910	3980	3990	932.0	8.0	120.00	0.00	
5920	3990	3960	314.0	8.0	120.00	0.00	
5950	50	4020	633.0	12.0	120.00	0.00	
5960	50	4030	698.0	12.0	120.00	0.00	
5970	4040	4280	144.0	12.0	120.00	0.00	
5980-BN	4040	0	307.0	12.0	120.00	0.00	240.00
5990	570	4820	227.0	24.0	120.00	0.00	
6000	600	4820	768.0	16.0	140.00	0.00	
6010	4050	6970	1918.0	8.0	120.00	0.00	
6020	450	4050	482.0	8.0	120.00	0.00	
6030	4050	4640	785.0	8.0	120.00	0.00	
6040	390	4050	1288.0	8.0	120.00	0.00	
6050	3840	4670	395.0	8.0	140.00	0.00	
6090	3970	6910	709.0	12.0	120.00	0.00	
6100	1710	1390	1711.0	12.0	120.00	0.00	
6110	1670	1390	2229.0	20.0	120.00	0.00	
6130	1370	5620	2179.0	12.0	120.00	0.00	
6140	3930	5610	1074.0	8.0	120.00	0.00	
6160	1700	4080	624.0	8.0	140.00	0.00	
6180	4090	4840	335.0	8.0	120.00	0.00	
6190	1400	4090	846.0	12.0	120.00	0.00	
6200	1840	4100	1836.0	16.0	120.00	0.00	
6210-BN	4100	0	389.0	20.0	120.00	0.00	245.00
6220-BN	2620	0	429.0	20.0	120.00	0.00	240.00
6230	4110	6400	2085.0	24.0	120.00	0.00	
6240-BN	4110	0	354.0	12.0	120.00	0.00	237.00
6250	1290	5740	1745.0	18.0	120.00	0.00	

6260	1290	5730	678.0	18.0	120.00	0.00
6270	1200	1110	4448.0	18.0	120.00	0.00
6280	4150	4160	1367.0	8.0	120.00	0.00
6290	4260	4320	301.0	10.0	120.00	0.00
6300	4260	4270	445.0	10.0	120.00	0.00
6310	70	4280	221.0	12.0	120.00	0.00
6320	4280	4360	353.0	6.0	120.00	0.00
6340	4260	4310	975.0	10.0	120.00	0.00
6350	10	4320	391.0	10.0	120.00	0.00
6360	4310	4430	838.0	8.0	120.00	0.00
6390	4290	4350	383.0	8.0	120.00	0.00
6400	4350	4300	936.0	8.0	120.00	0.00
6410	4290	4360	1318.0	6.0	120.00	0.00
6420	4360	4370	773.0	8.0	120.00	0.00
6430	4350	4370	2442.0	8.0	120.00	0.00
6440	4380	11020	2093.0	12.0	120.00	0.00
6450	110	4390	1596.0	12.0	120.00	0.00
6460	60	4400	876.0	12.0	120.00	0.00
6470	4400	4410	667.0	12.0	120.00	0.00
6480	30	4420	1987.0	10.0	120.00	0.00
6490	4320	4430	970.0	8.0	120.00	0.00
6500	100	4440	1356.0	12.0	120.00	0.00
6510	160	4450	1588.0	12.0	120.00	0.00
6520	210	4460	401.0	12.0	120.00	0.00
6540	4170	4480	767.0	8.0	120.00	0.00
6550	180	4490	2753.0	12.0	120.00	0.00
6560	180	4500	644.0	8.0	120.00	0.00
6570	250	4510	619.0	8.0	120.00	0.00
6580	6760	4520	551.0	8.0	120.00	0.00
6590	350	4530	716.0	24.0	120.00	0.00
6600	4530	4540	1028.0	24.0	120.00	0.00
6610	4540	4550	466.0	24.0	120.00	0.00
6620	290	4560	650.0	8.0	120.00	0.00
6630	190	4570	1458.0	12.0	120.00	0.00
6640	190	4580	686.0	12.0	120.00	0.00
6650	4590	4610	1968.0	24.0	140.00	0.00
6660	380	4600	768.0	12.0	120.00	0.00
6670	4610	4700	476.0	24.0	140.00	0.00
6680	400	4620	691.0	8.0	120.00	0.00
6690	440	4630	1582.0	8.0	120.00	0.00
6700	4630	4640	401.0	8.0	120.00	0.00
6710	440	4650	727.0	16.0	120.00	0.00
6720	3880	4660	614.0	8.0	120.00	0.00
6730	4060	4670	614.0	8.0	140.00	0.00
6740	4620	4680	783.0	8.0	120.00	0.00
6750	360	4690	1720.0	8.0	120.00	0.00
6760	360	4700	391.0	24.0	140.00	0.00
6770	400	4710	603.0	16.0	120.00	0.00
6780	470	4740	1948.0	8.0	120.00	0.00
6790	4730	10620	701.0	8.0	120.00	0.00
6800	4720	4760	583.0	24.0	120.00	0.00
6810	4730	4740	627.0	8.0	120.00	0.00
6820	380	4750	1037.0	16.0	120.00	0.00
6830	4740	4770	667.0	8.0	120.00	0.00



6840	4730	4760	658.0	8.0	120.00	0.00
6850	4750	4770	1130.0	8.0	120.00	0.00
6860	1970	4780	1686.0	12.0	120.00	0.00
6870	620	4780	2023.0	12.0	120.00	0.00
6880	4790	4800	753.0	8.0	120.00	0.00
6890	500	4800	1458.0	8.0	120.00	0.00
6900	500	4810	655.0	8.0	120.00	0.00
6910	3870	4820	1372.0	24.0	120.00	0.00
6920	4830	10600	794.0	16.0	120.00	0.00
6930	4840	4850	446.0	8.0	120.00	0.00
6940	4850	5090	732.0	8.0	120.00	0.00
6950	530	4860	1307.0	8.0	120.00	0.00
6960	4860	4870	593.0	8.0	120.00	0.00
6970	1790	4880	659.0	24.0	120.00	0.00
6980	4780	4890	995.0	12.0	120.00	0.00
6990	1850	4900	1148.0	12.0	120.00	0.00
7000	680	4910	699.0	8.0	120.00	0.00
7010	3390	4920	330.0	8.0	120.00	0.00
7020	3360	4930	785.0	8.0	120.00	0.00
7030	4940	5010	392.0	16.0	120.00	0.00
7040	3390	5030	486.0	8.0	120.00	0.00
7050	3370	4950	332.0	8.0	120.00	0.00
7060	650	4950	1999.0	8.0	120.00	0.00
7070	4960	6620	249.0	8.0	120.00	0.00
7080	4830	4970	316.0	16.0	120.00	0.00
7090	4090	4970	688.0	12.0	120.00	0.00
7100	1860	4980	624.0	12.0	120.00	0.00
7110	4970	6650	1035.0	12.0	120.00	0.00
7120	4980	4990	984.0	12.0	120.00	0.00
7130	3400	5000	732.0	8.0	120.00	0.00
7140	4900	5000	497.0	8.0	120.00	0.00
7150	3480	5010	385.0	16.0	120.00	0.00
7160	3400	5020	433.0	8.0	120.00	0.00
7170	4960	5030	499.0	8.0	120.00	0.00
7180	2010	5040	1524.0	8.0	120.00	0.00
7190	4990	5070	645.0	6.0	120.00	0.00
7200	3230	5060	687.0	8.0	120.00	0.00
7210	5050	5060	1067.0	6.0	120.00	0.00
7220	5050	5070	466.0	6.0	120.00	0.00
7230	1760	5080	777.0	16.0	120.00	0.00
7240	3310	5090	730.0	8.0	120.00	0.00
7250	5100	5110	681.0	16.0	120.00	0.00
7260	5110	5120	1090.0	16.0	120.00	0.00
7270	5120	5240	1517.0	16.0	120.00	0.00
7280	3350	5130	423.0	10.0	120.00	0.00
7290	5140	5150	276.0	16.0	120.00	0.00
7300	5150	7030	415.0	16.0	120.00	0.00
7310	5160	5180	406.0	8.0	120.00	0.00
7320	3130	5170	278.0	12.0	120.00	0.00
7330	3220	5180	499.0	8.0	120.00	0.00
7340	4900	5190	1126.0	12.0	120.00	0.00
7350	5200	5240	1002.0	8.0	120.00	0.00
7360	1940	5210	1484.0	8.0	120.00	0.00
7370	5210	5220	315.0	8.0	120.00	0.00

7380	5220	5200	1253.0	8.0	120.00	0.00
7390	5210	5230	346.0	8.0	120.00	0.00
7400	5230	4900	599.0	8.0	120.00	0.00
7410	1780	5240	497.0	8.0	120.00	0.00
7420	1780	5240	490.0	16.0	120.00	0.00
7430	1050	5250	2172.0	8.0	120.00	0.00
7440	5260	10540	1372.0	16.0	120.00	0.00
7450	920	5270	887.0	12.0	120.00	0.00
7460	1030	5280	1785.0	16.0	120.00	0.00
7470	5290	5300	479.0	8.0	120.00	0.00
7480	5300	5370	411.0	8.0	120.00	0.00
7490	1320	5310	697.0	8.0	120.00	0.00
7500	880	5320	472.0	12.0	120.00	0.00
7510	1360	5330	295.0	6.0	120.00	0.00
7520	5320	5340	976.0	12.0	120.00	0.00
7530	5340	5350	253.0	12.0	120.00	0.00
7540	1070	5360	794.0	18.0	120.00	0.00
7550	5310	5370	364.0	8.0	120.00	0.00
7560	1200	5380	996.0	18.0	120.00	0.00
7570	5390	5600	539.0	18.0	120.00	0.00
7580	5400	5510	1294.0	18.0	120.00	0.00
7590	1370	5410	260.0	6.0	140.00	0.00
7600	5410	5420	527.0	6.0	140.00	0.00
7610	740	10820	399.0	6.0	120.00	0.00
7640	5430	5460	1110.0	6.0	140.00	0.00
7650	5450	5460	1923.0	6.0	120.00	0.00
7660	1380	5470	900.0	18.0	120.00	0.00
7670	5430	5470	857.0	6.0	140.00	0.00
7680	5430	5480	699.0	6.0	120.00	0.00
7700	5480	5490	653.0	6.0	120.00	0.00
7710	5450	10810	311.0	8.0	120.00	0.00
7720	5450	5500	1074.0	8.0	120.00	0.00
7730	1380	5510	465.0	18.0	120.00	0.00
7740	5500	5510	979.0	8.0	120.00	0.00
7750	5330	5520	2006.0	6.0	120.00	0.00
7760	5520	5530	380.0	6.0	120.00	0.00
7770	5530	5350	855.0	8.0	120.00	0.00
7780	3980	5540	1641.0	16.0	140.00	0.00
7790	3940	5550	992.0	8.0	120.00	0.00
7800	3910	5560	884.0	8.0	120.00	0.00
7810	3320	5570	652.0	8.0	120.00	0.00
7820	5580	5590	751.0	12.0	120.00	0.00
7830	5590	5650	1152.0	12.0	120.00	0.00
7840	5400	5600	694.0	18.0	120.00	0.00
7850	1380	5610	2069.0	8.0	120.00	0.00
7860	5620	10700	1505.0	12.0	120.00	0.00
7870	5630	7020	512.0	12.0	120.00	0.00
7880	1500	5640	430.0	8.0	120.00	0.00
7890	1480	5650	567.0	12.0	120.00	0.00
7910	4250	5670	1143.0	8.0	120.00	0.00
7930	1250	5690	569.0	8.0	120.00	0.00
7940	5690	5700	322.0	8.0	120.00	0.00
7950	1210	5710	1465.0	18.0	120.00	0.00
7970	1110	5730	833.0	18.0	120.00	0.00

7980	1570	5740	390.0	18.0	120.00	0.00
7990	5750	10880	373.0	8.0	120.00	0.00
8000	5750	5760	633.0	8.0	120.00	0.00
8010	3250	5770	409.0	8.0	120.00	0.00
8020	1610	5780	599.0	12.0	120.00	0.00
8030	3100	5790	1266.0	8.0	120.00	0.00
8040	3110	5800	685.0	8.0	120.00	0.00
8050	3110	5810	480.0	8.0	120.00	0.00
8060	5810	5820	1523.0	8.0	120.00	0.00
8070	5820	3100	2148.0	8.0	120.00	0.00
8080	1660	5830	432.0	8.0	120.00	0.00
8090	5830	5840	488.0	8.0	120.00	0.00
8100	5840	6680	365.0	8.0	120.00	0.00
8110	5850	1590	446.0	8.0	120.00	0.00
8120	5860	10870	795.0	12.0	120.00	0.00
8130	5870	6670	831.0	8.0	120.00	0.00
8140	3130	5880	826.0	8.0	120.00	0.00
8150	3090	5890	685.0	8.0	120.00	0.00
8160	5900	5910	635.0	8.0	140.00	0.00
8170	5910	5920	887.0	8.0	140.00	0.00
8180	2980	5920	585.0	8.0	140.00	0.00
8190	2980	5930	1132.0	8.0	140.00	0.00
8200	5930	5940	635.0	8.0	140.00	0.00
8210	2870	5950	858.0	8.0	120.00	0.00
8220	2760	5960	704.0	24.0	120.00	0.00
8230	2730	5970	549.0	8.0	120.00	0.00
8240	2600	5980	841.0	12.0	120.00	0.00
8250	5990	6070	361.0	8.0	120.00	0.00
8260	2630	6000	454.0	8.0	140.00	0.00
8270	2660	6010	968.0	8.0	120.00	0.00
8280	2850	6020	674.0	16.0	120.00	0.00
8290	6030	6040	1376.0	8.0	120.00	0.00
8300	2860	6040	555.0	8.0	120.00	0.00
8310	2860	6050	361.0	24.0	120.00	0.00
8320	3180	6060	717.0	8.0	120.00	0.00
8330	2870	6070	761.0	8.0	120.00	0.00
8340	2580	6080	531.0	8.0	120.00	0.00
8350	2700	6090	595.0	20.0	120.00	0.00
8360	6100	6110	506.0	8.0	120.00	0.00
8370	2690	6110	473.0	8.0	120.00	0.00
8390	2760	6130	780.0	20.0	120.00	0.00
8400	6130	6140	518.0	20.0	120.00	0.00
8410	6150	6160	410.0	20.0	120.00	0.00
8420	2690	6160	385.0	20.0	120.00	0.00
8430	2450	6170	516.0	20.0	120.00	0.00
8440	6170	6180	234.0	20.0	120.00	0.00
8450	2710	6190	1026.0	8.0	120.00	0.00
8460	2720	6200	1657.0	8.0	120.00	0.00
8470	2330	6210	1623.0	8.0	120.00	0.00
8490	2480	6240	1423.0	16.0	120.00	0.00
8500	2420	6250	1142.0	20.0	120.00	0.00
8510	6250	6260	713.0	8.0	120.00	0.00
8520	2300	6270	606.0	12.0	120.00	0.00
8530	6280	6330	735.0	12.0	120.00	0.00



8540	2340	6290	1575.0	8.0	120.00	0.00
8550	2260	6300	713.0	12.0	120.00	0.00
8560	6310	6420	754.0	12.0	120.00	0.00
8570	2180	6320	289.0	12.0	120.00	0.00
8580	2270	6330	1044.0	12.0	120.00	0.00
8590	2240	6340	1274.0	8.0	120.00	0.00
8600	6320	6350	1376.0	12.0	120.00	0.00
8610	2160	6360	453.0	12.0	120.00	0.00
8620	6350	6370	684.0	12.0	120.00	0.00
8630	6380	6430	2184.0	24.0	120.00	0.00
8640	2090	6390	1696.0	8.0	120.00	0.00
8650	6380	6400	971.0	24.0	120.00	0.00
8660	2070	6410	2522.0	8.0	120.00	0.00
8670	2070	6420	1265.0	12.0	120.00	0.00
8680	6430	6440	1327.0	24.0	120.00	0.00
8690	2080	6440	713.0	24.0	120.00	0.00
8700	2080	6450	860.0	24.0	120.00	0.00
8710	6460	6470	1092.0	12.0	120.00	0.00
8720	2060	6470	304.0	12.0	120.00	0.00
8730	1870	6480	2849.0	12.0	120.00	0.00
8740	3510	6490	650.0	8.0	120.00	0.00
8750	6500	6510	927.0	12.0	120.00	0.00
8760	6510	10920	1349.0	12.0	120.00	0.00
8770	1900	6520	244.0	12.0	120.00	0.00
8780	1870	6530	807.0	12.0	120.00	0.00
8790	6460	6540	331.0	12.0	120.00	0.00
8800	3570	6550	1102.0	8.0	120.00	0.00
8810	6560	6570	1590.0	8.0	120.00	0.00
8820	6570	6580	380.0	8.0	120.00	0.00
8830	6580	6590	245.0	8.0	120.00	0.00
8840	4200	6590	156.0	8.0	120.00	0.00
8850	1990	6600	940.0	12.0	120.00	0.00
8860	3480	6610	683.0	8.0	120.00	0.00
8870	4940	6620	528.0	8.0	120.00	0.00
8880	4880	6630	407.0	24.0	120.00	0.00
8890	4920	6640	418.0	8.0	120.00	0.00
8900	4990	6650	451.0	12.0	120.00	0.00
8910	5200	6660	799.0	8.0	120.00	0.00
8920	3250	6670	956.0	8.0	120.00	0.00
8930	5850	6680	376.0	8.0	120.00	0.00
8960	6690	6710	12.6	24.0	120.00	0.30
8980	6710	6730	6.7	24.0	120.00	0.30
9000	1670	10850	1814.0	20.0	120.00	0.00
9010	6730	330	100.0	24.0	120.00	1.60
9020	350	6760	810.0	24.0	120.00	0.50
9030	6760	6770	535.0	30.0	120.00	0.00
9040	6830	6770	89.0	36.0	100.00	0.00
9060	6750	6790	114.0	36.0	120.00	0.00
9080	6790	6810	87.0	36.0	120.00	0.00
9100	6810	6830	70.0	36.0	120.00	0.00
9120	2480	6230	1166.0	8.0	120.00	0.00
9130	6230	2540	748.0	8.0	120.00	0.00
9140	4160	4310	528.0	10.0	120.00	0.00
9150-BNPU	0	6690	27.0	14.0	120.00	2.90

89.00

9160-BNPU	0	6710	27.0	10.0	120.00	3.50	89.00
9170-BNPU	0	6730	27.0	12.0	120.00	2.90	89.00
9220	1470	5590	383.0	6.0	120.00	0.00	
9230	5590	5600	2526.0	6.0	120.00	0.00	
9240	5050	5080	1061.0	6.0	120.00	0.00	
9250	5080	5090	679.0	6.0	120.00	0.00	
9260	1580	1570	6880.0	8.0	120.00	0.00	
9270	3060	6850	1391.0	8.0	120.00	0.00	
9280	2990	6850	3165.0	8.0	120.00	0.00	
9290	1880	6520	1853.0	8.0	120.00	0.00	
9300	3240	10750	1332.0	12.0	120.00	0.00	
9310	840	6860	1351.0	6.0	120.00	0.00	
9320	800	6860	436.0	6.0	120.00	0.00	
9330	810	6860	1283.0	8.0	120.00	0.00	
9340	2240	2200	1218.0	8.0	120.00	0.00	
9410-BNPU	0	6750	18.0	16.0	120.00	2.60	120.00
9420-BNPU	0	6790	18.0	16.0	120.00	2.60	120.00
9430-BNPU	0	6810	18.0	14.0	120.00	2.60	120.00
9440-BNPU	0	6830	18.0	14.0	120.00	2.60	120.00
9460	6910	6920	644.0	12.0	120.00	0.00	
9470	3850	6910	1133.0	4.0	100.00	0.00	
9480	1390	6920	394.0	12.0	120.00	0.00	
9490	3840	6920	1133.0	4.0	100.00	0.00	
9500	5490	1390	976.0	12.0	100.00	0.00	
9510	5470	1390	1902.0	18.0	100.00	0.00	
9520	6930	3800	728.0	8.0	120.00	0.00	
9550	6950	6990	455.0	8.0	120.00	0.00	
9560	6970	7000	250.0	8.0	120.00	0.00	
9570	6960	6970	521.0	4.0	120.00	0.00	
9580	6980	7010	251.0	8.0	120.00	0.00	
9590	6970	6980	640.0	4.0	120.00	0.00	
9600	6960	6990	250.0	8.0	120.00	0.00	
9610	430	7000	454.0	8.0	120.00	0.00	
9620	6990	7000	517.0	4.0	120.00	0.00	
9630	3800	7010	453.0	8.0	120.00	0.00	
9640	7000	7010	651.0	4.0	120.00	0.00	
9650	1440	1510	269.0	12.0	120.00	0.00	
9660	1520	7020	1509.0	12.0	120.00	0.00	
9670	1470	7020	194.0	8.0	120.00	0.00	
9680	3280	7030	719.0	16.0	120.00	0.00	
9690	3340	7030	206.0	12.0	120.00	0.00	
9700	3430	1810	230.0	8.0	120.00	0.00	
9710	1810	3470	643.0	8.0	120.00	0.00	
9720	6490	7040	388.0	8.0	120.00	0.00	
9730	1810	7040	2637.0	24.0	120.00	0.00	
9740	7040	2080	2691.0	24.0	120.00	0.00	
9750	3570	6460	1411.0	6.0	120.00	0.00	
9760	3570	1930	2090.0	8.0	120.00	0.00	
10001-XXPU	0	10000	50.0	20.0	140.00	0.00	130.00
10002-XXPU	0	10010	50.0	20.0	140.00	0.00	130.00
10003-XXPU	0	10020	50.0	20.0	140.00	0.00	130.00
10004-XXPU	0	10030	50.0	20.0	140.00	0.00	130.00
10100	10000	10010	10.0	36.0	140.00	0.00	
10110	10010	10020	10.0	36.0	140.00	0.00	

10120	10020	10030	10.0	36.0	140.00	0.00
10130	10030	10040	10.0	36.0	140.00	0.00
10140	10040	10050	10.0	36.0	140.00	0.00
10150	10050	10060	10.0	36.0	140.00	0.00
10160	10060	10070	10.0	36.0	140.00	0.00
10170	10070	10080	10.0	36.0	140.00	0.00
10180	10080	10090	10.0	36.0	140.00	0.00
10190	10090	10100	10.0	36.0	140.00	0.00
10200	10100	10110	10.0	36.0	140.00	0.00
10210	10110	10120	887.0	36.0	140.00	0.00
10220	10000	10130	795.0	42.0	140.00	0.00
10230	10130	10140	908.0	42.0	140.00	0.00
10240	10150	10140	2806.0	12.0	140.00	0.00
10250	10160	10150	2636.0	12.0	140.00	0.00
10260-XX	10160	10170	2638.0	12.0	140.00	0.00
10270	10170	10180	2787.0	12.0	140.00	0.00
10280-XX	10180	10120	2342.0	36.0	140.00	0.00
10290	10180	10190	1329.0	36.0	140.00	0.00
10300	10190	10200	2039.0	24.0	140.00	0.00
10310	10200	10210	1925.0	24.0	140.00	0.00
10320	10210	10220	649.0	24.0	140.00	0.00
10330	10220	10230	2729.0	20.0	140.00	0.00
10340	10230	10240	3073.0	16.0	140.00	0.00
10350	10240	10250	1984.0	16.0	140.00	0.00
10360	10250	10260	2970.0	16.0	140.00	0.00
10370	10270	10260	2417.0	16.0	140.00	0.00
10390	10270	10280	1589.0	16.0	140.00	0.00
10400	10280	4230	2294.0	16.0	140.00	0.00
10410	10250	10290	2040.0	12.0	140.00	0.00
10420	10290	10300	1944.0	12.0	140.00	0.00
10430	10300	4220	1873.0	12.0	140.00	0.00
10440	6330	2280	1258.0	12.0	140.00	0.00
10450	2510	2650	1495.0	8.0	140.00	0.00
10460	2650	6120	1329.0	8.0	140.00	0.00
10470	6120	2640	2623.0	8.0	140.00	0.00
10480	6770	310	511.0	36.0	140.00	0.00
10490-XX	760	750	524.0	12.0	140.00	0.00
10500	890	1050	1402.0	12.0	140.00	0.00
10510	960	10310	734.0	12.0	140.00	0.00
10520	1010	1000	787.0	12.0	140.00	0.00
10530	4120	10320	2757.0	12.0	140.00	0.00
10540-XX	10310	10320	2609.0	12.0	140.00	0.00
10550-XX	10320	10330	4597.0	12.0	140.00	0.00
10560	10330	10340	3535.0	12.0	140.00	0.00
10570	10340	10900	2546.0	12.0	140.00	0.00
10580	4020	10350	2644.0	16.0	140.00	0.00
10590	10350	10360	2619.0	16.0	140.00	0.00
10600	10360	3750	2591.0	16.0	140.00	0.00
10610	4820	1680	829.0	16.0	140.00	0.00
10620	360	4760	1706.0	24.0	140.00	0.00
10630-XX	4720	10370	2277.0	24.0	140.00	0.00
10640	10370	620	3007.0	12.0	140.00	0.00
10650	6400	2410	1248.0	12.0	140.00	0.00
10660-XX	2150	10770	1515.0	12.0	140.00	0.00

10670	10380	10390	2701.0	16.0	140.00	0.00
10680	10390	10140	2648.0	24.0	140.00	0.00
10690	10390	10190	5844.0	16.0	140.00	0.00
10700-XX	6430	2050	3003.0	36.0	140.00	0.00
10710	2050	10400	2708.0	36.0	140.00	0.00
10720	10400	10410	5290.0	36.0	140.00	0.00
10730-XX	10410	10140	5276.0	42.0	140.00	0.00
10740	4210	10420	2854.0	12.0	140.00	0.00
10750	10420	10220	3043.0	12.0	140.00	0.00
10760	10170	10430	5301.0	12.0	140.00	0.00
10790	10450	10460	2227.0	12.0	140.00	0.00
10800	10460	10470	2586.0	12.0	140.00	0.00
10810	10470	10190	2709.0	12.0	140.00	0.00
10920	10530	10800	1633.0	12.0	120.00	0.00
10930	1040	10530	1634.0	12.0	140.00	0.00
10940	910	5250	1304.0	8.0	140.00	0.00
10950	5280	10540	404.0	16.0	120.00	0.00
10960-XX	5250	10540	1488.0	8.0	140.00	0.00
10970	900	10550	1446.0	8.0	140.00	0.00
10980-XX	10550	5260	1354.0	8.0	140.00	0.00
11010	4390	10570	1219.0	12.0	140.00	0.00
11020	4140	10570	1698.0	8.0	140.00	0.00
11030	230	10580	1153.0	20.0	140.00	0.00
11040	4180	10580	730.0	8.0	140.00	0.00
11050-XX	5110	6670	2201.0	8.0	140.00	0.00
11060	3190	10590	303.0	12.0	120.00	0.00
11070-XX	6670	10590	711.0	8.0	140.00	0.00
11080-XX	1850	5070	1084.0	12.0	140.00	0.00
11090	5080	10600	371.0	16.0	120.00	0.00
11100-XX	5070	10600	1047.0	12.0	140.00	0.00
11110-XX	6570	10370	5535.0	24.0	140.00	0.00
11130	4720	10620	444.0	8.0	120.00	0.00
11140	490	10620	2162.0	8.0	140.00	0.00
11150	2310	6250	1295.0	20.0	140.00	0.00
11160	10250	10630	2755.0	12.0	140.00	0.00
11170	10630	10510	1947.0	12.0	140.00	0.00
11230	2970	3030	844.0	12.0	140.00	0.00
11240	170	10670	5648.0	16.0	120.00	0.00
11250	3640	10670	69.0	8.0	140.00	0.00
11260	10670	10680	2317.0	16.0	120.00	0.00
11270	3600	10680	79.0	8.0	140.00	0.00
11280	10580	10690	2576.0	20.0	140.00	0.00
11290	4170	10690	1128.0	8.0	140.00	0.00
11300	5490	10700	202.0	12.0	120.00	0.00
11310	5610	10700	266.0	8.0	140.00	0.00
11320	700	10710	498.0	8.0	140.00	0.00
11330	880	10720	429.0	12.0	120.00	0.00
11340	900	10730	590.0	12.0	120.00	0.00
11350	10720	10740	637.0	8.0	140.00	0.00
11360	10740	890	414.0	8.0	140.00	0.00
11370	1520	10750	2133.0	12.0	120.00	0.00
11380	3330	10760	420.0	10.0	120.00	0.00
11390	10750	10760	2157.0	12.0	140.00	0.00
11400	10380	10770	2615.0	16.0	140.00	0.00

11410	6360	10770	250.0	8.0	140.00	0.00
11430	1160	10790	1924.0	12.0	120.00	0.00
11440	1130	10790	1379.0	8.0	140.00	0.00
11450	1150	10800	277.0	12.0	120.00	0.00
11460	1140	10800	1341.0	8.0	140.00	0.00
11470-XX	5520	5340	873.0	12.0	140.00	0.00
11480	790	10810	340.0	8.0	120.00	0.00
11490	5460	10820	511.0	6.0	140.00	0.00
11500-XX	10810	10820	1470.0	12.0	140.00	0.00
11510-XX	10820	10830	714.0	12.0	140.00	0.00
11520	1710	10840	685.0	12.0	120.00	0.00
11530-XX	10830	10840	879.0	12.0	140.00	0.00
11540	10830	5480	1466.0	8.0	140.00	0.00
11550	6950	10860	845.0	24.0	120.00	0.00
11570	10590	10870	470.0	12.0	120.00	0.00
11580	1560	10880	1308.0	8.0	120.00	0.00
11590-XX	10870	10880	2209.0	8.0	140.00	0.00
11610	10570	10900	1461.0	12.0	140.00	0.00
11620	4140	10900	2582.0	8.0	140.00	0.00
11640	1200	1230	1223.0	8.0	140.00	0.00
11650	1230	1220	1141.0	8.0	140.00	0.00
11660	1220	1260	1231.0	8.0	140.00	0.00
11670	1260	1540	1892.0	8.0	140.00	0.00
11680	3860	10910	953.0	12.0	120.00	0.00
11690-XX	4660	10910	1063.0	16.0	140.00	0.00
11700	2310	6240	3384.0	12.0	140.00	0.00
11710	2040	10920	586.0	12.0	120.00	0.00
11720	2080	10920	2693.0	16.0	140.00	0.00
11730	10920	10930	2596.0	12.0	140.00	0.00
11740-XX	6570	10930	3038.0	24.0	140.00	0.00
11750-XX	10930	10400	2629.0	24.0	140.00	0.00
11760	7030	1420	1687.0	16.0	140.00	0.00
11770-XX	10600	3980	1525.0	24.0	140.00	0.00
11780	3980	5490	2766.0	30.0	140.00	0.00
11790	740	10940	691.0	12.0	120.00	0.00
11800	5490	10940	2556.0	30.0	140.00	0.00
11810	4060	11050	1187.0	16.0	120.00	0.00
11820	10460	10950	4216.0	16.0	140.00	0.00
11830	10950	10960	480.0	20.0	140.00	0.00
11840	10960	10970	5543.0	12.0	140.00	0.00
11850-XX	10970	10230	2902.0	12.0	140.00	0.00
11860	10510	10970	2684.0	12.0	140.00	0.00
11870	10630	10980	5987.0	12.0	140.00	0.00
11880-XX	10430	10460	4137.0	12.0	140.00	0.00
11890	10340	10990	8471.0	12.0	140.00	0.00
11900	4020	11030	8094.0	18.0	140.00	0.00
11910	11000	11010	4945.0	18.0	140.00	0.00
11920	4390	11020	388.0	12.0	120.00	0.00
11930	40	11020	8478.0	12.0	140.00	0.00
11940	11000	11030	4159.0	18.0	140.00	0.00
11960	330	10850	448.0	20.0	120.00	0.00
11990-XX	10850	11050	720.0	16.0	140.00	0.00
12000	4030	4150	1375.0	12.0	140.00	0.00
12020	310	340	1535.0	24.0	140.00	0.00

12030-XX	340	190	1943.0	20.0	140.00	0.00	
12040	330	320	779.0	24.0	140.00	0.00	
12050-BN	10270	0	299.0	24.0	140.00	0.00	225.00
12060	2310	6240	3651.0	16.0	140.00	0.00	

P U M P   D A T A

THERE IS A PUMP IN LINE 9150 DESCRIBED BY THE FOLLOWING DATA:

HEAD (ft)	FLOWRATE (gpm)
225.00	0.00
188.00	6300.00
140.00	8000.00

THERE IS A PUMP IN LINE 9160 DESCRIBED BY THE FOLLOWING DATA:

HEAD (ft)	FLOWRATE (gpm)
255.00	0.00
200.00	4200.00
170.00	5100.00

THERE IS A PUMP IN LINE 9170 DESCRIBED BY THE FOLLOWING DATA:

HEAD (ft)	FLOWRATE (gpm)
220.00	0.00
185.00	2100.00
117.00	3500.00

THERE IS A PUMP IN LINE 9410 DESCRIBED BY THE FOLLOWING DATA:

HEAD (ft)	FLOWRATE (gpm)
225.00	0.00
187.00	6300.00
140.00	8000.00

THERE IS A PUMP IN LINE 9420 DESCRIBED BY THE FOLLOWING DATA:

HEAD (ft)	FLOWRATE (gpm)
230.00	0.00
194.00	6300.00
135.00	8000.00

THERE IS A PUMP IN LINE 9430 DESCRIBED BY THE FOLLOWING DATA:

HEAD (ft)	FLOWRATE (gpm)
230.00	0.00
190.00	4200.00
117.00	7000.00

THERE IS A PUMP IN LINE 9440 DESCRIBED BY THE FOLLOWING DATA:

HEAD (ft)	FLOWRATE (gpm)
228.00	0.00
197.00	6300.00
152.00	9000.00

THERE IS A PUMP IN LINE 10001 DESCRIBED BY THE FOLLOWING DATA:

HEAD (ft)	FLOWRATE (gpm)
230.00	0.00
185.00	5000.00
145.00	6500.00

THERE IS A PUMP IN LINE 10002 DESCRIBED BY THE FOLLOWING DATA:

HEAD (ft)	FLOWRATE (gpm)
230.00	0.00
185.00	5000.00
145.00	6500.00

THERE IS A PUMP IN LINE 10003 DESCRIBED BY THE FOLLOWING DATA:

HEAD (ft)	FLOWRATE (gpm)
230.00	0.00
185.00	5000.00
145.00	6500.00

THERE IS A PUMP IN LINE 10004 DESCRIBED BY THE FOLLOWING DATA:

HEAD (ft)	FLOWRATE (gpm)
230.00	0.00
185.00	5000.00
145.00	6500.00

JUNCTION NODE DATA

JUNCTION NUMBER	JUNCTION TITLE	EXTERNAL DEMAND (gpm)	JUNCTION ELEVATION (ft)	CONNECTING PIPES			
10-1		28.40	100.00	30	50	6350	
20-1		0.00	100.00	20	30	40	
30-1		276.59	100.00	180	190	6480	
40-1		0.73	100.00	50	190	200	11930
50-1		0.00	100.00	80	5950	5960	
60-1		92.82	100.00	110	170	180	6460
70-1		0.00	100.00	90	140	6310	
80-1		0.61	100.00	90	110	120	
100-1		0.00	100.00	120	160	6500	
110-1		31.82	100.00	130	150	6450	
120-1		306.70	100.00	160	170	250	
130-1		0.00	100.00	350	370	5300	
140-1		0.00	100.00	340	350	5270	
150-1		0.00	100.00	330	340	5290	
160-1		0.00	100.00	330	5310	6510	
170-1		36.42	100.00	260	420	5550	11240
180-1		21.41	100.00	270	6550	6560	
190-1		1.45	100.00	300	6630	6640	12030
200-1		60.46	100.00	300	310		
210-1		18.89	100.00	310	320	6520	
220-1		12.81	100.00	150	360	370	
230-1		79.26	100.00	430	570	11030	
240-1		15.59	100.00	390	400		
250-1		92.74	100.00	410	420	450	6570
260-1		15.51	100.00	410	440	550	
270-1		44.32	100.00	430	440	580	
280-1		7.33	100.00	450	460	5600	
290-1		2.01	100.00	470	500	6620	
300-1		67.07	100.00	470	490		
310-1		45.92	100.00	520	530	10480	12020
320-1		0.00	100.00	510	520	1080	12040
330-1		0.00	100.00	510	560	9010	11960
12040							
340-1		8.51	100.00	530	540	1000	12020
12030							
350-1		114.91	100.00	560	2280	6590	9020
360-1		16.51	100.00	650	6750	6760	10620
370-1		11.41	100.00	580	590	600	
380-1		0.00	100.00	680	700	6660	6820
390-1		0.00	100.00	600	610	6040	
400-1		34.34	100.00	690	6680	6770	
420-1		41.47	100.00	630	640		
430-1		63.85	100.00	2281	2300	9610	
440-1		10.59	100.00	750	860	6690	6710
450-1		0.00	100.00	5620	6020		
460-1		0.89	100.00	700	710	740	
470-1		3.67	100.00	710	720	6780	
480-1		3.36	100.00	720	730		



490-1	28.88	100.00	730	760	880	11140
500-1	0.78	100.00	750	6890	6900	
510-1	84.75	100.00	760	770		
520-1	0.00	100.00	770	780		
530-1	7.96	100.00	780	790	940	6950
540-1	0.00	100.00	790	800	810	
550-1	0.12	100.00	810	820	900	
560-1	13.71	100.00	820	830	2400	
570-1	15.76	100.00	830	5990		
600-1	67.49	100.00	860	6000		
610-1	4.45	100.00	880	890		
620-1	78.59	100.00	890	2710	6870	10640
630-1	86.28	100.00	900	910	930	
640-1	0.00	100.00	910	920	2450	
650-1	3.90	100.00	930	960	7060	
660-1	1.40	100.00	940	950	990	
670-1	5.35	100.00	950	960	970	
680-1	15.56	100.00	980	4880	7000	
690-1	38.31	100.00	980	990	4860	4870
700-1	0.00	100.00	1000	1010	11320	
710-1	0.00	100.00	1010	1030	1060	
720-1	11.31	100.00	1020	1040		
730-1	43.01	100.00	1020	1030		
740-1	3.19	100.00	1040	1100	7610	11790
750-1	59.36	100.00	1050	1130	10490	
760-1	0.00	100.00	1050	1060	1070	10490
770-1	34.99	100.00	1070	1110	1120	
780-1	15.13	100.00	1080	1090	2360	
790-1	0.00	100.00	1100	1160	11480	
800-1	0.00	100.00	1110	1140	1150	9320
810-1	0.00	100.00	1120	1260	9330	
820-1	0.00	100.00	1130	1140		
830-1	0.00	100.00	1150	1160	1170	
840-1	10.04	100.00	1170	1180	1860	9310
850-1	17.12	100.00	1180	1190		
860-1	145.05	100.00	1190	1200		
870-1	0.34	100.00	1200	1210		
880-1	0.32	100.00	1220	1440	7500	11330
890-1	1.14	100.00	1220	1230	10500	11360
900-1	11.96	100.00	1240	10970	11340	
910-1	0.88	100.00	1240	1250	10940	
920-1	6.24	100.00	1290	7450		
930-1	15.24	100.00	1260	1270		
940-1	4.49	100.00	1270	1280		
950-1	41.54	100.00	1280	1300		
960-1	5.28	100.00	1290	1300	1310	10510
970-1	35.84	100.00	1310			
980-1	60.49	100.00	1320	1330	1370	
990-1	16.26	100.00	1330	1340	1360	
1000-1	3.06	100.00	1340	1350	10520	
1010-1	94.76	100.00	1360	1390	1400	10520
1020-1	0.59	100.00	1370	1380	1420	
1030-1	168.46	100.00	1380	1390	7460	
1040-1	13.03	100.00	1410	1430	1490	10930

1050-1	102.47	100.00	1430	1450	7430	10500
1060-1	5.16	100.00	1440	1450	1460	
1070-1	25.03	100.00	1460	1470	1500	7540
1080-1	0.00	100.00	1470	1480	1540	
1090-1	118.10	100.00	1480	1490	1560	
1100-1	19.92	100.00	1500			
1110-1	32.85	100.00	1680	1740	6270	7970
1130-1	14.14	100.00	1540	1550	11440	
1140-1	10.08	100.00	1550	1560	1570	11460
1150-1	11.51	100.00	1580	11450		
1160-1	1.51	100.00	1590	1770	11430	
1170-1	13.74	100.00	1590	1600		
1180-1	0.00	100.00	1600	1790		
1190-1	0.00	100.00	1620	1630	1800	1840
1200-1	2.81	100.00	1770	1780	6270	7560
11640						
1210-1	14.09	100.00	2090	7950		
1220-1	30.14	100.00	1670	2110	11650	11660
1230-1	11.11	100.00	1650	11640	11650	
1240-1	3.09	100.00	1650	1660	1750	
1250-1	8.10	100.00	1670	1680	7930	
1260-1	51.46	100.00	1720	11660	11670	
1290-1	57.58	100.00	1720	6250	6260	
1310-1	0.00	100.00	1610	1780	1790	1810
1320-1	0.00	100.00	1800	1820	7490	
1330-1	0.00	100.00	1820	1830	1850	
1340-1	6.72	100.00	1830	1840	1890	2050
1350-1	91.13	100.00	1860	1870		
1360-1	3.22	100.00	1880	7510		
1370-1	6.42	100.00	5830	6130	7590	
1380-1	0.00	100.00	1930	7660	7730	7850
1390-1	1.29	100.00	6100	6110	9480	9500
9510						
1400-1	1.18	100.00	2000	2350	5750	6190
1410-1	0.29	100.00	1930	5810		
1420-1	1.38	100.00	1940	1960	1990	11760
1430-1	0.00	100.00	1950	5770		
1440-1	7.80	100.00	1960	1970	2010	9650
1450-1	0.00	100.00	1970	1980	2020	
1460-1	0.00	100.00	2000	5890		
1470-1	34.67	100.00	2010	2030	9220	9670
1480-1	3.29	100.00	2040	2060	2100	7890
1490-1	0.00	100.00	2030	2040	2110	
1500-1	19.21	100.00	2050	7880		
1510-1	27.82	100.00	2070	4800	9650	
1520-1	23.56	100.00	2080	2130	9660	11370
1530-1	52.25	100.00	2080	2090	2100	
1540-1	62.87	100.00	2150	2170	5260	11670
1550-1	9.76	100.00	2130	2140	4640	
1560-1	58.03	100.00	2140	5260	11580	
1570-1	2.46	100.00	2150	7980	9260	
1580-1	61.24	100.00	2170	2180	2200	9260
1590-1	0.82	100.00	2180	2190	2270	8110
1600-1	0.00	100.00	2200	2210	4340	4360

1610-1	0.00	100.00	2220	2270	4330	8020
1620-1	40.30	100.00	2220	2230	4320	
1630-1	16.13	100.00	2230	2240	4310	
1640-1	0.00	100.00	2240	2250	4350	
1650-1	0.00	100.00	2250	2260	4430	
1660-1	15.08	100.00	2260	4550	4560	8080
1670-1	0.00	100.00	2300	5681	6110	9000
1680-1	7.35	100.00	2340	5740	10610	
1700-1	25.73	100.00	2340	2350	5710	6160
1710-1	0.00	100.00	6100	11520		
1730-1	5.06	100.00	2390	4690	4740	
1740-1	3.00	100.00	2400	2410	4870	
1750-1	0.00	100.00	2410	2420	4750	4850
1760-1	9.68	100.00	2430	4670	7230	
1770-1	2.67	100.00	2440	4710		
1780-1	7.87	100.00	4400	4460	4490	7410
7420						
1790-1	0.00	100.00	2460	2480	2630	6970
1800-1	0.00	100.00	2460	2470	5060	
1810-1	0.00	100.00	2470	2680	9700	9710
9730						
1820-1	10.40	100.00	2490	4930	4960	5070
1830-1	6.68	100.00	2490	2500	2580	
1840-1	30.68	100.00	2510	2530	2610	6200
1850-1	4.38	100.00	2520	4620	6990	11080
1860-1	14.70	100.00	4910	7100		
1870-1	0.00	100.00	2540	4000	8730	8780
1880-1	60.79	100.00	2540	2550	9290	
1890-1	0.00	100.00	2550	2560	2590	
1900-1	2.03	100.00	2570	2720	8770	
1910-1	7.46	100.00	2570	2580	5080	
1920-1	26.25	100.00	2590	2600	2740	
1930-1	26.45	100.00	2600	2790	9760	
1940-1	38.79	100.00	2610	2620	4470	7360
1950-1	0.00	100.00	2630	2640	2700	4980
1960-1	8.08	100.00	2640	2650	2690	4970
1970-1	16.80	100.00	2660	6860		
1980-1	52.85	100.00	2660	2670		
1990-1	26.90	100.00	2760	2770	5120	8850
2010-1	32.28	100.00	2690	2710	7180	
2020-1	1.39	100.00	2730	5000	5050	5060
2030-1	0.00	100.00	2740	2750	5150	
2040-1	30.97	100.00	2780	11710		
2050-1	69.14	100.00	2780	2820	2900	10700
10710						
2060-1	15.73	100.00	2810	2840	2890	8720
2070-1	131.94	100.00	2800	2880	8660	8670
2080-1	66.17	100.00	8690	8700	9740	11720
2090-1	9.44	100.00	2830	2860	8640	
2100-1	3.74	100.00	2840	3870	5170	
2110-1	41.05	100.00	2850	2870	3900	
2120-1	0.20	100.00	2850	2860	3830	
2130-1	0.00	100.00	2870	2880	3110	
2140-1	13.24	100.00	3810	3840	4130	

2150-1	23.97	100.00	2900	2910	3250	10660
2160-1	27.78	100.00	2920	3240	8610	
2170-1	3.48	100.00	2920	2930	2990	3220
3260						
2180-1	8.09	100.00	2940	3040	8570	
2190-1	28.40	100.00	2950	2960	3000	
2200-1	31.59	100.00	2960	2970	9340	
2210-1	0.00	100.00	2970	2980		
2220-1	0.00	100.00	2980	2990	3030	
2230-1	8.72	100.00	3000	3010		
2240-1	10.14	100.00	3020	8590	9340	
2250-1	36.72	100.00	3020	3030		
2260-1	31.37	100.00	3050	3130	8550	
2270-1	81.74	100.00	3060	8580		
2280-1	0.00	100.00	3060	3070	10440	
2290-1	0.00	100.00	3070	3080	3140	
2300-1	4.54	100.00	3090	3150	8520	
2310-1	70.41	100.00	3090	3100	11150	11700
12060						
2320-1	38.82	100.00	3110	3120	3210	
2330-1	12.87	100.00	3120	3200	3330	8470
2340-1	29.37	100.00	3140	3160	8540	
2350-1	0.00	100.00	3150	3160	3170	
2360-1	40.89	100.00	3170	3180	3290	
2370-1	0.04	100.00	3180	3190	3210	
2380-1	70.55	100.00	3190	3200	3450	
2390-1	0.00	100.00	3220	3230	3270	
2400-1	94.07	100.00	3230	3240	3250	
2410-1	50.87	100.00	3260	3270	3280	10650
2420-1	22.24	100.00	3300	8500		
2430-1	0.00	100.00	3300	3310	3420	
2440-1	58.13	100.00	3310	3320	3450	
2450-1	0.43	100.00	3320	3340	3350	8430
2460-1	0.00	100.00	3330	3340	3710	
2470-1	32.48	100.00	3350	3400	3650	
2480-1	72.77	100.00	3370	3440	8490	9120
2490-1	0.00	100.00	3370	3380	3470	
2500-1	0.00	100.00	3390	3410	3490	
2510-1	0.00	100.00	3400	3500	3520	10450
2520-1	0.00	100.00	3380	3410	3430	
2530-1	93.08	100.00	3420	3430	3440	
2540-1	3.23	100.00	3470	3480	9130	
2550-1	0.00	100.00	3480	3490	3510	
2560-1	68.48	100.00	3390	3500	3510	
2570-1	20.51	100.00	3520	3530		
2580-1	0.00	100.00	3530	3540	8340	
2590-1	49.28	100.00	3540	3550		
2600-1	8.75	100.00	3560	3570	4140	8240
2610-1	26.74	100.00	3560	3590	4160	
2620-1	60.14	100.00	3580	3980	4110	6220
2630-1	0.00	100.00	3600	3630	8260	
2640-1	174.84	100.00	3600	3640	10470	
2650-1	7.58	100.00	10450	10460		
2660-1	1.22	100.00	3640	8270		

2670-1	20.79	100.00	3650	3660		
2680-1	2.96	100.00	3660	3670	3680	
2690-1	10.19	100.00	3690	8370	8420	
2700-1	13.94	100.00	3700	3720	8350	
2710-1	17.84	100.00	3710	3720	3730	8450
2720-1	21.68	100.00	3740	3760	8460	
2730-1	17.75	100.00	3750	3800	8230	
2740-1	81.36	100.00	3760	3770	3820	
2750-1	0.00	100.00	3770	3780	3830	
2760-1	2.66	100.00	3790	3930	8220	8390
2770-1	7.33	100.00	3810	3820	3910	3960
2780-1	30.25	100.00	2890	3840	3860	
2790-1	120.86	100.00	2830	3850	3880	
2800-1	5.33	100.00	3850	3870	3890	
2810-1	42.79	100.00	3860	3880	3890	
2820-1	104.77	100.00	3910	3920	4070	
2830-1	0.29	100.00	3920	3950	3970	4080
2840-1	34.94	100.00	3930	3940	3990	
2850-1	7.66	100.00	3940	3950	8280	
2860-1	27.04	100.00	3960	8300	8310	
2870-1	28.61	100.00	4530	8210	8330	
2880-1	0.88	100.00	4000	4010	4070	4470
2890-1	28.43	100.00	4010	4020	4480	
2900-1	40.86	100.00	4020	4030	4080	4460
2910-1	8.44	100.00	4030	4040	4090	4450
2920-1	22.57	100.00	4040	4050	4440	
2930-1	22.02	100.00	4060	4240	4510	
2940-1	1.79	100.00	4060	4100	4210	
2950-1	9.22	100.00	4100	4120	4150	
2960-1	0.00	100.00	3570	4110	4120	
2970-1	38.19	100.00	4150	4190	11230	
2980-1	26.11	100.00	4170	8180	8190	
2990-1	8.75	100.00	4170	4180	9280	
3000-1	0.63	100.00	4180	4200		
3010-1	29.83	100.00	4140	4190	4200	
3020-1	0.00	100.00	4210	4220	4230	4390
3030-1	40.82	100.00	4220	11230		
3040-1	37.13	100.00	4230	4250	4260	4310
3050-1	30.27	100.00	4240	4250	4350	
3060-1	0.00	100.00	4260	4270	9270	
3070-1	33.66	100.00	4270	4280	4320	
3080-1	0.00	100.00	4280	4290	4330	
3090-1	10.21	100.00	4300	4340	4380	8150
3100-1	5.34	100.00	4370	8030	8070	
3110-1	17.01	100.00	8040	8050		
3120-1	36.86	100.00	4400	4410	4450	
3130-1	8.11	100.00	4420	4600	7320	8140
3140-1	61.24	100.00	4420	4430	4520	4610
3150-1	47.29	100.00	4480	4500		
3160-1	0.00	100.00	2620	4490	4500	
3170-1	0.00	100.00	4050	4510	4520	4540
3180-1	0.00	100.00	4540	8320		
3190-1	58.98	100.00	4630	11060		
3200-1	40.51	100.00	4560	4570	4610	

3210-1	0.00	100.00	4570	4580	4660	
3220-1	23.85	100.00	4580	4590	7330	
3230-1	10.08	100.00	4680	7200		
3240-1	66.04	100.00	4630	4640	4650	9300
3250-1	13.51	100.00	4700	8010	8920	
3260-1	48.18	100.00	4670	4680	4720	
3270-1	47.33	100.00	4690	4700		
3280-1	47.70	100.00	4710	4720	4730	9680
3290-1	0.00	100.00	4730	4740	4820	
3300-1	15.44	100.00	4750	4760	4770	
3310-1	1.50	100.00	4780	7240		
3320-1	25.32	100.00	4790	4810	7810	
3330-1	7.10	100.00	4800	4810	11380	
3340-1	0.00	100.00	4790	4820	4840	9690
3350-1	1.35	100.00	4830	4840	7280	
3360-1	0.00	100.00	4850	4860	7020	
3370-1	0.16	100.00	4890	4920	7050	
3380-1	0.23	100.00	4890	4900	4910	
3390-1	11.35	100.00	4930	4940	7010	7040
3400-1	5.42	100.00	4950	7130	7160	
3410-1	0.00	100.00	4950	4960		
3420-1	0.00	100.00	4970	4990		
3430-1	85.10	100.00	4980	4990	5020	9700
3440-1	8.65	100.00	2720	5000	5010	
3450-1	27.25	100.00	5010	5030		
3460-1	2.77	100.00	5020	5030		
3470-1	3.40	100.00	5050	5090	9710	
3480-1	0.18	100.00	5070	7150	8860	
3490-1	0.00	100.00	5090	5110	5160	
3500-1	0.00	100.00	2680	5130		
3510-1	1.84	100.00	5120	5140	8740	
3520-1	2.03	100.00	5110	5130	5140	
3530-1	77.84	100.00	2730	5150	5160	
3540-1	1.77	100.00	5170	5190	5210	
3550-1	0.00	100.00	5180	5190	5200	5220
3560-1	38.61	100.00	2810	5200	5210	
3570-1	73.22	100.00	5230	8800	9750	9760
3580-1	0.00	100.00	5230	5250		
3590-1	41.46	100.00	2750	5240	5250	
3600-1	0.00	100.00	5340	5400	11270	
3610-1	7.88	100.00	5270	5280	5300	5320
3620-1	208.93	100.00	5310	5330	5450	
3630-1	5.57	100.00	5290	5320	5360	
3640-1	0.00	100.00	5350	5370	11250	
3650-1	9.74	100.00	5330	5360	5380	
3660-1	36.76	100.00	5340	5370	5420	
3670-1	0.00	100.00	5350	5390	5430	
3680-1	0.00	100.00	5400	5440	5480	
3690-1	0.00	100.00	5420	5430	5440	5510
3700-1	0.81	100.00	5450	5470	5500	
3710-1	0.00	100.00	5380	5460	5470	5490
3720-1	0.00	100.00	5280	5480	5490	
3730-1	0.00	100.00	5390	5500	5520	
3740-1	0.00	100.00	5460	5510	5520	

3750-1	8.73	100.00	5530	5540	10600	
3760-1	4.79	100.00	5540	5570		
3770-1	4.60	100.00	5550	5560	5580	
3780-1	0.00	100.00	5560	5570		
3790-1	0.00	100.00	550	5590	5600	
3800-1	12.92	100.00	5610	9520	9630	
3810-1	0.00	100.00	5610	5630		
3820-1	0.16	100.00	5630	5690		
3840-1	12.81	100.00	5660	6050	9490	
3850-1	5.47	100.00	5660	5670	9470	
3860-1	0.00	100.00	5700	5730	5870	11680
3870-1	42.70	100.00	5680	5690	5700	6910
3880-1	0.16	100.00	5710	5720	6720	
3890-1	0.00	100.00	5720	5730	5760	
3900-1	0.00	100.00	5750	5760	5780	5860
3910-1	24.15	100.00	1940	5770	7800	
3930-1	0.05	100.00	5820	5850	6140	
3940-1	236.77	100.00	1950	5810	5840	7790
3950-1	6.09	100.00	1980	5830	5840	
3960-1	0.57	100.00	5850	5880	5920	
3970-1	6.00	100.00	5860	5870	5880	6090
3980-1	1.84	100.00	5890	5910	7780	11770.
11780						
3990-1	13.51	100.00	5780	5900	5910	5920
4020-1	0.00	100.00	5950	10580	11900	
4030-1	0.00	100.00	5960	12000		
4040-1	0.00	100.00	200	5970	5980	
4050-1	13.03	100.00	6010	6020	6030	6040
4060-1	19.81	100.00	6730	11810		
4080-1	0.00	100.00	4760	6160		
4090-1	9.81	100.00	4770	6180	6190	7090
4100-1	68.51	100.00	2500	6200	6210	
4110-1	9.24	100.00	2800	6230	6240	
4120-1	53.97	100.00	1350	10530		
4130-1	30.91	100.00	1400			
4140-1	20.84	100.00	130	11020	11620	
4150-1	19.15	100.00	20	6280	12000	
4160-1	0.77	100.00	6280	9140		
4170-1	10.82	100.00	6540	11290		
4180-1	28.17	100.00	390	11040		
4190-1	13.31	100.00	630			
4200-1	51.91	100.00	8840			
4210-1	7.52	100.00	2950	10740		
4220-1	17.40	100.00	3100	10430		
4230-1	99.12	100.00	3360	10400		
4250-1	2.00	100.00	7910			
4260-1	8.53	100.00	6290	6300	6340	
4270-1	1.99	100.00	6300			
4280-1	0.90	100.00	5970	6310	6320	
4290-1	24.33	100.00	6390	6410		
4300-1	0.09	100.00	6400			
4310-1	28.99	100.00	6340	6360	9140	
4320-1	2.04	100.00	6290	6350	6490	
4350-1	5.72	100.00	6390	6400	6430	

4360-1	12.42	100.00	6320	6410	6420
4370-1	4.78	100.00	6420	6430	
4380-1	108.46	100.00	140	6440	
4390-1	57.23	100.00	6450	11010	11920
4400-1	0.62	100.00	6460	6470	
4410-1	80.04	100.00	80	6470	
4420-1	5.80	100.00	40	6480	
4430-1	38.83	100.00	6360	6490	
4440-1	0.00	100.00	360	6500	
4450-1	0.64	100.00	320	6510	
4460-1	0.00	100.00	6520		
4480-1	0.00	100.00	5580	6540	
4490-1	14.05	100.00	260	6550	
4500-1	0.00	100.00	490	6560	
4510-1	3.03	100.00	400	6570	
4520-1	16.46	100.00	500	6580	
4530-1	11.85	100.00	6590	6600	
4540-1	19.01	100.00	6600	6610	
4550-1	1.90	100.00	5590	6610	
4560-1	6.74	100.00	460	6620	
4570-1	6.77	100.00	270	6630	
4580-1	42.86	100.00	540	6640	
4590-1	60.10	100.00	570	6650	
4600-1	14.34	100.00	590	6660	
4610-1	6.59	100.00	6650	6670	
4620-1	10.12	100.00	6680	6740	
4630-1	14.40	100.00	6690	6700	
4640-1	0.00	100.00	6030	6700	
4650-1	14.09	100.00	690	6710	
4660-1	8.95	100.00	5740	6720	11690
4670-1	1.96	100.00	6050	6730	
4680-1	44.01	100.00	610	6740	
4690-1	4.18	100.00	640	6750	
4700-1	9.79	100.00	6670	6760	
4710-1	14.07	100.00	680	6770	
4720-1	40.83	100.00	6800	10630	11130
4730-1	29.50	100.00	6790	6810	6840
4740-1	1.69	100.00	6780	6810	6830
4750-1	1.93	100.00	650	6820	6850
4760-1	26.26	100.00	6800	6840	10620
4770-1	5.07	100.00	6830	6850	
4780-1	6.05	100.00	6860	6870	6980
4790-1	8.63	100.00	740	6880	
4800-1	0.01	100.00	6880	6890	
4810-1	16.03	100.00	800	6900	
4820-1	0.00	100.00	5990	6000	6910 10610
4830-1	1.88	100.00	6920	7080	
4840-1	0.26	100.00	6180	6930	
4850-1	1.72	100.00	6930	6940	
4860-1	0.00	100.00	6950	6960	
4870-1	14.86	100.00	920	6960	
4880-1	6.36	100.00	6970	8880	
4890-1	21.13	100.00	2650	6980	
4900-1	2.42	100.00	6990	7140	7340 7400



4910-1	0.00	100.00	970	7000			
4920-1	11.98	100.00	7010	8890			
4930-1	0.00	100.00	4900	7020			
4940-1	8.47	100.00	2480	7030	8870		
4950-1	0.00	100.00	4880	7050	7060		
4960-1	27.44	100.00	7070	7170			
4970-1	104.02	100.00	2420	7080	7090	7110	
4980-1	24.30	100.00	2520	7100	7120		
4990-1	0.00	100.00	7120	7190	8900		
5000-1	35.61	100.00	7130	7140			
5010-1	0.00	100.00	7030	7150			
5020-1	2.94	100.00	4940	7160			
5030-1	10.29	100.00	7040	7170			
5040-1	24.33	100.00	2700	7180			
5050-1	0.41	100.00	7210	7220	9240		
5060-1	44.94	100.00	4620	7200	7210		
5070-1	1.54	100.00	7190	7220	11080	11100	
5080-1	0.57	100.00	7230	9240	9250	11090	
5090-1	37.89	100.00	6940	7240	9250		
5100-1	21.50	100.00	2440	7250			
5110-1	11.46	100.00	7250	7260	11050		
5120-1	0.00	100.00	7260	7270			
5130-1	1.68	100.00	2390	7280			
5140-1	0.18	100.00	2430	7290			
5150-1	2.04	100.00	7290	7300			
5160-1	0.02	100.00	4600	7310			
5170-1	0.00	100.00	4410	7320			
5180-1	0.67	100.00	7310	7330			
5190-1	1.82	100.00	2510	7340			
5200-1	12.23	100.00	7350	7380	8910		
5210-1	2.99	100.00	7360	7370	7390		
5220-1	3.86	100.00	7370	7380			
5230-1	0.00	100.00	7390	7400			
5240-1	42.21	100.00	7270	7350	7410	7420	
5250-1	31.86	100.00	1420	7430	10940	10960	
5260-1	2.29	100.00	1410	7440	10980		
5270-1	16.94	100.00	1250	7450			
5280-1	18.26	100.00	7460	10950			
5290-1	0.00	100.00	1810	7470			
5300-1	3.17	100.00	7470	7480			
5310-1	1.43	100.00	7490	7550			
5320-1	4.04	100.00	7500	7520			
5330-1	3.94	100.00	1870	7510	7750		
5340-1	4.71	100.00	7520	7530	11470		
5350-1	84.07	100.00	1850	7530	7770		
5360-1	121.55	100.00	1610	7540			
5370-1	1.08	100.00	7480	7550			
5380-1	8.56	100.00	1620	7560			
5390-1	76.38	100.00	1890	7570			
5400-1	19.94	100.00	7580	7840			
5410-1	1.93	100.00	7590	7600			
5420-1	16.52	100.00	1880	7600			
5430-1	5.48	100.00	7640	7670	7680		
5450-1	9.73	100.00	7650	7710	7720		

5460-1	8.25	100.00	7640	7650	11490	
5470-1	0.43	100.00	7660	7670	9510	
5480-1	34.05	100.00	7680	7700	11540	
5490-1	2.15	100.00	7700	9500	11300	11780
11800						
5500-1	44.65	100.00	7720	7740		
5510-1	14.79	100.00	7580	7730	7740	
5520-1	21.89	100.00	7750	7760	11470	
5530-1	0.62	100.00	7760	7770		
5540-1	51.89	100.00	1990	7780		
5550-1	0.05	100.00	5820	7790		
5560-1	0.76	100.00	5900	7800		
5570-1	3.61	100.00	4780	7810		
5580-1	22.02	100.00	2020	7820		
5590-1	5.53	100.00	7820	7830	9220	9230
5600-1	2.21	100.00	7570	7840	9230	
5610-1	0.55	100.00	6140	7850	11310	
5620-1	1.43	100.00	6130	7860		
5630-1	1.48	100.00	2070	7870		
5640-1	1.57	100.00	2060	7880		
5650-1	5.05	100.00	7830	7890		
5670-1	0.72	100.00	1740	7910		
5680-1	19.59	100.00	1750			
5690-1	0.00	100.00	7930	7940		
5700-1	5.74	100.00	1660	7940		
5710-1	96.39	100.00	1630	7950		
5730-1	14.55	100.00	6260	7970		
5740-1.	142.09	100.00	6250	7980		
5750-1	83.70	100.00	7990	8000		
5760-1	2.29	100.00	2190	8000		
5770-1	3.24	100.00	4650	8010		
5780-1	18.94	100.00	2210	8020		
5790-1	24.77	100.00	4360	8030		
5800-1	9.59	100.00	4380	8040		
5810-1	18.84	100.00	4370	8050	8060	
5820-1	14.33	100.00	8060	8070		
5830-1	1.14	100.00	8080	8090		
5840-1	24.36	100.00	8090	8100		
5850-1	2.04	100.00	8110	8930		
5860-1	1.72	100.00	4550	8120		
5870-1	2.07	100.00	4660	8130		
5880-1	2.66	100.00	4440	8140		
5890-1	26.51	100.00	4290	8150		
5900-1	42.22	100.00	4300	8160		
5910-1	24.39	100.00	8160	8170		
5920-1	80.68	100.00	8170	8180		
5930-1	69.45	100.00	8190	8200		
5940-1	28.87	100.00	4160	8200		
5950-1	0.00	100.00	3990	8210		
5960-1	9.48	100.00	3580	8220		
5970-1	35.88	100.00	3740	8230		
5980-1	66.21	100.00	3550	8240		
5990-1	17.27	100.00	3980	8250		
6000-1	11.52	100.00	3590	8260		

6010-1	54.62	100.00	3630	8270		
6020-1	1.20	100.00	4090	8280		
6030-1	1.66	100.00	3970	8290		
6040-1	6.90	100.00	8290	8300		
6050-1	0.29	100.00	3790	8310		
6060-1	121.31	100.00	4530	8320		
6070-1	1.56	100.00	8250	8330		
6080-1	4.46	100.00	3670	8340		
6090-1	0.00	100.00	3690	8350		
6100-1	29.94	100.00	3680	8360		
6110-1	13.67	100.00	8360	8370		
6120-1	65.35	100.00	10460	10470		
6130-1	6.84	100.00	8390	8400		
6140-1	0.00	100.00	3800	8400		
6150-1	0.00	100.00	3750	8410		
6160-1	6.35	100.00	8410	8420		
6170-1	1.57	100.00	8430	8440		
6180-1	2.89	100.00	3700	8440		
6190-1	0.00	100.00	3780	8450		
6200-1	67.84	100.00	3730	8460		
6210-1	44.28	100.00	3900	8470		
6230-1	0.00	100.00	9120	9130		
6240-1	33.52	100.00	3360	8490	11700	12060
6250-1	28.41	100.00	8500	8510	11150	
6260-1	4.64	100.00	3290	8510		
6270-1	4.73	100.00	3080	8520		
6280-1	50.57	100.00	3050	8530		
6290-1	9.24	100.00	3130	8540		
6300-1	85.35	100.00	3040	8550		
6310-1	41.04	100.00	2940	8560		
6320-1	28.01	100.00	8570	8600		
6330-1	0.00	100.00	8530	8580	10440	
6340-1	0.00	100.00	3010	8590		
6350-1	0.50	100.00	8600	8620		
6360-1	44.08	100.00	2910	8610	11410	
6370-1	30.12	100.00	2930	8620		
6380-1	41.76	100.00	8630	8650		
6390-1	2.75	100.00	2820	8640		
6400-1	0.00	100.00	6230	8650	10650	
6410-1	1.59	100.00	3280	8660		
6420-1	0.00	100.00	8560	8670		
6430-1	16.70	100.00	8630	8680	10700	
6440-1	43.20	100.00	8680	8690		
6450-1	0.00	100.00	5180	8700		
6460-1	20.46	100.00	8710	8790	9750	
6470-1	3.75	100.00	8710	8720		
6480-1	10.64	100.00	4130	8730		
6490-1	33.45	100.00	8740	9720		
6500-1	1.64	100.00	2770	8750		
6510-1	34.78	100.00	8750	8760		
6520-1	2.09	100.00	2560	8770	9290	
6530-1	37.23	100.00	2530	8780		
6540-1	58.48	100.00	2790	8790		
6550-1	0.00	100.00	5220	8800		

6560-1	50.92	100.00	2760	8810		
6570-1	15.78	100.00	8810	8820	11110	11740
6580-1	0.00	100.00	8820	8830		
6590-1	0.00	100.00	8830	8840		
6600-1	9.09	100.00	2670	8850		
6610-1	15.10	100.00	5080	8860		
6620-1	6.50	100.00	7070	8870		
6630-1	7.17	100.00	2450	8880		
6640-1	12.67	100.00	4920	8890		
6650-1	1.83	100.00	7110	8900		
6660-1	11.22	100.00	4590	8910		
6670-1	16.78	100.00	8130	8920	11050	11070
6680-1	1.45	100.00	8100	8930		
6690-1	0.00	100.00	8960	9150		
6710-1	0.00	100.00	8960	8980	9160	
6730-1	0.00	100.00	8980	9010	9170	
6750-1	0.00	100.00	9060	9410		
6760-1	0.00	100.00	6580	9020	9030	
6770-1	0.00	100.00	9030	9040	10480	
6790-1	0.00	100.00	9060	9080	9420	
6810-1	0.00	100.00	9080	9100	9430	
6830-1	0.00	100.00	9040	9100	9440	
6850-1	0.00	100.00	4390	9270	9280	
6860-1	45.87	100.00	9310	9320	9330	
6910-1	78.05	100.00	6090	9460	9470	
6920-1	0.00	100.00	9460	9480	9490	
6930-1	0.00	100.00	5680	5681	9520	
6950-1	3.99	100.00	2281	9550	11550	
6960-1	0.00	100.00	9570	9600		
6970-1	2.73	100.00	6010	9560	9570	9590
6980-1	0.00	100.00	5620	9580	9590	
6990-1	0.00	100.00	9550	9600	9620	
7000-1	0.00	100.00	9560	9610	9620	9640
7010-1	0.00	100.00	9580	9630	9640	
7020-1	0.00	100.00	7870	9660	9670	
7030-1	5.59	100.00	7300	9680	9690	11760
7040-1	0.00	100.00	5240	9720	9730	9740
10000-1	0.00	100.00	10001	10100	10220	
10010-1	0.00	100.00	10002	10100	10110	
10020-1	0.00	100.00	10003	10110	10120	
10030-1	0.00	100.00	10004	10120	10130	
10040-1	0.00	100.00	10130	10140		
10050-1	0.00	100.00	10140	10150		
10060-1	0.00	100.00	10150	10160		
10070-1	0.00	100.00	10160	10170		
10080-1	0.00	100.00	10170	10180		
10090-1	0.00	100.00	10180	10190		
10100-1	0.00	100.00	10190	10200		
10110-1	0.00	100.00	10200	10210		
10120-1	0.00	100.00	10210	10280		
10130-1	0.00	100.00	10220	10230		
10140-1	13.18	100.00	10230	10240	10680	10730
10150-1	0.00	100.00	10240	10250		
10160-1	4.89	100.00	10250	10260		

10170-1	0.00	100.00	10260	10270	10760	
10180-1	32.32	100.00	10270	10280	10290	
10190-1	50.24	100.00	10290	10300	10690	10810
10200-1	0.00	100.00	10300	10310		
10210-1	13.08	100.00	10310	10320		
10220-1	0.00	100.00	10320	10330	10750	
10230-1	107.15	100.00	10330	10340	11850	
10240-1	87.04	100.00	10340	10350		
10250-1	0.00	100.00	10350	10360	10410	11160
10260-1	0.00	100.00	10360	10370		
10270-1	6.08	100.00	10370	10390	12050	
10280-1	41.63	100.00	10390	10400		
10290-1	62.14	100.00	10410	10420		
10300-1	42.44	100.00	10420	10430		
10310-1	1.96	100.00	1320	10510	10540	
10320-1	0.00	100.00	10530	10540	10550	
10330-1	0.00	100.00	10550	10560		
10340-1	51.63	100.00	10560	10570	11890	
10350-1	43.10	100.00	10580	10590		
10360-1	0.00	100.00	10590	10600		
10370-1	21.17	100.00	10630	10640	11110	
10380-1	44.61	100.00	10670	11400		
10390-1	48.87	100.00	10670	10680	10690	
10400-1	16.75	100.00	10710	10720	11750	
10410-1	0.00	100.00	10720	10730		
10420-1	43.65	100.00	10740	10750		
10430-1	12.61	100.00	10760	11880		
10450-1	36.42	100.00	10790			
10460-1	9.84	100.00	10790	10800	11820	11880
10470-1	0.00	100.00	10800	10810		
10510-1	24.96	100.00	11170	11860		
10530-1	0.00	100.00	1570	10920	10930	
10540-1	0.00	100.00	7440	10950	10960	
10550-1	0.00	100.00	10970	10980		
10570-1	0.00	100.00	11010	11020	11610	
10580-1	0.00	100.00	11030	11040	11280	
10590-1	0.00	100.00	11060	11070	11570	
10600-1	0.00	100.00	6920	11090	11100	11770
10620-1	0.00	100.00	6790	11130	11140	
10630-1	0.00	100.00	11160	11170	11870	
10670-1	0.00	100.00	11240	11250	11260	
10680-1	0.00	100.00	250	11260	11270	
10690-1	0.00	100.00	5530	11280	11290	
10700-1	0.00	100.00	7860	11300	11310	
10710-1	0.00	100.00	11320			
10720-1	0.00	100.00	1210	11330	11350	
10730-1	0.00	100.00	1230	11340		
10740-1	0.00	100.00	11350	11360		
10750-1	0.00	100.00	9300	11370	11390	
10760-1	0.00	100.00	4830	11380	11390	
10770-1	0.00	100.00	10660	11400	11410	
10790-1	0.00	100.00	1580	11430	11440	
10800-1	0.00	100.00	10920	11450	11460	
10810-1	0.00	100.00	7710	11480	11500	

10820-1	0.00	100.00	7610	11490	11500	11510
10830-1	0.00	100.00	11510	11530	11540	
10840-1	0.00	100.00	2360	11520	11530	
10850-1	0.00	100.00	9000	11960	11990	
10860-1	0.00	100.00	2280	11550		
10870-1	0.00	100.00	8120	11570	11590	
10880-1	0.00	100.00	7990	11580	11590	
10900-1	0.00	100.00	10570	11610	11620	
10910-1	0.00	100.00	5670	11680	11690	
10920-1	0.00	100.00	8760	11710	11720	11730
10930-1	0.00	100.00	11730	11740	11750	
10940-1	0.00	100.00	1090	11790	11800	
10950-1	38.45	100.00	11820	11830		
10960-1	0.00	100.00	11830	11840		
10970-1	94.93	100.00	11840	11850	11860	
10980-1	0.00	100.00	11870			
10990-1	0.00	100.00	11890			
11000-1	0.00	100.00	11910	11940		
11010-1	764.00	100.00	11910			
11020-1	0.00	100.00	6440	11920	11930	
11030-1	694.00	100.00	11900	11940		
11050-1	0.00	0.00	11810	11990		

**2016 COMPUTER WATER MODEL  
INPUT DATA FILE**

1630	1190	5710	1361.0	18.0	120.00	0.00
1650	1230	1240	484.0	8.0	120.00	0.00
1660	1240	5700	227.0	8.0	120.00	0.00
1670	1250	1220	494.0	8.0	140.00	0.00
1680	1110	1250	585.0	8.0	140.00	0.00
1720	1260	1290	1399.0	8.0	120.00	0.00
1740	1110	5670	678.0	8.0	120.00	0.00
1750	1240	5680	635.0	8.0	120.00	0.00
1770	1200	1160	3606.0	8.0	120.00	0.00
1780	1200	1310	653.0	8.0	140.00	0.00
1790	1310	1180	1134.0	12.0	120.00	0.00
1800	1190	1320	637.0	8.0	120.00	0.00
1810	1310	5290	215.0	8.0	120.00	0.00
1820	1320	1330	684.0	8.0	120.00	0.00
1830	1340	1330	666.0	12.0	120.00	0.00
1840	1340	1190	619.0	18.0	120.00	0.00
1850	1330	5350	213.0	12.0	120.00	0.00
1860	840	1350	561.0	12.0	120.00	0.00
1870	1350	5330	778.0	6.0	120.00	0.00
1880	1360	5420	1210.0	6.0	140.00	0.00
1890	1340	5390	984.0	18.0	120.00	0.00
1930	1410	1380	211.0	8.0	120.00	0.00
1940	1420	3910	640.0	8.0	120.00	0.00
1950	1430	3940	330.0	10.0	120.00	0.00
1960	1420	1440	904.0	12.0	140.00	0.00
1970	1440	1450	453.0	12.0	120.00	0.00
1980	1450	3950	833.0	12.0	120.00	0.00
1990	1420	5540	356.0	16.0	140.00	0.00
2000	1400	1460	447.0	16.0	140.00	0.00
2010	1440	1470	1451.0	8.0	140.00	0.00
2020	1450	5580	627.0	12.0	120.00	0.00
2030	1470	1490	1448.0	8.0	140.00	0.00
2040	1490	1480	330.0	8.0	120.00	0.00
2050	1340	1500	1323.0	8.0	120.00	0.00
2060	1480	5640	492.0	8.0	120.00	0.00
2070	1510	5630	846.0	12.0	120.00	0.00
2080	1520	1530	167.0	12.0	120.00	0.00
2090	1530	1210	481.0	12.0	120.00	0.00
2100	1530	1480	832.0	12.0	120.00	0.00
2110	1490	1220	2779.0	8.0	140.00	0.00
2130	1520	1550	2681.0	8.0	120.00	0.00
2140	1550	1560	1594.0	8.0	120.00	0.00
2150	1540	1570	1685.0	8.0	140.00	0.00
2170	1580	1540	2640.0	8.0	140.00	0.00
2180	1580	1590	1320.0	8.0	120.00	0.00
2190	1590	5760	320.0	8.0	120.00	0.00
2200	1600	1580	1195.0	8.0	140.00	0.00
2210	1600	5780	688.0	12.0	120.00	0.00
2220	1610	1620	665.0	12.0	120.00	0.00
2230	1620	1630	923.0	12.0	120.00	0.00
2240	1630	1640	433.0	12.0	120.00	0.00
2250	1640	1650	170.0	12.0	120.00	0.00
2260	1650	1660	1320.0	12.0	120.00	0.00
2270	1610	1590	1189.0	8.0	120.00	0.00



2280	350	10860	446.0	24.0	120.00	0.00
2281	6950	430	526.0	24.0	120.00	0.00
2300	1670	430	739.0	24.0	120.00	0.00
2340	1680	1700	593.0	20.0	140.00	0.00
2350	1700	1400	473.0	20.0	140.00	0.00
2360	780	10840	470.0	12.0	120.00	0.00
2390	1730	5130	275.0	10.0	120.00	0.00
2400	560	1740	602.0	16.0	120.00	0.00
2410	1740	1750	751.0	16.0	120.00	0.00
2420	1750	4970	485.0	16.0	120.00	0.00
2430	1760	5140	208.0	16.0	120.00	0.00
2440	1770	5100	423.0	16.0	120.00	0.00
2450	640	6630	429.0	24.0	120.00	0.00
2460	1790	1800	1640.0	24.0	120.00	0.00
2470	1800	1810	1009.0	24.0	120.00	0.00
2480	1790	4940	704.0	16.0	120.00	0.00
2490	1830	1820	808.0	16.0	120.00	0.00
2500	1830	4100	351.0	20.0	120.00	0.00
2510	1840	5190	667.0	12.0	120.00	0.00
2520	1850	4980	630.0	12.0	120.00	0.00
2530	1840	6530	1852.0	12.0	120.00	0.00
2540	1870	1880	1260.0	8.0	120.00	0.00
2550	1880	1890	925.0	8.0	120.00	0.00
2560	1890	6520	950.0	12.0	120.00	0.00
2570	1900	1910	703.0	12.0	120.00	0.00
2580	1910	1830	819.0	12.0	120.00	0.00
2590	1890	1920	773.0	12.0	120.00	0.00
2600	1920	1930	562.0	12.0	120.00	0.00
2610	1840	1940	609.0	16.0	120.00	0.00
2620	1940	3160	699.0	16.0	120.00	0.00
2630	1790	1950	950.0	12.0	120.00	0.00
2640	1950	1960	680.0	12.0	120.00	0.00
2650	1960	4890	1024.0	12.0	120.00	0.00
2660	1970	1980	692.0	12.0	120.00	0.00
2670	1980	6600	1099.0	12.0	120.00	0.00
2680	1810	3500	897.0	12.0	120.00	0.00
2690	1960	2010	1372.0	8.0	120.00	0.00
2700	1950	5040	718.0	8.0	120.00	0.00
2710	2010	620	2228.0	8.0	120.00	0.00
2720	1900	3440	907.0	8.0	120.00	0.00
2730	2020	3530	1098.0	8.0	120.00	0.00
2740	2030	1920	1577.0	8.0	120.00	0.00
2750	2030	3590	1116.0	8.0	120.00	0.00
2760	1990	6560	1386.0	12.0	120.00	0.00
2770	1990	6500	357.0	12.0	120.00	0.00
2780	2040	2050	2102.0	12.0	120.00	0.00
2790	1930	6540	602.0	12.0	120.00	0.00
2800	2070	4110	703.0	24.0	120.00	0.00
2810	2060	3560	830.0	24.0	120.00	0.00
2820	2050	6390	3612.0	12.0	120.00	0.00
2830	2090	2790	520.0	16.0	120.00	0.00
2840	2100	2060	597.0	16.0	120.00	0.00
2850	2110	2120	1406.0	16.0	120.00	0.00
2860	2120	2090	375.0	16.0	120.00	0.00

2870	2110	2130	831.0	12.0	120.00	0.00
2880	2070	2130	262.0	12.0	120.00	0.00
2890	2060	2780	597.0	24.0	120.00	0.00
2900	2050	2150	4340.0	12.0	120.00	0.00
2910	2150	6360	1604.0	12.0	120.00	0.00
2920	2160	2170	2189.0	12.0	120.00	0.00
2930	2170	6370	358.0	12.0	120.00	0.00
2940	2180	6310	1040.0	12.0	120.00	0.00
2950	4210	2190	177.0	12.0	120.00	0.00
2960	2190	2200	1594.0	12.0	120.00	0.00
2970	2200	2210	596.0	12.0	120.00	0.00
2980	2210	2220	212.0	12.0	120.00	0.00
2990	2220	2170	1441.0	12.0	120.00	0.00
3000	2190	2230	1206.0	8.0	120.00	0.00
3010	2230	6340	331.0	8.0	120.00	0.00
3020	2240	2250	796.0	8.0	120.00	0.00
3030	2250	2220	1218.0	8.0	120.00	0.00
3040	2180	6300	1314.0	12.0	120.00	0.00
3050	2260	6280	1218.0	12.0	120.00	0.00
3060	2270	2280	423.0	8.0	120.00	0.00
3070	2280	2290	292.0	12.0	120.00	0.00
3080	2290	6270	684.0	12.0	120.00	0.00
3090	2300	2310	1476.0	12.0	120.00	0.00
3100	2310	4220	933.0	12.0	120.00	0.00
3110	2130	2320	2319.0	12.0	120.00	0.00
3120	2320	2330	1136.0	12.0	120.00	0.00
3130	2260	6290	1078.0	8.0	120.00	0.00
3140	2340	2290	1269.0	8.0	120.00	0.00
3150	2300	2350	1149.0	8.0	120.00	0.00
3160	2350	2340	1184.0	8.0	120.00	0.00
3170	2350	2360	305.0	8.0	120.00	0.00
3180	2360	2370	1311.0	8.0	120.00	0.00
3190	2370	2380	493.0	8.0	120.00	0.00
3200	2380	2330	2267.0	8.0	120.00	0.00
3210	2320	2370	3810.0	8.0	120.00	0.00
3220	2170	2390	1566.0	8.0	120.00	0.00
3230	2390	2400	1091.0	8.0	120.00	0.00
3240	2160	2400	1793.0	8.0	120.00	0.00
3250	2150	2400	1098.0	8.0	120.00	0.00
3260	2170	2410	1454.0	16.0	120.00	0.00
3270	2390	2410	246.0	8.0	120.00	0.00
3280	2410	6410	1123.0	8.0	120.00	0.00
3290	2360	6260	958.0	8.0	120.00	0.00
3300	2420	2430	210.0	20.0	120.00	0.00
3310	2430	2440	598.0	20.0	120.00	0.00
3320	2440	2450	2014.0	20.0	120.00	0.00
3330	2330	2460	650.0	12.0	120.00	0.00
3340	2460	2450	1051.0	12.0	120.00	0.00
3350	2450	2470	2179.0	12.0	120.00	0.00
3360	4230	6240	791.0	16.0	120.00	0.00
3370	2480	2490	761.0	16.0	120.00	0.00
3380	2490	2520	1033.0	16.0	120.00	0.00
3390	2500	2560	890.0	16.0	120.00	0.00
3400	2470	2510	778.0	12.0	120.00	0.00

3410	2500	2520	328.0	24.0	120.00	0.00
3420	2430	2530	1718.0	8.0	120.00	0.00
3430	2520	2530	2103.0	8.0	120.00	0.00
3440	2480	2530	2537.0	8.0	120.00	0.00
3450	2380	2440	1452.0	8.0	120.00	0.00
3470	2540	2490	1184.0	8.0	120.00	0.00
3480	2540	2550	854.0	8.0	120.00	0.00
3490	2500	2550	1115.0	8.0	120.00	0.00
3500	2510	2560	913.0	16.0	120.00	0.00
3510	2550	2560	2439.0	8.0	120.00	0.00
3520	2510	2570	2301.0	12.0	120.00	0.00
3530	2570	2580	656.0	12.0	120.00	0.00
3540	2580	2590	808.0	12.0	120.00	0.00
3550	2590	5980	916.0	12.0	120.00	0.00
3560	2600	2610	2781.0	12.0	120.00	0.00
3570	2600	2960	632.0	18.0	120.00	0.00
3580	2620	5960	789.0	24.0	120.00	0.00
3590	2610	6000	1152.0	16.0	140.00	0.00
3600	2630	2640	995.0	16.0	140.00	0.00
3630	2630	6010	1164.0	8.0	120.00	0.00
3640	2640	2660	1208.0	8.0	120.00	0.00
3650	2470	2670	1827.0	8.0	120.00	0.00
3660	2670	2680	1481.0	8.0	120.00	0.00
3670	2680	6080	863.0	8.0	120.00	0.00
3680	2680	6100	532.0	8.0	120.00	0.00
3690	2690	6090	717.0	20.0	120.00	0.00
3700	2700	6180	584.0	20.0	120.00	0.00
3710	2460	2710	1360.0	8.0	120.00	0.00
3720	2710	2700	1443.0	8.0	120.00	0.00
3730	2710	6200	686.0	8.0	120.00	0.00
3740	2720	5970	892.0	8.0	120.00	0.00
3750	2730	6150	247.0	20.0	120.00	0.00
3760	2720	2740	1044.0	8.0	120.00	0.00
3770	2740	2750	1289.0	8.0	120.00	0.00
3780	2750	6190	947.0	8.0	120.00	0.00
3790	2760	6050	428.0	24.0	120.00	0.00
3800	2730	6140	250.0	20.0	120.00	0.00
3810	2140	2770	595.0	24.0	120.00	0.00
3820	2740	2770	1277.0	8.0	120.00	0.00
3830	2120	2750	2830.0	8.0	120.00	0.00
3840	2140	2780	1656.0	24.0	120.00	0.00
3850	2790	2800	819.0	16.0	120.00	0.00
3860	2780	2810	976.0	8.0	120.00	0.00
3870	2100	2800	500.0	16.0	120.00	0.00
3880	2790	2810	1387.0	8.0	120.00	0.00
3890	2800	2810	579.0	8.0	120.00	0.00
3900	2110	6210	2618.0	8.0	120.00	0.00
3910	2770	2820	2660.0	8.0	120.00	0.00
3920	2820	2830	1300.0	8.0	120.00	0.00
3930	2760	2840	1355.0	16.0	120.00	0.00
3940	2840	2850	1297.0	16.0	120.00	0.00
3950	2830	2850	917.0	8.0	120.00	0.00
3960	2770	2860	1433.0	24.0	120.00	0.00
3970	2830	6030	750.0	8.0	120.00	0.00

3980	2620	5990	224.0	8.0	120.00	0.00
3990	2840	5950	618.0	8.0	120.00	0.00
4000	1870	2880	601.0	8.0	120.00	0.00
4010	2880	2890	705.0	8.0	120.00	0.00
4020	2890	2900	779.0	8.0	120.00	0.00
4030	2900	2910	756.0	8.0	120.00	0.00
4040	2910	2920	601.0	8.0	120.00	0.00
4050	2920	3170	876.0	8.0	120.00	0.00
4060	2930	2940	575.0	8.0	120.00	0.00
4070	2820	2880	1323.0	8.0	120.00	0.00
4080	2900	2830	1343.0	8.0	120.00	0.00
4090	2910	6020	650.0	16.0	120.00	0.00
4100	2940	2950	1800.0	8.0	120.00	0.00
4110	2620	2960	745.0	18.0	120.00	0.00
4120	2950	2960	2190.0	8.0	120.00	0.00
4130	2140	6480	1132.0	12.0	120.00	0.00
4140	2600	3010	673.0	12.0	120.00	0.00
4150	2970	2950	689.0	8.0	120.00	0.00
4160	2610	5940	920.0	16.0	140.00	0.00
4170	2980	2990	1308.0	8.0	120.00	0.00
4180	2990	3000	2612.0	8.0	120.00	0.00
4190	2970	3010	1582.0	12.0	120.00	0.00
4200	3000	3010	1130.0	8.0	120.00	0.00
4210	2940	3020	683.0	8.0	120.00	0.00
4220	3020	3030	957.0	12.0	120.00	0.00
4230	3020	3040	988.0	12.0	120.00	0.00
4240	2930	3050	1621.0	8.0	120.00	0.00
4250	3050	3040	611.0	8.0	120.00	0.00
4260	3040	3060	877.0	8.0	120.00	0.00
4270	3060	3070	220.0	8.0	120.00	0.00
4280	3070	3080	632.0	8.0	120.00	0.00
4290	3080	5890	648.0	8.0	120.00	0.00
4300	3090	5900	621.0	16.0	140.00	0.00
4310	3040	1630	1646.0	12.0	120.00	0.00
4320	1620	3070	1430.0	8.0	120.00	0.00
4330	1610	3080	1439.0	8.0	120.00	0.00
4340	1600	3090	1422.0	16.0	140.00	0.00
4350	1640	3050	1908.0	8.0	120.00	0.00
4360	1600	5790	533.0	8.0	120.00	0.00
4370	3100	5810	583.0	8.0	120.00	0.00
4380	3090	5800	1120.0	8.0	120.00	0.00
4390	3020	6850	930.0	8.0	120.00	0.00
4400	1780	3120	772.0	16.0	120.00	0.00
4410	3120	5170	478.0	12.0	120.00	0.00
4420	3130	3140	730.0	12.0	120.00	0.00
4430	3140	1650	824.0	12.0	120.00	0.00
4440	2920	5880	2013.0	8.0	120.00	0.00
4450	2910	3120	2644.0	16.0	120.00	0.00
4460	2900	1780	2673.0	8.0	120.00	0.00
4470	1940	2880	2669.0	8.0	120.00	0.00
4480	2890	3150	1297.0	8.0	120.00	0.00
4490	1780	3160	777.0	16.0	120.00	0.00
4500	3150	3160	1370.0	8.0	120.00	0.00
4510	2930	3170	196.0	8.0	120.00	0.00

4520	3140	3170	2668.0	6.0	120.00	0.00
4530	2870	6060	614.0	8.0	120.00	0.00
4540	3180	3170	1299.0	8.0	120.00	0.00
4550	1660	5860	482.0	12.0	120.00	0.00
4560	1660	3200	828.0	8.0	120.00	0.00
4570	3200	3210	156.0	8.0	120.00	0.00
4580	3210	3220	699.0	8.0	120.00	0.00
4590	3220	6660	657.0	8.0	120.00	0.00
4600	3130	5160	583.0	8.0	120.00	0.00
4610	3200	3140	1321.0	6.0	120.00	0.00
4620	1850	5060	597.0	8.0	120.00	0.00
4630	3190	3240	657.0	12.0	120.00	0.00
4640	1550	3240	760.0	8.0	120.00	0.00
4650	3240	5770	290.0	8.0	120.00	0.00
4660	3210	5870	704.0	8.0	120.00	0.00
4670	1760	3260	734.0	8.0	120.00	0.00
4680	3260	3230	1396.0	8.0	120.00	0.00
4690	1730	3270	1302.0	8.0	120.00	0.00
4700	3270	3250	542.0	8.0	120.00	0.00
4710	1770	3280	328.0	16.0	120.00	0.00
4720	3260	3280	907.0	8.0	120.00	0.00
4730	3280	3290	196.0	8.0	120.00	0.00
4740	3290	1730	567.0	8.0	120.00	0.00
4750	1750	3300	690.0	8.0	140.00	0.00
4760	3300	4080	206.0	8.0	140.00	0.00
4770	3300	4090	468.0	8.0	120.00	0.00
4780	3310	5570	461.0	8.0	120.00	0.00
4790	3320	3340	648.0	8.0	120.00	0.00
4800	1510	3330	896.0	10.0	120.00	0.00
4810	3320	3330	523.0	8.0	120.00	0.00
4820	3290	3340	763.0	8.0	120.00	0.00
4830	3350	10760	261.0	10.0	120.00	0.00
4840	3340	3350	533.0	12.0	120.00	0.00
4850	1750	3360	689.0	8.0	120.00	0.00
4860	690	3360	756.0	8.0	120.00	0.00
4870	1740	690	699.0	8.0	120.00	0.00
4880	680	4950	348.0	8.0	120.00	0.00
4890	3370	3380	834.0	8.0	120.00	0.00
4900	3380	4930	626.0	8.0	120.00	0.00
4910	3380	1860	212.0	8.0	120.00	0.00
4920	3370	6640	604.0	8.0	120.00	0.00
4930	3390	1820	848.0	12.0	120.00	0.00
4940	3390	5020	572.0	8.0	120.00	0.00
4950	3400	3410	709.0	8.0	120.00	0.00
4960	3410	1820	985.0	8.0	120.00	0.00
4970	1960	3420	1469.0	8.0	120.00	0.00
4980	1950	3430	1427.0	8.0	120.00	0.00
4990	3420	3430	677.0	8.0	120.00	0.00
5000	2020	3440	605.0	8.0	120.00	0.00
5010	3440	3450	818.0	8.0	120.00	0.00
5020	3430	3460	976.0	8.0	120.00	0.00
5030	3460	3450	804.0	8.0	120.00	0.00
5050	3470	2020	1175.0	8.0	120.00	0.00
5060	2020	1800	720.0	8.0	120.00	0.00

5070	1820	3480	265.0	16.0	120.00	0.00
5080	1910	6610	1240.0	8.0	120.00	0.00
5090	3470	3490	509.0	8.0	120.00	0.00
5110	3490	3520	1011.0	8.0	120.00	0.00
5120	1990	3510	1687.0	12.0	120.00	0.00
5130	3500	3520	1166.0	8.0	120.00	0.00
5140	3510	3520	1462.0	8.0	120.00	0.00
5150	2030	3530	906.0	8.0	120.00	0.00
5160	3490	3530	1679.0	8.0	120.00	0.00
5170	2100	3540	805.0	8.0	120.00	0.00
5180	3550	6450	547.0	24.0	120.00	0.00
5190	3540	3550	1262.0	8.0	120.00	0.00
5200	3550	3560	480.0	24.0	120.00	0.00
5210	3540	3560	681.0	8.0	120.00	0.00
5220	3550	6550	392.0	8.0	120.00	0.00
5230	3570	3580	1340.0	6.0	120.00	0.00
5240	3590	7040	238.0	8.0	120.00	0.00
5250	3580	3590	934.0	8.0	120.00	0.00
5260	1560	1540	1349.0	8.0	120.00	0.00
5270	140	3610	568.0	8.0	120.00	0.00
5280	3610	3720	830.0	8.0	120.00	0.00
5290	150	3630	250.0	8.0	120.00	0.00
5300	3610	130	1168.0	8.0	120.00	0.00
5310	160	3620	251.0	8.0	120.00	0.00
5320	3610	3630	1033.0	8.0	120.00	0.00
5330	3620	3650	773.0	8.0	120.00	0.00
5340	3600	3660	1141.0	8.0	120.00	0.00
5350	3640	3670	1343.0	8.0	120.00	0.00
5360	3630	3650	424.0	8.0	120.00	0.00
5370	3640	3660	1177.0	8.0	120.00	0.00
5380	3650	3710	1148.0	8.0	120.00	0.00
5390	3670	3730	1192.0	8.0	120.00	0.00
5400	3600	3680	1343.0	8.0	120.00	0.00
5420	3660	3690	1343.0	8.0	120.00	0.00
5430	3670	3690	1177.0	8.0	120.00	0.00
5440	3690	3680	1140.0	8.0	120.00	0.00
5450	3620	3700	1552.0	8.0	120.00	0.00
5460	3710	3740	1229.0	8.0	120.00	0.00
5470	3700	3710	1177.0	8.0	120.00	0.00
5480	3680	3720	2421.0	8.0	120.00	0.00
5490	3710	3720	1140.0	8.0	120.00	0.00
5500	3700	3730	1229.0	8.0	120.00	0.00
5510	3690	3740	1192.0	8.0	120.00	0.00
5520	3730	3740	1177.0	8.0	120.00	0.00
5530	3750	10690	1360.0	20.0	140.00	0.00
5540	3750	3760	1731.0	8.0	120.00	0.00
5550	170	3770	643.0	8.0	120.00	0.00
5560	3770	3780	373.0	8.0	120.00	0.00
5570	3780	3760	1373.0	6.0	120.00	0.00
5580	3770	4480	788.0	8.0	120.00	0.00
5590	3790	4550	378.0	24.0	120.00	0.00
5600	280	3790	844.0	8.0	120.00	0.00
5610	3800	3810	798.0	8.0	120.00	0.00
5620	450	6980	131.0	8.0	120.00	0.00

5630	3810	3820	740.0	8.0	120.00	0.00	
5660	3840	3850	644.0	6.0	140.00	0.00	
5670	3850	10910	406.0	6.0	140.00	0.00	
5680	3870	6930	1529.0	24.0	120.00	0.00	
5681	6930	1670	676.0	24.0	120.00	0.00	
5690	3820	3870	737.0	8.0	120.00	0.00	
5700	3870	3860	1361.0	8.0	120.00	0.00	
5710	1700	3880	362.0	8.0	120.00	0.00	
5720	3880	3890	426.0	8.0	120.00	0.00	
5730	3890	3860	387.0	8.0	120.00	0.00	
5740-XX	1680	4660	395.0	16.0	140.00	0.00	
5750	1400	3900	704.0	12.0	120.00	0.00	
5760	3890	3900	407.0	8.0	120.00	0.00	
5770	1430	3910	359.0	8.0	120.00	0.00	
5780	3900	3990	1207.0	8.0	120.00	0.00	
5810	1410	3940	1335.0	10.0	120.00	0.00	
5820	3930	5550	799.0	8.0	120.00	0.00	
5830	1370	3950	357.0	12.0	120.00	0.00	
5840	3940	3950	900.0	8.0	120.00	0.00	
5850	3930	3960	386.0	8.0	120.00	0.00	
5860	3900	3970	355.0	12.0	120.00	0.00	
5870	3860	3970	465.0	8.0	120.00	0.00	
5880	3970	3960	1208.0	8.0	120.00	0.00	
5890	1460	3980	562.0	16.0	120.00	0.00	
5900	3990	5560	906.0	8.0	120.00	0.00	
5910	3980	3990	932.0	8.0	120.00	0.00	
5920	3990	3960	314.0	8.0	120.00	0.00	
5950	50	4020	633.0	12.0	120.00	0.00	
5960	50	4030	698.0	12.0	120.00	0.00	
5970	4040	4280	144.0	12.0	120.00	0.00	
5980-BN	4040	0	307.0	12.0	120.00	0.00	240.00
5990	570	4820	227.0	24.0	120.00	0.00	
6000	600	4820	768.0	16.0	140.00	0.00	
6010	4050	6970	1918.0	8.0	120.00	0.00	
6020	450	4050	482.0	8.0	120.00	0.00	
6030	4050	4640	785.0	8.0	120.00	0.00	
6040	390	4050	1288.0	8.0	120.00	0.00	
6050	3840	4670	395.0	8.0	140.00	0.00	
6090	3970	6910	709.0	12.0	120.00	0.00	
6100	1710	1390	1711.0	12.0	120.00	0.00	
6110	1670	1390	2229.0	20.0	120.00	0.00	
6130	1370	5620	2179.0	12.0	120.00	0.00	
6140	3930	5610	1074.0	8.0	120.00	0.00	
6160	1700	4080	624.0	8.0	140.00	0.00	
6180	4090	4840	335.0	8.0	120.00	0.00	
6190	1400	4090	846.0	12.0	120.00	0.00	
6200	1840	4100	1836.0	16.0	120.00	0.00	
6210-BN	4100	0	389.0	20.0	120.00	0.00	245.00
6220-BN	2620	0	429.0	20.0	120.00	0.00	245.00
6230	4110	6400	2085.0	24.0	120.00	0.00	
6240-BN	4110	0	354.0	12.0	120.00	0.00	242.00
6250	1290	5740	1745.0	18.0	120.00	0.00	
6260	1290	5730	678.0	18.0	120.00	0.00	
6270	1200	1110	4448.0	18.0	120.00	0.00	

6280	4150	4160	1367.0	8.0	120.00	0.00
6290	4260	4320	301.0	10.0	120.00	0.00
6300	4260	4270	445.0	10.0	120.00	0.00
6310	70	4280	221.0	12.0	120.00	0.00
6320	4280	4360	353.0	6.0	120.00	0.00
6340	4260	4310	975.0	10.0	120.00	0.00
6350	10	4320	391.0	10.0	120.00	0.00
6360	4310	4430	838.0	8.0	120.00	0.00
6390	4290	4350	383.0	8.0	120.00	0.00
6400	4350	4300	936.0	8.0	120.00	0.00
6410	4290	4360	1318.0	6.0	120.00	0.00
6420	4360	4370	773.0	8.0	120.00	0.00
6430	4350	4370	2442.0	8.0	120.00	0.00
6440	4380	11020	2093.0	12.0	120.00	0.00
6450	110	4390	1596.0	12.0	120.00	0.00
6460	60	4400	876.0	12.0	120.00	0.00
6470	4400	4410	667.0	12.0	120.00	0.00
6480	30	4420	1987.0	10.0	120.00	0.00
6490	4320	4430	970.0	8.0	120.00	0.00
6500	100	4440	1356.0	12.0	120.00	0.00
6510	160	4450	1588.0	16.0	120.00	0.00
6520	210	4460	401.0	12.0	120.00	0.00
6540	4170	4480	767.0	8.0	120.00	0.00
6550	180	4490	2753.0	12.0	120.00	0.00
6560	180	4500	644.0	8.0	120.00	0.00
6570	250	4510	619.0	8.0	120.00	0.00
6580	6760	4520	551.0	8.0	120.00	0.00
6590	350	4530	716.0	24.0	120.00	0.00
6600	4530	4540	1028.0	24.0	120.00	0.00
6610	4540	4550	466.0	24.0	120.00	0.00
6620	290	4560	650.0	8.0	120.00	0.00
6630	190	4570	1458.0	12.0	120.00	0.00
6640	190	4580	686.0	12.0	120.00	0.00
6650	4590	4610	1968.0	16.0	140.00	0.00
6660	380	4600	768.0	12.0	120.00	0.00
6670	4610	4700	476.0	16.0	140.00	0.00
6680	400	4620	691.0	8.0	120.00	0.00
6690	440	4630	1582.0	8.0	120.00	0.00
6700	4630	4640	401.0	8.0	120.00	0.00
6710	440	4650	727.0	16.0	120.00	0.00
6720	3880	4660	614.0	8.0	120.00	0.00
6730	4060	4670	614.0	8.0	140.00	0.00
6740	4620	4680	783.0	8.0	120.00	0.00
6750	360	4690	1720.0	8.0	120.00	0.00
6760	360	4700	391.0	16.0	140.00	0.00
6770	400	4710	603.0	16.0	120.00	0.00
6780	470	4740	1948.0	8.0	120.00	0.00
6790	4730	10620	701.0	8.0	120.00	0.00
6800	4720	4760	583.0	16.0	120.00	0.00
6810	4730	4740	627.0	8.0	120.00	0.00
6820	380	4750	1037.0	16.0	120.00	0.00
6830	4740	4770	667.0	8.0	120.00	0.00
6840	4730	4760	658.0	8.0	120.00	0.00
6850	4750	4770	1130.0	8.0	120.00	0.00



6860	1970	4780	1686.0	12.0	120.00	0.00
6870	620	4780	2023.0	12.0	120.00	0.00
6880	4790	4800	753.0	8.0	120.00	0.00
6890	500	4800	1458.0	8.0	120.00	0.00
6900	500	4810	655.0	8.0	120.00	0.00
6910	3870	4820	1372.0	24.0	120.00	0.00
6920	4830	10600	794.0	16.0	120.00	0.00
6930	4840	4850	446.0	8.0	120.00	0.00
6940	4850	5090	732.0	8.0	120.00	0.00
6950	530	4860	1307.0	8.0	120.00	0.00
6960	4860	4870	593.0	8.0	120.00	0.00
6970	1790	4880	659.0	24.0	120.00	0.00
6980	4780	4890	995.0	12.0	120.00	0.00
6990	1850	4900	1148.0	12.0	120.00	0.00
7000	680	4910	699.0	8.0	120.00	0.00
7010	3390	4920	330.0	8.0	120.00	0.00
7020	3360	4930	785.0	8.0	120.00	0.00
7030	4940	5010	392.0	16.0	120.00	0.00
7040	3390	5030	486.0	8.0	120.00	0.00
7050	3370	4950	332.0	8.0	120.00	0.00
7060	650	4950	1999.0	8.0	120.00	0.00
7070	4960	6620	249.0	8.0	120.00	0.00
7080	4830	4970	316.0	16.0	120.00	0.00
7090	4090	4970	688.0	12.0	120.00	0.00
7100	1860	4980	624.0	12.0	120.00	0.00
7110	4970	6650	1035.0	12.0	120.00	0.00
7120	4980	4990	984.0	12.0	120.00	0.00
7130	3400	5000	732.0	8.0	120.00	0.00
7140	4900	5000	497.0	8.0	120.00	0.00
7150	3480	5010	385.0	16.0	120.00	0.00
7160	3400	5020	433.0	8.0	120.00	0.00
7170	4960	5030	499.0	8.0	120.00	0.00
7180	2010	5040	1524.0	8.0	120.00	0.00
7190	4990	5070	645.0	6.0	120.00	0.00
7200	3230	5060	687.0	8.0	120.00	0.00
7210	5050	5060	1067.0	6.0	120.00	0.00
7220	5050	5070	466.0	6.0	120.00	0.00
7230	1760	5080	777.0	16.0	120.00	0.00
7240	3310	5090	730.0	8.0	120.00	0.00
7250	5100	5110	681.0	16.0	120.00	0.00
7260	5110	5120	1090.0	16.0	120.00	0.00
7270	5120	5240	1517.0	16.0	120.00	0.00
7280	3350	5130	423.0	10.0	120.00	0.00
7290	5140	5150	276.0	16.0	120.00	0.00
7300	5150	7030	415.0	16.0	120.00	0.00
7310	5160	5180	406.0	8.0	120.00	0.00
7320	3130	5170	278.0	12.0	120.00	0.00
7330	3220	5180	499.0	8.0	120.00	0.00
7340	4900	5190	1126.0	12.0	120.00	0.00
7350	5200	5240	1002.0	8.0	120.00	0.00
7360	1940	5210	1484.0	8.0	120.00	0.00
7370	5210	5220	315.0	8.0	120.00	0.00
7380	5220	5200	1253.0	8.0	120.00	0.00
7390	5210	5230	346.0	8.0	120.00	0.00

7400	5230	4900	599.0	8.0	120.00	0.00
7410	1780	5240	497.0	8.0	120.00	0.00
7420	1780	5240	490.0	16.0	120.00	0.00
7430	1050	5250	2172.0	8.0	120.00	0.00
7440	5260	10540	1372.0	16.0	120.00	0.00
7450	920	5270	887.0	12.0	120.00	0.00
7460	1030	5280	1785.0	16.0	120.00	0.00
7470	5290	5300	479.0	8.0	120.00	0.00
7480	5300	5370	411.0	8.0	120.00	0.00
7490	1320	5310	697.0	8.0	120.00	0.00
7500	880	5320	472.0	12.0	120.00	0.00
7510	1360	5330	295.0	6.0	120.00	0.00
7520	5320	5340	976.0	12.0	120.00	0.00
7530	5340	5350	253.0	12.0	120.00	0.00
7540	1070	5360	794.0	18.0	120.00	0.00
7550	5310	5370	364.0	8.0	120.00	0.00
7560	1200	5380	996.0	18.0	120.00	0.00
7570	5390	5600	539.0	18.0	120.00	0.00
7580	5400	5510	1294.0	18.0	120.00	0.00
7590	1370	5410	260.0	6.0	140.00	0.00
7600	5410	5420	527.0	6.0	140.00	0.00
7610	740	10820	399.0	6.0	120.00	0.00
7640	5430	5460	1110.0	6.0	140.00	0.00
7650	5450	5460	1923.0	6.0	120.00	0.00
7660	1380	5470	900.0	18.0	120.00	0.00
7670	5430	5470	857.0	6.0	140.00	0.00
7680	5430	5480	699.0	6.0	120.00	0.00
7700	5480	5490	653.0	6.0	120.00	0.00
7710	5450	10810	311.0	8.0	120.00	0.00
7720	5450	5500	1074.0	8.0	120.00	0.00
7730	1380	5510	465.0	18.0	120.00	0.00
7740	5500	5510	979.0	8.0	120.00	0.00
7750	5330	5520	2006.0	6.0	120.00	0.00
7760	5520	5530	380.0	6.0	120.00	0.00
7770	5530	5350	855.0	8.0	120.00	0.00
7780	3980	5540	1641.0	16.0	140.00	0.00
7790	3940	5550	992.0	8.0	120.00	0.00
7800	3910	5560	884.0	8.0	120.00	0.00
7810	3320	5570	652.0	8.0	120.00	0.00
7820	5580	5590	751.0	12.0	120.00	0.00
7830	5590	5650	1152.0	12.0	120.00	0.00
7840	5400	5600	694.0	18.0	120.00	0.00
7850	1380	5610	2069.0	8.0	120.00	0.00
7860	5620	10700	1505.0	12.0	120.00	0.00
7870	5630	7020	512.0	12.0	120.00	0.00
7880	1500	5640	430.0	8.0	120.00	0.00
7890	1480	5650	567.0	12.0	120.00	0.00
7910	4250	5670	1143.0	8.0	120.00	0.00
7930	1250	5690	569.0	8.0	120.00	0.00
7940	5690	5700	322.0	8.0	120.00	0.00
7950	1210	5710	1465.0	18.0	120.00	0.00
7970	1110	5730	833.0	18.0	120.00	0.00
7980	1570	5740	390.0	18.0	120.00	0.00
7990	5750	10880	373.0	8.0	120.00	0.00

8000	5750	5760	633.0	8.0	120.00	0.00
8010	3250	5770	409.0	8.0	120.00	0.00
8020	1610	5780	599.0	12.0	120.00	0.00
8030	3100	5790	1266.0	8.0	120.00	0.00
8040	3110	5800	685.0	8.0	120.00	0.00
8050	3110	5810	480.0	8.0	120.00	0.00
8060	5810	5820	1523.0	8.0	120.00	0.00
8070	5820	3100	2148.0	8.0	120.00	0.00
8080	1660	5830	432.0	8.0	120.00	0.00
8090	5830	5840	488.0	8.0	120.00	0.00
8100	5840	6680	365.0	8.0	120.00	0.00
8110	5850	1590	446.0	8.0	120.00	0.00
8120	5860	10870	795.0	12.0	120.00	0.00
8130	5870	6670	831.0	8.0	120.00	0.00
8140	3130	5880	826.0	8.0	120.00	0.00
8150	3090	5890	685.0	8.0	120.00	0.00
8160	5900	5910	635.0	16.0	140.00	0.00
8170	5910	5920	887.0	16.0	140.00	0.00
8180	2980	5920	585.0	16.0	140.00	0.00
8190	2980	5930	1132.0	16.0	140.00	0.00
8200	5930	5940	635.0	16.0	140.00	0.00
8210	2870	5950	858.0	8.0	120.00	0.00
8220	2760	5960	704.0	24.0	120.00	0.00
8230	2730	5970	549.0	8.0	120.00	0.00
8240	2600	5980	841.0	12.0	120.00	0.00
8250	5990	6070	361.0	8.0	120.00	0.00
8260	2630	6000	454.0	16.0	140.00	0.00
8270	2660	6010	968.0	8.0	120.00	0.00
8280	2850	6020	674.0	16.0	120.00	0.00
8290	6030	6040	1376.0	8.0	120.00	0.00
8300	2860	6040	555.0	8.0	120.00	0.00
8310	2860	6050	361.0	24.0	120.00	0.00
8320	3180	6060	717.0	8.0	120.00	0.00
8330	2870	6070	761.0	8.0	120.00	0.00
8340	2580	6080	531.0	8.0	120.00	0.00
8350	2700	6090	595.0	20.0	120.00	0.00
8360	6100	6110	506.0	8.0	120.00	0.00
8370	2690	6110	473.0	8.0	120.00	0.00
8390	2760	6130	780.0	20.0	120.00	0.00
8400	6130	6140	518.0	20.0	120.00	0.00
8410	6150	6160	410.0	20.0	120.00	0.00
8420	2690	6160	385.0	20.0	120.00	0.00
8430	2450	6170	516.0	20.0	120.00	0.00
8440	6170	6180	234.0	20.0	120.00	0.00
8450	2710	6190	1026.0	8.0	120.00	0.00
8460	2720	6200	1657.0	8.0	120.00	0.00
8470	2330	6210	1623.0	8.0	120.00	0.00
8490	2480	6240	1423.0	16.0	120.00	0.00
8500	2420	6250	1142.0	20.0	120.00	0.00
8510	6250	6260	713.0	8.0	120.00	0.00
8520	2300	6270	606.0	12.0	120.00	0.00
8530	6280	6330	735.0	12.0	120.00	0.00
8540	2340	6290	1575.0	8.0	120.00	0.00
8550	2260	6300	713.0	12.0	120.00	0.00

8560	6310	6420	754.0	12.0	120.00	0.00	
8570	2180	6320	289.0	12.0	120.00	0.00	
8580	2270	6330	1044.0	12.0	120.00	0.00	
8590	2240	6340	1274.0	8.0	120.00	0.00	
8600	6320	6350	1376.0	12.0	120.00	0.00	
8610	2160	6360	453.0	12.0	120.00	0.00	
8620	6350	6370	684.0	12.0	120.00	0.00	
8630	6380	6430	2184.0	24.0	120.00	0.00	
8640	2090	6390	1696.0	12.0	120.00	0.00	
8650	6380	6400	971.0	24.0	120.00	0.00	
8660	2070	6410	2522.0	8.0	120.00	0.00	
8670	2070	6420	1265.0	12.0	120.00	0.00	
8680	6430	6440	1327.0	24.0	120.00	0.00	
8690	2080	6440	713.0	24.0	120.00	0.00	
8700	2080	6450	860.0	24.0	120.00	0.00	
8710	6460	6470	1092.0	12.0	120.00	0.00	
8720	2060	6470	304.0	12.0	120.00	0.00	
8730	1870	6480	2849.0	12.0	120.00	0.00	
8740	3510	6490	650.0	12.0	120.00	0.00	
8750	6500	6510	927.0	12.0	120.00	0.00	
8760	6510	10920	1349.0	12.0	120.00	0.00	
8770	1900	6520	244.0	12.0	120.00	0.00	
8780	1870	6530	807.0	12.0	120.00	0.00	
8790	6460	6540	331.0	12.0	120.00	0.00	
8800	3570	6550	1102.0	8.0	120.00	0.00	
8810	6560	6570	1590.0	12.0	120.00	0.00	
8820	6570	6580	380.0	8.0	120.00	0.00	
8830	6580	6590	245.0	8.0	120.00	0.00	
8840	4200	6590	156.0	8.0	120.00	0.00	
8850	1990	6600	940.0	12.0	120.00	0.00	
8860	3480	6610	683.0	8.0	120.00	0.00	
8870	4940	6620	528.0	8.0	120.00	0.00	
8880	4880	6630	407.0	24.0	120.00	0.00	
8890	4920	6640	418.0	8.0	120.00	0.00	
8900	4990	6650	451.0	12.0	120.00	0.00	
8910	5200	6660	799.0	8.0	120.00	0.00	
8920	3250	6670	956.0	8.0	120.00	0.00	
8930	5850	6680	376.0	8.0	120.00	0.00	
8960	6690	6710	12.6	24.0	120.00	0.30	
8980	6710	6730	6.7	24.0	120.00	0.30	
9000	1670	10850	1814.0	20.0	120.00	0.00	
9010	6730	330	100.0	24.0	120.00	1.60	
9020	350	6760	810.0	24.0	120.00	0.50	
9030	6760	6770	535.0	30.0	120.00	0.00	
9040	6830	6770	89.0	36.0	100.00	0.00	
9060	6750	6790	114.0	36.0	120.00	0.00	
9080	6790	6810	87.0	36.0	120.00	0.00	
9100	6810	6830	70.0	36.0	120.00	0.00	
9120	2480	6230	1166.0	8.0	120.00	0.00	
9130	6230	2540	748.0	8.0	120.00	0.00	
9140	4160	4310	528.0	10.0	120.00	0.00	
9150-BNPU	0	6690	27.0	14.0	120.00	2.90	89.00
9160-BNPU	0	6710	27.0	10.0	120.00	3.50	89.00
9170-BNPU	0	6730	27.0	12.0	120.00	2.90	89.00

9220	1470	5590	383.0	6.0	120.00	0.00	
9230	5590	5600	2526.0	6.0	120.00	0.00	
9240	5050	5080	1061.0	6.0	120.00	0.00	
9250	5080	5090	679.0	6.0	120.00	0.00	
9260	1580	1570	6880.0	8.0	120.00	0.00	
9270	3060	6850	1391.0	8.0	120.00	0.00	
9280	2990	6850	3165.0	8.0	120.00	0.00	
9290	1880	6520	1853.0	8.0	120.00	0.00	
9300	3240	10750	1332.0	12.0	120.00	0.00	
9310	840	6860	1351.0	6.0	120.00	0.00	
9320	800	6860	436.0	6.0	120.00	0.00	
9330	810	6860	1283.0	8.0	120.00	0.00	
9340	2240	2200	1218.0	8.0	120.00	0.00	
9410-BNPU	0	6750	18.0	16.0	120.00	2.60	120.00
9420-BNPU	0	6790	18.0	16.0	120.00	2.60	120.00
9430-BNPU	0	6810	18.0	14.0	120.00	2.60	120.00
9440-BNPU	0	6830	18.0	14.0	120.00	2.60	120.00
9460	6910	6920	644.0	12.0	120.00	0.00	
9470	3850	6910	1133.0	4.0	100.00	0.00	
9480	1390	6920	394.0	12.0	120.00	0.00	
9490	3840	6920	1133.0	4.0	100.00	0.00	
9500	5490	1390	976.0	12.0	100.00	0.00	
9510	5470	1390	1902.0	18.0	100.00	0.00	
9520	6930	3800	728.0	8.0	120.00	0.00	
9550	6950	6990	455.0	8.0	120.00	0.00	
9560	6970	7000	250.0	8.0	120.00	0.00	
9570	6960	6970	521.0	4.0	120.00	0.00	
9580	6980	7010	251.0	8.0	120.00	0.00	
9590	6970	6980	640.0	4.0	120.00	0.00	
9600	6960	6990	250.0	8.0	120.00	0.00	
9610	430	7000	454.0	8.0	120.00	0.00	
9620	6990	7000	517.0	4.0	120.00	0.00	
9630	3800	7010	453.0	8.0	120.00	0.00	
9640	7000	7010	651.0	4.0	120.00	0.00	
9650	1440	1510	269.0	12.0	120.00	0.00	
9660	1520	7020	1509.0	12.0	120.00	0.00	
9670	1470	7020	194.0	8.0	120.00	0.00	
9680	3280	7030	719.0	16.0	120.00	0.00	
9690	3340	7030	206.0	12.0	120.00	0.00	
9700	3430	1810	230.0	8.0	120.00	0.00	
9710	1810	3470	643.0	8.0	120.00	0.00	
9720	6490	7040	388.0	12.0	120.00	0.00	
9730	1810	7040	2637.0	24.0	120.00	0.00	
9740	7040	2080	2691.0	24.0	120.00	0.00	
9750	3570	6460	1411.0	6.0	120.00	0.00	
9760	3570	1930	2090.0	8.0	120.00	0.00	
10001-BNPU	0	10000	50.0	20.0	140.00	0.00	130.00
10002-BNPU	0	10010	50.0	20.0	140.00	0.00	130.00
10003-XXPU	0	10020	50.0	20.0	140.00	0.00	130.00
10004-XXPU	0	10030	50.0	20.0	140.00	0.00	130.00
10100	10000	10010	10.0	36.0	140.00	0.00	
10110	10010	10020	10.0	36.0	140.00	0.00	
10120	10020	10030	10.0	36.0	140.00	0.00	
10130	10030	10040	10.0	36.0	140.00	0.00	

10140	10040	10050	10.0	36.0	140.00	0.00
10150	10050	10060	10.0	36.0	140.00	0.00
10160	10060	10070	10.0	36.0	140.00	0.00
10170	10070	10080	10.0	36.0	140.00	0.00
10180	10080	10090	10.0	36.0	140.00	0.00
10190	10090	10100	10.0	36.0	140.00	0.00
10200	10100	10110	10.0	36.0	140.00	0.00
10210	10110	10120	887.0	30.0	140.00	0.00
10220	10000	10130	795.0	36.0	140.00	0.00
10230	10130	10140	908.0	36.0	140.00	0.00
10240	10150	10140	2806.0	12.0	140.00	0.00
10250	10160	10150	2636.0	12.0	140.00	0.00
10260	10160	10170	2638.0	12.0	140.00	0.00
10270	10170	10180	2787.0	12.0	140.00	0.00
10280	10180	10120	2342.0	30.0	140.00	0.00
10290	10180	10190	1329.0	24.0	140.00	0.00
10300	10190	10200	2039.0	24.0	140.00	0.00
10310	10200	10210	1925.0	24.0	140.00	0.00
10320	10210	10220	649.0	24.0	140.00	0.00
10330	10220	10230	2729.0	20.0	140.00	0.00
10340	10230	10240	3073.0	16.0	140.00	0.00
10350	10240	10250	1984.0	16.0	140.00	0.00
10360	10250	10260	2970.0	16.0	140.00	0.00
10370	10270	10260	2417.0	16.0	140.00	0.00
10380-BN	10270	0	407.0	24.0	140.00	0.00
10390	10270	10280	1589.0	16.0	140.00	0.00
10400	10280	4230	2294.0	16.0	140.00	0.00
10410	10250	10290	2040.0	12.0	140.00	0.00
10420	10290	10300	1944.0	12.0	140.00	0.00
10430	10300	4220	1873.0	12.0	140.00	0.00
10440	6330	2280	1258.0	12.0	140.00	0.00
10450	2510	2650	1495.0	16.0	140.00	0.00
10460	2650	6120	1329.0	16.0	140.00	0.00
10470	6120	2640	2623.0	16.0	140.00	0.00
10480	6770	310	511.0	36.0	140.00	0.00
10490	760	750	524.0	12.0	140.00	0.00
10500	890	1050	1402.0	12.0	140.00	0.00
10510	960	10310	734.0	12.0	140.00	0.00
10520	1010	1000	787.0	12.0	140.00	0.00
10530	4120	10320	2757.0	12.0	140.00	0.00
10540	10310	10320	2609.0	12.0	140.00	0.00
10550	10320	10330	4597.0	16.0	140.00	0.00
10560	10330	10340	3535.0	16.0	140.00	0.00
10570	10340	10900	2546.0	12.0	140.00	0.00
10580	4020	10350	2644.0	16.0	140.00	0.00
10590	10350	10360	2619.0	16.0	140.00	0.00
10600	10360	3750	2591.0	16.0	140.00	0.00
10610	4820	1680	829.0	20.0	140.00	0.00
10620	360	4760	1706.0	16.0	140.00	0.00
10630	4720	10370	2277.0	16.0	140.00	0.00
10640	10370	620	3007.0	12.0	140.00	0.00
10650	6400	2410	1248.0	16.0	140.00	0.00
10660-XX	2150	10770	1515.0	12.0	140.00	0.00
10670	10380	10390	2701.0	16.0	140.00	0.00

243.00

10680	10390	10140	2648.0	24.0	140.00	0.00
10690	10390	10190	5844.0	16.0	140.00	0.00
10700-XX	6430	2050	3003.0	12.0	140.00	0.00
10710	2050	10400	2708.0	12.0	140.00	0.00
10720	10400	10410	5290.0	24.0	140.00	0.00
10730	10410	10140	5276.0	24.0	140.00	0.00
10740	4210	10420	2854.0	12.0	140.00	0.00
10750	10420	10220	3043.0	16.0	140.00	0.00
10760	10170	10430	5301.0	12.0	140.00	0.00
10790	10450	10460	2227.0	12.0	140.00	0.00
10800	10460	10470	2586.0	12.0	140.00	0.00
10810	10470	10190	2709.0	12.0	140.00	0.00
10920	10530	10800	1633.0	12.0	120.00	0.00
10930	1040	10530	1634.0	12.0	140.00	0.00
10940	910	5250	1304.0	8.0	140.00	0.00
10950	5280	10540	404.0	16.0	120.00	0.00
10960-XX	5250	10540	1488.0	8.0	140.00	0.00
10970	900	10550	1446.0	8.0	140.00	0.00
10980-XX	10550	5260	1354.0	8.0	140.00	0.00
11010	4390	10570	1219.0	12.0	140.00	0.00
11020	4140	10570	1698.0	8.0	140.00	0.00
11030	230	10580	1153.0	20.0	140.00	0.00
11040	4180	10580	730.0	8.0	140.00	0.00
11050-XX	5110	6670	2201.0	8.0	140.00	0.00
11060	3190	10590	303.0	12.0	120.00	0.00
11070-XX	6670	10590	711.0	8.0	140.00	0.00
11080-XX	1850	5070	1084.0	12.0	140.00	0.00
11090	5080	10600	371.0	16.0	120.00	0.00
11100-XX	5070	10600	1047.0	12.0	140.00	0.00
11110	6570	10370	5535.0	16.0	140.00	0.00
11130	4720	10620	444.0	8.0	120.00	0.00
11140	490	10620	2162.0	8.0	140.00	0.00
11150	2310	6250	1295.0	20.0	140.00	0.00
11160	10250	10630	2755.0	12.0	140.00	0.00
11170	10630	10510	1947.0	12.0	140.00	0.00
11230	2970	3030	844.0	12.0	140.00	0.00
11240	170	10670	5648.0	16.0	120.00	0.00
11250	3640	10670	69.0	8.0	140.00	0.00
11260	10670	10680	2317.0	16.0	120.00	0.00
11270	3600	10680	79.0	8.0	140.00	0.00
11280	10580	10690	2576.0	20.0	140.00	0.00
11290	4170	10690	1128.0	8.0	140.00	0.00
11300	5490	10700	202.0	12.0	120.00	0.00
11310	5610	10700	266.0	8.0	140.00	0.00
11320	700	10710	498.0	8.0	140.00	0.00
11330	880	10720	429.0	12.0	120.00	0.00
11340	900	10730	590.0	12.0	120.00	0.00
11350	10720	10740	637.0	8.0	140.00	0.00
11360	10740	890	414.0	8.0	140.00	0.00
11370	1520	10750	2133.0	12.0	120.00	0.00
11380	3330	10760	420.0	10.0	120.00	0.00
11390	10750	10760	2157.0	12.0	140.00	0.00
11400	10380	10770	2615.0	16.0	140.00	0.00
11410	6360	10770	250.0	8.0	140.00	0.00

11430	1160	10790	1924.0	12.0	120.00	0.00
11440	1130	10790	1379.0	8.0	140.00	0.00
11450	1150	10800	277.0	12.0	120.00	0.00
11460	1140	10800	1341.0	8.0	140.00	0.00
11470-XX	5520	5340	873.0	12.0	140.00	0.00
11480	790	10810	340.0	8.0	120.00	0.00
11490	5460	10820	511.0	6.0	140.00	0.00
11500-XX	10810	10820	1470.0	12.0	140.00	0.00
11510-XX	10820	10830	714.0	12.0	140.00	0.00
11520	1710	10840	685.0	12.0	120.00	0.00
11530-XX	10830	10840	879.0	12.0	140.00	0.00
11540	10830	5480	1466.0	8.0	140.00	0.00
11550	6950	10860	845.0	24.0	120.00	0.00
11570	10590	10870	470.0	12.0	120.00	0.00
11580	1560	10880	1308.0	8.0	120.00	0.00
11590-XX	10870	10880	2209.0	8.0	140.00	0.00
11610	10570	10900	1461.0	12.0	140.00	0.00
11620	4140	10900	2582.0	8.0	140.00	0.00
11640	1200	1230	1223.0	8.0	140.00	0.00
11650	1230	1220	1141.0	8.0	140.00	0.00
11660	1220	1260	1231.0	8.0	140.00	0.00
11670	1260	1540	1892.0	8.0	140.00	0.00
11680	3860	10910	953.0	12.0	120.00	0.00
11690-XX	4660	10910	1063.0	16.0	140.00	0.00
11700	2310	6240	3384.0	12.0	140.00	0.00
11710	2040	10920	586.0	12.0	120.00	0.00
11720	2080	10920	2693.0	24.0	140.00	0.00
11730	10920	10930	2596.0	36.0	140.00	0.00
11740	6570	10930	3038.0	16.0	140.00	0.00
11750	10930	10400	2629.0	24.0	140.00	0.00
11760	7030	1420	1687.0	16.0	140.00	0.00
11770-XX	10600	3980	1525.0	24.0	140.00	0.00
11780	3980	5490	2766.0	30.0	140.00	0.00
11790	740	10940	691.0	12.0	120.00	0.00
11800	5490	10940	2556.0	30.0	140.00	0.00
11810	4060	11050	1187.0	16.0	120.00	0.00
11820	10460	10950	4216.0	12.0	140.00	0.00
11830	10950	10960	480.0	12.0	140.00	0.00
11840	10960	10970	5543.0	12.0	140.00	0.00
11850	10970	10230	2902.0	12.0	140.00	0.00
11860	10510	10970	2684.0	12.0	140.00	0.00
11870	10630	10980	5987.0	12.0	140.00	0.00
11880	10430	10460	4137.0	12.0	140.00	0.00
11890	10340	10990	8471.0	12.0	140.00	0.00
11900	4020	11030	8094.0	16.0	140.00	0.00
11910	11000	11010	4945.0	16.0	140.00	0.00
11920	4390	11020	388.0	12.0	120.00	0.00
11930	40	11020	8478.0	12.0	140.00	0.00
11940	11000	11030	4159.0	16.0	140.00	0.00
11960	330	10850	448.0	20.0	120.00	0.00
11990-XX	10850	11050	720.0	16.0	140.00	0.00
12000	4030	4150	1375.0	12.0	140.00	0.00
12020	310	340	1535.0	24.0	140.00	0.00
12030	340	190	1943.0	20.0	140.00	0.00



12040	330	320	779.0	24.0	140.00	0.00	
12060	6240	2310	3533.0	16.0	140.00	0.00	
12100-BN	10930	0	404.0	20.0	140.00	0.00	243.00
12200-BN	1210	0	308.0	24.0	140.00	0.00	243.00
12300	1210	5730	3606.0	16.0	140.00	0.00	

P U M P   D A T A

THERE IS A PUMP IN LINE 9150 DESCRIBED BY THE FOLLOWING DATA:

HEAD (ft)	FLOWRATE (gpm)
-----	-----
225.00	0.00
188.00	6300.00
140.00	8000.00

THERE IS A PUMP IN LINE 9160 DESCRIBED BY THE FOLLOWING DATA:

HEAD (ft)	FLOWRATE (gpm)
-----	-----
255.00	0.00
200.00	4200.00
170.00	5100.00

THERE IS A PUMP IN LINE 9170 DESCRIBED BY THE FOLLOWING DATA:

HEAD (ft)	FLOWRATE (gpm)
-----	-----
220.00	0.00
185.00	2100.00
117.00	3500.00

THERE IS A PUMP IN LINE 9410 DESCRIBED BY THE FOLLOWING DATA:

HEAD (ft)	FLOWRATE (gpm)
-----	-----
225.00	0.00
187.00	6300.00
140.00	8000.00

THERE IS A PUMP IN LINE 9420 DESCRIBED BY THE FOLLOWING DATA:

HEAD (ft)	FLOWRATE (gpm)
-----	-----
230.00	0.00
194.00	6300.00
135.00	8000.00

THERE IS A PUMP IN LINE 9430 DESCRIBED BY THE FOLLOWING DATA:

HEAD (ft)	FLOWRATE (gpm)
230.00	0.00
190.00	4200.00
117.00	7000.00

THERE IS A PUMP IN LINE 9440 DESCRIBED BY THE FOLLOWING DATA:

HEAD (ft)	FLOWRATE (gpm)
228.00	0.00
197.00	6300.00
152.00	9000.00

THERE IS A PUMP IN LINE 10001 DESCRIBED BY THE FOLLOWING DATA:

HEAD (ft)	FLOWRATE (gpm)
225.00	0.00
150.00	8333.00
50.00	12000.00

THERE IS A PUMP IN LINE 10002 DESCRIBED BY THE FOLLOWING DATA:

HEAD (ft)	FLOWRATE (gpm)
225.00	0.00
150.00	8333.00
50.00	12000.00

THERE IS A PUMP IN LINE 10003 DESCRIBED BY THE FOLLOWING DATA:

HEAD (ft)	FLOWRATE (gpm)
225.00	0.00
150.00	8333.00
50.00	12000.00

THERE IS A PUMP IN LINE 10004 DESCRIBED BY THE FOLLOWING DATA:

HEAD (ft)	FLOWRATE (gpm)
225.00	0.00
150.00	8333.00
50.00	12000.00

JUNCTION NODE DATA

JUNCTION NUMBER	JUNCTION TITLE	EXTERNAL DEMAND (gpm)	JUNCTION ELEVATION (ft)	CONNECTING PIPES			
10-1		28.40	100.00	30	50	6350	
20-1		0.00	100.00	20	30	40	
30-1		306.81	100.00	180	190	6480	
40-1		0.73	100.00	50	190	200	11930
50-1		0.00	100.00	80	5950	5960	
60-1		92.82	100.00	110	170	180	6460
70-1		60.63	100.00	90	140	6310	
80-1		0.61	100.00	90	110	120	
100-1		0.00	100.00	120	160	6500	
110-1		31.82	100.00	130	150	6450	
120-1		306.70	100.00	160	170	250	
130-1		47.57	100.00	350	370	5300	
140-1		0.00	100.00	340	350	5270	
150-1		0.00	100.00	330	340	5290	
160-1		0.00	100.00	330	5310	6510	
170-1		36.42	100.00	260	420	5550	11240
180-1		21.41	100.00	270	6550	6560	
190-1		1.45	100.00	300	6630	6640	12030
200-1		60.46	100.00	300	310		
210-1		18.89	100.00	310	320	6520	
220-1		76.09	100.00	150	360	370	
230-1		236.21	100.00	430	570	11030	
240-1		15.59	100.00	390	400		
250-1		92.74	100.00	410	420	450	6570
260-1		15.51	100.00	410	440	550	
270-1		145.19	100.00	430	440	580	
280-1		7.33	100.00	450	460	5600	
290-1		2.01	100.00	470	500	6620	
300-1		67.07	100.00	470	490		
310-1		45.92	100.00	520	530	10480	12020
320-1		0.00	100.00	510	520	1080	12040
330-1		0.00	100.00	510	560	9010	11960
12040							
340-1		15.11	100.00	530	540	1000	12020
12030							
350-1		114.91	100.00	560	2280	6590	9020
360-1		45.62	100.00	650	6750	6760	10620
370-1		11.41	100.00	580	590	600	
380-1		0.00	100.00	680	700	6660	6820
390-1		37.32	100.00	600	610	6040	
400-1		34.34	100.00	690	6680	6770	
420-1		252.96	100.00	630	640		
430-1		63.85	100.00	2281	2300	9610	
440-1		10.59	100.00	750	860	6690	6710
450-1		0.00	100.00	5620	6020		
460-1		0.89	100.00	700	710	740	
470-1		3.67	100.00	710	720	6780	
480-1		3.36	100.00	720	730		

490-1	28.88	100.00	730	760	880	11140
500-1	0.78	100.00	750	6890	6900	
510-1	84.75	100.00	760	770		
520-1	0.00	100.00	770	780		
530-1	7.96	100.00	780	790	940	6950
540-1	0.00	100.00	790	800	810	
550-1	0.12	100.00	810	820	900	
560-1	13.71	100.00	820	830	2400	
570-1	15.76	100.00	830	5990		
600-1	67.49	100.00	860	6000		
610-1	32.63	100.00	880	890		
620-1	78.59	100.00	890	2710	6870	10640
630-1	86.28	100.00	900	910	930	
640-1	0.00	100.00	910	920	2450	
650-1	3.90	100.00	930	960	7060	
660-1	1.40	100.00	940	950	990	
670-1	5.35	100.00	950	960	970	
680-1	15.56	100.00	980	4880	7000	
690-1	38.31	100.00	980	990	4860	4870
700-1	53.64	100.00	1000	1010	11320	
710-1	0.00	100.00	1010	1030	1060	
720-1	11.31	100.00	1020	1040		
730-1	43.01	100.00	1020	1030		
740-1	3.19	100.00	1040	1100	7610	11790
750-1	59.36	100.00	1050	1130	10490	
760-1	0.00	100.00	1050	1060	1070	10490
770-1	34.99	100.00	1070	1110	1120	
780-1	15.13	100.00	1080	1090	2360	
790-1	0.00	100.00	1100	1160	11480	
800-1	0.00	100.00	1110	1140	1150	9320
810-1	213.69	100.00	1120	1260	9330	
820-1	0.00	100.00	1130	1140		
830-1	0.00	100.00	1150	1160	1170	
840-1	10.04	100.00	1170	1180	1860	9310
850-1	17.12	100.00	1180	1190		
860-1	145.05	100.00	1190	1200		
870-1	0.34	100.00	1200	1210		
880-1	0.32	100.00	1220	1440	7500	11330
890-1	1.14	100.00	1220	1230	10500	11360
900-1	11.96	100.00	1240	10970	11340	
910-1	0.88	100.00	1240	1250	10940	
920-1	145.68	100.00	1290	7450		
930-1	15.24	100.00	1260	1270		
940-1	4.49	100.00	1270	1280		
950-1	55.15	100.00	1280	1300		
960-1	5.28	100.00	1290	1300	1310	10510
970-1	35.84	100.00	1310			
980-1	60.49	100.00	1320	1330	1370	
990-1	16.26	100.00	1330	1340	1360	
1000-1	3.06	100.00	1340	1350	10520	
1010-1	94.76	100.00	1360	1390	1400	10520
1020-1	0.59	100.00	1370	1380	1420	
1030-1	168.46	100.00	1380	1390	7460	
1040-1	58.76	100.00	1410	1430	1490	10930

1050-1	102.47	100.00	1430	1450	7430	10500
1060-1	5.16	100.00	1440	1450	1460	
1070-1	25.03	100.00	1460	1470	1500	7540
1080-1	0.00	100.00	1470	1480	1540	
1090-1	118.10	100.00	1480	1490	1560	
1100-1	19.92	100.00	1500			
1110-1	32.85	100.00	1680	1740	6270	7970
1130-1	14.14	100.00	1540	1550	11440	
1140-1	10.08	100.00	1550	1560	1570	11460
1150-1	11.51	100.00	1580	11450		
1160-1	1.51	100.00	1590	1770	11430	
1170-1	13.74	100.00	1590	1600		
1180-1	0.00	100.00	1600	1790		
1190-1	0.00	100.00	1620	1630	1800	1840
1200-1	2.81	100.00	1770	1780	6270	7560
11640						
1210-1	14.09	100.00	2090	7950	12200	12300
1220-1	30.14	100.00	1670	2110	11650	11660
1230-1	11.11	100.00	1650	11640	11650	
1240-1	3.09	100.00	1650	1660	1750	
1250-1	8.10	100.00	1670	1680	7930	
1260-1	51.46	100.00	1720	11660	11670	
1290-1	81.44	100.00	1720	6250	6260	
1310-1	0.00	100.00	1610	1780	1790	1810
1320-1	0.00	100.00	1800	1820	7490	
1330-1	0.00	100.00	1820	1830	1850	
1340-1	6.72	100.00	1830	1840	1890	2050
1350-1	91.13	100.00	1860	1870		
1360-1	3.22	100.00	1880	7510		
1370-1	7.40	100.00	5830	6130	7590	
1380-1	0.00	100.00	1930	7660	7730	7850
1390-1	1.29	100.00	6100	6110	9480	9500
9510						
1400-1	1.18	100.00	2000	2350	5750	6190
1410-1	0.29	100.00	1930	5810		
1420-1	1.38	100.00	1940	1960	1990	11760
1430-1	0.00	100.00	1950	5770		
1440-1	7.80	100.00	1960	1970	2010	9650
1450-1	0.00	100.00	1970	1980	2020	
1460-1	0.00	100.00	2000	5890		
1470-1	34.67	100.00	2010	2030	9220	9670
1480-1	3.29	100.00	2040	2060	2100	7890
1490-1	0.00	100.00	2030	2040	2110	
1500-1	19.21	100.00	2050	7880		
1510-1	27.82	100.00	2070	4800	9650	
1520-1	23.56	100.00	2080	2130	9660	11370
1530-1	52.25	100.00	2080	2090	2100	
1540-1	62.87	100.00	2150	2170	5260	11670
1550-1	9.76	100.00	2130	2140	4640	
1560-1	58.03	100.00	2140	5260	11580	
1570-1	2.46	100.00	2150	7980	9260	
1580-1	207.41	100.00	2170	2180	2200	9260
1590-1	0.82	100.00	2180	2190	2270	8110
1600-1	0.00	100.00	2200	2210	4340	4360

1610-1	0.00	100.00	2220	2270	4330	8020
1620-1	40.30	100.00	2220	2230	4320	
1630-1	16.13	100.00	2230	2240	4310	
1640-1	0.00	100.00	2240	2250	4350	
1650-1	0.00	100.00	2250	2260	4430	
1660-1	15.08	100.00	2260	4550	4560	8080
1670-1	0.00	100.00	2300	5681	6110	9000
1680-1	7.35	100.00	2340	5740	10610	
1700-1	25.73	100.00	2340	2350	5710	6160
1710-1	0.00	100.00	6100	11520		
1730-1	5.06	100.00	2390	4690	4740	
1740-1	3.00	100.00	2400	2410	4870	
1750-1	0.00	100.00	2410	2420	4750	4850
1760-1	9.68	100.00	2430	4670	7230	
1770-1	2.67	100.00	2440	4710		
1780-1	7.87	100.00	4400	4460	4490	7410
7420						
1790-1	0.00	100.00	2460	2480	2630	6970
1800-1	0.00	100.00	2460	2470	5060	
1810-1	9.69	100.00	2470	2680	9700	9710
9730						
1820-1	10.40	100.00	2490	4930	4960	5070
1830-1	6.68	100.00	2490	2500	2580	
1840-1	30.68	100.00	2510	2530	2610	6200
1850-1	7.07	100.00	2520	4620	6990	11080
1860-1	14.70	100.00	4910	7100		
1870-1	0.00	100.00	2540	4000	8730	8780
1880-1	60.79	100.00	2540	2550	9290	
1890-1	0.00	100.00	2550	2560	2590	
1900-1	2.03	100.00	2570	2720	8770	
1910-1	7.46	100.00	2570	2580	5080	
1920-1	26.25	100.00	2590	2600	2740	
1930-1	26.45	100.00	2600	2790	9760	
1940-1	38.79	100.00	2610	2620	4470	7360
1950-1	0.00	100.00	2630	2640	2700	4980
1960-1	8.08	100.00	2640	2650	2690	4970
1970-1	111.15	100.00	2660	6860		
1980-1	52.85	100.00	2660	2670		
1990-1	26.90	100.00	2760	2770	5120	8850
2010-1	32.28	100.00	2690	2710	7180	
2020-1	1.39	100.00	2730	5000	5050	5060
2030-1	0.00	100.00	2740	2750	5150	
2040-1	82.97	100.00	2780	11710		
2050-1	136.46	100.00	2780	2820	2900	10700
10710						
2060-1	15.73	100.00	2810	2840	2890	8720
2070-1	131.94	100.00	2800	2880	8660	8670
2080-1	112.32	100.00	8690	8700	9740	11720
2090-1	9.44	100.00	2830	2860	8640	
2100-1	3.74	100.00	2840	3870	5170	
2110-1	41.05	100.00	2850	2870	3900	
2120-1	0.20	100.00	2850	2860	3830	
2130-1	0.00	100.00	2870	2880	3110	
2140-1	13.24	100.00	3810	3840	4130	

2150-1	117.12	100.00	2900	2910	3250	10660
2160-1	27.78	100.00	2920	3240	8610	
2170-1	3.48	100.00	2920	2930	2990	3220 3260
2180-1	30.26	100.00	2940	3040	8570	
2190-1	28.40	100.00	2950	2960	3000	
2200-1	31.59	100.00	2960	2970	9340	
2210-1	0.00	100.00	2970	2980		
2220-1	0.00	100.00	2980	2990	3030	
2230-1	42.74	100.00	3000	3010		
2240-1	10.14	100.00	3020	8590	9340	
2250-1	56.37	100.00	3020	3030		
2260-1	31.37	100.00	3050	3130	8550	
2270-1	81.74	100.00	3060	8580		
2280-1	0.00	100.00	3060	3070	10440	
2290-1	0.00	100.00	3070	3080	3140	
2300-1	47.11	100.00	3090	3150	8520	
2310-1	104.36	100.00	3090	3100	11150	11700
12060						
2320-1	38.82	100.00	3110	3120	3210	
2330-1	12.87	100.00	3120	3200	3330	8470
2340-1	29.37	100.00	3140	3160	8540	
2350-1	0.00	100.00	3150	3160	3170	
2360-1	40.89	100.00	3170	3180	3290	
2370-1	0.04	100.00	3180	3190	3210	
2380-1	70.55	100.00	3190	3200	3450	
2390-1	0.00	100.00	3220	3230	3270	
2400-1	94.07	100.00	3230	3240	3250	
2410-1	50.87	100.00	3260	3270	3280	10650
2420-1	69.94	100.00	3300	8500		
2430-1	0.00	100.00	3300	3310	3420	
2440-1	82.98	100.00	3310	3320	3450	
2450-1	0.43	100.00	3320	3340	3350	8430
2460-1	8.33	100.00	3330	3340	3710	
2470-1	32.48	100.00	3350	3400	3650	
2480-1	72.77	100.00	3370	3440	8490	9120
2490-1	0.00	100.00	3370	3380	3470	
2500-1	0.00	100.00	3390	3410	3490	
2510-1	0.00	100.00	3400	3500	3520	10450
2520-1	0.00	100.00	3380	3410	3430	
2530-1	235.68	100.00	3420	3430	3440	
2540-1	70.41	100.00	3470	3480	9130	
2550-1	38.92	100.00	3480	3490	3510	
2560-1	68.48	100.00	3390	3500	3510	
2570-1	20.51	100.00	3520	3530		
2580-1	0.00	100.00	3530	3540	8340	
2590-1	49.28	100.00	3540	3550		
2600-1	8.75	100.00	3560	3570	4140	8240
2610-1	56.48	100.00	3560	3590	4160	
2620-1	60.14	100.00	3580	3980	4110	6220
2630-1	0.00	100.00	3600	3630	8260	
2640-1	280.63	100.00	3600	3640	10470	
2650-1	17.52	100.00	10450	10460		
2660-1	1.22	100.00	3640	8270		
2670-1	20.79	100.00	3650	3660		

2680-1	2.96	100.00	3660	3670	3680	
2690-1	10.19	100.00	3690	8370	8420	
2700-1	13.94	100.00	3700	3720	8350	
2710-1	17.84	100.00	3710	3720	3730	8450
2720-1	21.68	100.00	3740	3760	8460	
2730-1	17.75	100.00	3750	3800	8230	
2740-1	81.36	100.00	3760	3770	3820	
2750-1	0.00	100.00	3770	3780	3830	
2760-1	2.66	100.00	3790	3930	8220	8390
2770-1	7.33	100.00	3810	3820	3910	3960
2780-1	40.98	100.00	2890	3840	3860	
2790-1	124.80	100.00	2830	3850	3880	
2800-1	5.33	100.00	3850	3870	3890	
2810-1	42.79	100.00	3860	3880	3890	
2820-1	104.77	100.00	3910	3920	4070	
2830-1	0.29	100.00	3920	3950	3970	4080
2840-1	34.94	100.00	3930	3940	3990	
2850-1	7.66	100.00	3940	3950	8280	
2860-1	27.04	100.00	3960	8300	8310	
2870-1	28.61	100.00	4530	8210	8330	
2880-1	0.88	100.00	4000	4010	4070	4470
2890-1	28.43	100.00	4010	4020	4480	
2900-1	40.86	100.00	4020	4030	4080	4460
2910-1	8.44	100.00	4030	4040	4090	4450
2920-1	22.57	100.00	4040	4050	4440	
2930-1	22.02	100.00	4060	4240	4510	
2940-1	1.79	100.00	4060	4100	4210	
2950-1	9.22	100.00	4100	4120	4150	
2960-1	0.00	100.00	3570	4110	4120	
2970-1	38.19	100.00	4150	4190	11230	
2980-1	26.11	100.00	4170	8180	8190	
2990-1	8.75	100.00	4170	4180	9280	
3000-1	0.63	100.00	4180	4200		
3010-1	29.83	100.00	4140	4190	4200	
3020-1	0.00	100.00	4210	4220	4230	4390
3030-1	40.82	100.00	4220	11230		
3040-1	37.13	100.00	4230	4250	4260	4310
3050-1	30.27	100.00	4240	4250	4350	
3060-1	0.00	100.00	4260	4270	9270	
3070-1	33.66	100.00	4270	4280	4320	
3080-1	0.00	100.00	4280	4290	4330	
3090-1	29.37	100.00	4300	4340	4380	8150
3100-1	5.34	100.00	4370	8030	8070	
3110-1	17.01	100.00	8040	8050		
3120-1	36.86	100.00	4400	4410	4450	
3130-1	8.11	100.00	4420	4600	7320	8140
3140-1	61.24	100.00	4420	4430	4520	4610
3150-1	47.29	100.00	4480	4500		
3160-1	0.00	100.00	2620	4490	4500	
3170-1	0.00	100.00	4050	4510	4520	4540
3180-1	0.00	100.00	4540	8320		
3190-1	58.98	100.00	4630	11060		
3200-1	55.99	100.00	4560	4570	4610	
3210-1	0.00	100.00	4570	4580	4660	



3220-1	23.85	100.00	4580	4590	7330	
3230-1	10.08	100.00	4680	7200		
3240-1	66.04	100.00	4630	4640	4650	9300
3250-1	13.51	100.00	4700	8010	8920	
3260-1	48.18	100.00	4670	4680	4720	
3270-1	47.33	100.00	4690	4700		
3280-1	47.70	100.00	4710	4720	4730	9680
3290-1	0.00	100.00	4730	4740	4820	
3300-1	15.44	100.00	4750	4760	4770	
3310-1	1.50	100.00	4780	7240		
3320-1	25.32	100.00	4790	4810	7810	
3330-1	7.10	100.00	4800	4810	11380	
3340-1	0.00	100.00	4790	4820	4840	9690
3350-1	7.07	100.00	4830	4840	7280	
3360-1	0.00	100.00	4850	4860	7020	
3370-1	0.16	100.00	4890	4920	7050	
3380-1	0.23	100.00	4890	4900	4910	
3390-1	11.35	100.00	4930	4940	7010	7040
3400-1	12.95	100.00	4950	7130	7160	
3410-1	0.00	100.00	4950	4960		
3420-1	0.00	100.00	4970	4990		
3430-1	85.10	100.00	4980	4990	5020	9700
3440-1	8.65	100.00	2720	5000	5010	
3450-1	27.25	100.00	5010	5030		
3460-1	2.77	100.00	5020	5030		
3470-1	3.40	100.00	5050	5090	9710	
3480-1	0.18	100.00	5070	7150	8860	
3490-1	0.00	100.00	5090	5110	5160	
3500-1	0.00	100.00	2680	5130		
3510-1	1.84	100.00	5120	5140	8740	
3520-1	2.03	100.00	5110	5130	5140	
3530-1	77.84	100.00	2730	5150	5160	
3540-1	1.77	100.00	5170	5190	5210	
3550-1	0.00	100.00	5180	5190	5200	5220
3560-1	38.61	100.00	2810	5200	5210	
3570-1	86.25	100.00	5230	8800	9750	9760
3580-1	0.00	100.00	5230	5250		
3590-1	41.46	100.00	2750	5240	5250	
3600-1	0.00	100.00	5340	5400	11270	
3610-1	7.88	100.00	5270	5280	5300	5320
3620-1	208.93	100.00	5310	5330	5450	
3630-1	5.57	100.00	5290	5320	5360	
3640-1	0.00	100.00	5350	5370	11250	
3650-1	9.74	100.00	5330	5360	5380	
3660-1	36.76	100.00	5340	5370	5420	
3670-1	0.00	100.00	5350	5390	5430	
3680-1	0.00	100.00	5400	5440	5480	
3690-1	0.00	100.00	5420	5430	5440	5510
3700-1	0.81	100.00	5450	5470	5500	
3710-1	0.00	100.00	5380	5460	5470	5490
3720-1	0.00	100.00	5280	5480	5490	
3730-1	0.00	100.00	5390	5500	5520	
3740-1	0.00	100.00	5460	5510	5520	
3750-1	8.73	100.00	5530	5540	10600	

3760-1	4.79	100.00	5540	5570		
3770-1	4.60	100.00	5550	5560	5580	
3780-1	0.00	100.00	5560	5570		
3790-1	0.00	100.00	550	5590	5600	
3800-1	12.92	100.00	5610	9520	9630	
3810-1	0.00	100.00	5610	5630		
3820-1	0.16	100.00	5630	5690		
3840-1	12.81	100.00	5660	6050	9490	
3850-1	5.47	100.00	5660	5670	9470	
3860-1	0.00	100.00	5700	5730	5870	11680
3870-1	42.70	100.00	5680	5690	5700	6910
3880-1	0.16	100.00	5710	5720	6720	
3890-1	0.00	100.00	5720	5730	5760	
3900-1	0.00	100.00	5750	5760	5780	5860
3910-1	24.15	100.00	1940	5770	7800	
3930-1	0.05	100.00	5820	5850	6140	
3940-1	236.77	100.00	1950	5810	5840	7790
3950-1	6.09	100.00	1980	5830	5840	
3960-1	0.57	100.00	5850	5880	5920	
3970-1	6.00	100.00	5860	5870	5880	6090
3980-1	1.84	100.00	5890	5910	7780	11770
11780						
3990-1	13.51	100.00	5780	5900	5910	5920
4020-1	0.00	100.00	5950	10580	11900	
4030-1	96.57	100.00	5960	12000		
4040-1	0.00	100.00	200	5970	5980	
4050-1	13.03	100.00	6010	6020	6030	6040
4060-1	19.81	100.00	6730	11810		
4080-1	0.00	100.00	4760	6160		
4090-1	9.81	100.00	4770	6180	6190	7090
4100-1	68.51	100.00	2500	6200	6210	
4110-1	9.24	100.00	2800	6230	6240	
4120-1	53.97	100.00	1350	10530		
4130-1	135.41	100.00	1400			
4140-1	20.84	100.00	130	11020	11620	
4150-1	99.30	100.00	20	6280	12000	
4160-1	0.77	100.00	6280	9140		
4170-1	10.82	100.00	6540	11290		
4180-1	28.17	100.00	390	11040		
4190-1	13.31	100.00	630			
4200-1	51.91	100.00	8840			
4210-1	37.48	100.00	2950	10740		
4220-1	132.00	100.00	3100	10430		
4230-1	193.53	100.00	3360	10400		
4250-1	2.00	100.00	7910			
4260-1	8.53	100.00	6290	6300	6340	
4270-1	1.99	100.00	6300			
4280-1	0.90	100.00	5970	6310	6320	
4290-1	24.33	100.00	6390	6410		
4300-1	0.09	100.00	6400			
4310-1	28.99	100.00	6340	6360	9140	
4320-1	2.04	100.00	6290	6350	6490	
4350-1	5.72	100.00	6390	6400	6430	
4360-1	12.42	100.00	6320	6410	6420	

4370-1	4.78	100.00	6420	6430	
4380-1	161.85	100.00	140	6440	
4390-1	81.99	100.00	6450	11010	11920
4400-1	0.62	100.00	6460	6470	
4410-1	80.04	100.00	80	6470	
4420-1	5.80	100.00	40	6480	
4430-1	38.83	100.00	6360	6490	
4440-1	256.05	100.00	360	6500	
4450-1	0.64	100.00	320	6510	
4460-1	0.00	100.00	6520		
4480-1	0.00	100.00	5580	6540	
4490-1	31.49	100.00	260	6550	
4500-1	0.00	100.00	490	6560	
4510-1	35.67	100.00	400	6570	
4520-1	16.46	100.00	500	6580	
4530-1	11.85	100.00	6590	6600	
4540-1	19.01	100.00	6600	6610	
4550-1	1.90	100.00	5590	6610	
4560-1	6.74	100.00	460	6620	
4570-1	6.77	100.00	270	6630	
4580-1	42.86	100.00	540	6640	
4590-1	133.85	100.00	570	6650	
4600-1	21.97	100.00	590	6660	
4610-1	114.87	100.00	6650	6670	
4620-1	10.12	100.00	6680	6740	
4630-1	14.40	100.00	6690	6700	
4640-1	0.00	100.00	6030	6700	
4650-1	14.09	100.00	690	6710	
4660-1	8.95	100.00	5740	6720	11690
4670-1	1.96	100.00	6050	6730	
4680-1	69.21	100.00	610	6740	
4690-1	4.18	100.00	640	6750	
4700-1	9.79	100.00	6670	6760	
4710-1	14.07	100.00	680	6770	
4720-1	40.83	100.00	6800	10630	11130
4730-1	54.83	100.00	6790	6810	6840
4740-1	1.69	100.00	6780	6810	6830
4750-1	1.93	100.00	650	6820	6850
4760-1	48.22	100.00	6800	6840	10620
4770-1	5.07	100.00	6830	6850	
4780-1	6.05	100.00	6860	6870	6980
4790-1	8.63	100.00	740	6880	
4800-1	0.01	100.00	6880	6890	
4810-1	16.03	100.00	800	6900	
4820-1	0.00	100.00	5990	6000	6910 10610
4830-1	1.88	100.00	6920	7080	
4840-1	0.26	100.00	6180	6930	
4850-1	1.72	100.00	6930	6940	
4860-1	0.00	100.00	6950	6960	
4870-1	14.86	100.00	920	6960	
4880-1	6.36	100.00	6970	8880	
4890-1	39.62	100.00	2650	6980	
4900-1	3.94	100.00	6990	7140	7340 7400
4910-1	0.00	100.00	970	7000	

4920-1	11.98	100.00	7010	8890		
4930-1	0.00	100.00	4900	7020		
4940-1	8.47	100.00	2480	7030	8870	
4950-1	0.00	100.00	4880	7050	7060	
4960-1	27.44	100.00	7070	7170		
4970-1	104.02	100.00	2420	7080	7090	7110
4980-1	27.89	100.00	2520	7100	7120	
4990-1	0.00	100.00	7120	7190	8900	
5000-1	35.61	100.00	7130	7140		
5010-1	0.00	100.00	7030	7150		
5020-1	2.94	100.00	4940	7160		
5030-1	10.29	100.00	7040	7170		
5040-1	24.33	100.00	2700	7180		
5050-1	0.41	100.00	7210	7220	9240	
5060-1	44.94	100.00	4620	7200	7210	
5070-1	1.54	100.00	7190	7220	11080	11100
5080-1	0.57	100.00	7230	9240	9250	11090
5090-1	37.89	100.00	6940	7240	9250	
5100-1	21.50	100.00	2440	7250		
5110-1	11.46	100.00	7250	7260	11050	
5120-1	0.00	100.00	7260	7270		
5130-1	1.68	100.00	2390	7280		
5140-1	0.18	100.00	2430	7290		
5150-1	2.04	100.00	7290	7300		
5160-1	0.02	100.00	4600	7310		
5170-1	0.00	100.00	4410	7320		
5180-1	11.90	100.00	7310	7330		
5190-1	1.82	100.00	2510	7340		
5200-1	27.40	100.00	7350	7380	8910	
5210-1	2.99	100.00	7360	7370	7390	
5220-1	3.86	100.00	7370	7380		
5230-1	0.00	100.00	7390	7400		
5240-1	42.21	100.00	7270	7350	7410	7420
5250-1	31.86	100.00	1420	7430	10940	10960
5260-1	2.29	100.00	1410	7440	10980	
5270-1	16.94	100.00	1250	7450		
5280-1	216.56	100.00	7460	10950		
5290-1	0.00	100.00	1810	7470		
5300-1	3.17	100.00	7470	7480		
5310-1	1.43	100.00	7490	7550		
5320-1	4.04	100.00	7500	7520		
5330-1	3.94	100.00	1870	7510	7750	
5340-1	4.71	100.00	7520	7530	11470	
5350-1	84.07	100.00	1850	7530	7770	
5360-1	121.55	100.00	1610	7540		
5370-1	1.08	100.00	7480	7550		
5380-1	29.87	100.00	1620	7560		
5390-1	76.38	100.00	1890	7570		
5400-1	19.94	100.00	7580	7840		
5410-1	1.93	100.00	7590	7600		
5420-1	16.52	100.00	1880	7600		
5430-1	5.48	100.00	7640	7670	7680	
5450-1	9.73	100.00	7650	7710	7720	
5460-1	8.25	100.00	7640	7650	11490	

5470-1	0.43	100.00	7660	7670	9510	
5480-1	34.05	100.00	7680	7700	11540	
5490-1	2.15	100.00	7700	9500	11300	11780
11800						
5500-1	44.65	100.00	7720	7740		
5510-1	14.79	100.00	7580	7730	7740	
5520-1	21.89	100.00	7750	7760	11470	
5530-1	0.62	100.00	7760	7770		
5540-1	51.89	100.00	1990	7780		
5550-1	0.05	100.00	5820	7790		
5560-1	0.76	100.00	5900	7800		
5570-1	3.61	100.00	4780	7810		
5580-1	22.02	100.00	2020	7820		
5590-1	5.53	100.00	7820	7830	9220	9230
5600-1	2.21	100.00	7570	7840	9230	
5610-1	0.55	100.00	6140	7850	11310	
5620-1	1.43	100.00	6130	7860		
5630-1	1.48	100.00	2070	7870		
5640-1	1.57	100.00	2060	7880		
5650-1	5.05	100.00	7830	7890		
5670-1	0.72	100.00	1740	7910		
5680-1	19.59	100.00	1750			
5690-1	0.00	100.00	7930	7940		
5700-1	5.74	100.00	1660	7940		
5710-1	96.39	100.00	1630	7950		
5730-1	14.55	100.00	6260	7970	12300	
5740-1	142.09	100.00	6250	7980		
5750-1	83.70	100.00	7990	8000		
5760-1	2.29	100.00	2190	8000		
5770-1	3.24	100.00	4650	8010		
5780-1	18.94	100.00	2210	8020		
5790-1	24.77	100.00	4360	8030		
5800-1	9.59	100.00	4380	8040		
5810-1	44.69	100.00	4370	8050	8060	
5820-1	14.33	100.00	8060	8070		
5830-1	1.14	100.00	8080	8090		
5840-1	24.36	100.00	8090	8100		
5850-1	2.04	100.00	8110	8930		
5860-1	1.72	100.00	4550	8120		
5870-1	2.07	100.00	4660	8130		
5880-1	2.66	100.00	4440	8140		
5890-1	26.51	100.00	4290	8150		
5900-1	42.22	100.00	4300	8160		
5910-1	24.39	100.00	8160	8170		
5920-1	223.75	100.00	8170	8180		
5930-1	69.45	100.00	8190	8200		
5940-1	28.87	100.00	4160	8200		
5950-1	0.00	100.00	3990	8210		
5960-1	9.48	100.00	3580	8220		
5970-1	35.88	100.00	3740	8230		
5980-1	66.21	100.00	3550	8240		
5990-1	17.27	100.00	3980	8250		
6000-1	11.52	100.00	3590	8260		
6010-1	54.62	100.00	3630	8270		

6020-1	1.20	100.00	4090	8280		
6030-1	1.66	100.00	3970	8290		
6040-1	6.90	100.00	8290	8300		
6050-1	0.29	100.00	3790	8310		
6060-1	121.31	100.00	4530	8320		
6070-1	1.56	100.00	8250	8330		
6080-1	4.46	100.00	3670	8340		
6090-1	0.00	100.00	3690	8350		
6100-1	29.94	100.00	3680	8360		
6110-1	13.67	100.00	8360	8370		
6120-1	65.35	100.00	10460	10470		
6130-1	6.84	100.00	8390	8400		
6140-1	0.00	100.00	3800	8400		
6150-1	0.00	100.00	3750	8410		
6160-1	6.35	100.00	8410	8420		
6170-1	1.57	100.00	8430	8440		
6180-1	2.89	100.00	3700	8440		
6190-1	0.00	100.00	3780	8450		
6200-1	67.84	100.00	3730	8460		
6210-1	44.28	100.00	3900	8470		
6230-1	26.60	100.00	9120	9130		
6240-1	132.67	100.00	3360	8490	11700	12060
6250-1	28.41	100.00	8500	8510	11150	
6260-1	7.39	100.00	3290	8510		
6270-1	4.73	100.00	3080	8520		
6280-1	104.51	100.00	3050	8530		
6290-1	9.24	100.00	3130	8540		
6300-1	85.35	100.00	3040	8550		
6310-1	109.04	100.00	2940	8560		
6320-1	60.47	100.00	8570	8600		
6330-1	0.00	100.00	8530	8580	10440	
6340-1	0.00	100.00	3010	8590		
6350-1	16.55	100.00	8600	8620		
6360-1	44.08	100.00	2910	8610	11410	
6370-1	30.12	100.00	2930	8620		
6380-1	103.39	100.00	8630	8650		
6390-1	18.89	100.00	2820	8640		
6400-1	0.00	100.00	6230	8650	10650	
6410-1	36.77	100.00	3280	8660		
6420-1	0.00	100.00	8560	8670		
6430-1	16.70	100.00	8630	8680	10700	
6440-1	43.20	100.00	8680	8690		
6450-1	0.00	100.00	5180	8700		
6460-1	20.46	100.00	8710	8790	9750	
6470-1	3.75	100.00	8710	8720		
6480-1	10.64	100.00	4130	8730		
6490-1	33.45	100.00	8740	9720		
6500-1	15.67	100.00	2770	8750		
6510-1	132.41	100.00	8750	8760		
6520-1	2.09	100.00	2560	8770	9290	
6530-1	37.23	100.00	2530	8780		
6540-1	58.48	100.00	2790	8790		
6550-1	0.00	100.00	5220	8800		
6560-1	50.92	100.00	2760	8810		

6570-1	171.16	100.00	8810	8820	11110	11740
6580-1	1.45	100.00	8820	8830		
6590-1	0.00	100.00	8830	8840		
6600-1	106.73	100.00	2670	8850		
6610-1	15.10	100.00	5080	8860		
6620-1	8.73	100.00	7070	8870		
6630-1	7.17	100.00	2450	8880		
6640-1	12.67	100.00	4920	8890		
6650-1	1.83	100.00	7110	8900		
6660-1	11.38	100.00	4590	8910		
6670-1	16.78	100.00	8130	8920	11050	11070
6680-1	1.45	100.00	8100	8930		
6690-1	0.00	100.00	8960	9150		
6710-1	0.00	100.00	8960	8980	9160	
6730-1	0.00	100.00	8980	9010	9170	
6750-1	0.00	100.00	9060	9410		
6760-1	0.00	100.00	6580	9020	9030	
6770-1	0.00	100.00	9030	9040	10480	
6790-1	0.00	100.00	9060	9080	9420	
6810-1	0.00	100.00	9080	9100	9430	
6830-1	0.00	100.00	9040	9100	9440	
6850-1	0.00	100.00	4390	9270	9280	
6860-1	45.87	100.00	9310	9320	9330	
6910-1	78.05	100.00	6090	9460	9470	
6920-1	0.00	100.00	9460	9480	9490	
6930-1	0.00	100.00	5680	5681	9520	
6950-1	3.99	100.00	2281	9550	11550	
6960-1	0.00	100.00	9570	9600		
6970-1	37.46	100.00	6010	9560	9570	9590
6980-1	0.00	100.00	5620	9580	9590	
6990-1	0.00	100.00	9550	9600	9620	
7000-1	0.00	100.00	9560	9610	9620	9640
7010-1	0.00	100.00	9580	9630	9640	
7020-1	0.00	100.00	7870	9660	9670	
7030-1	5.59	100.00	7300	9680	9690	11760
7040-1	0.00	100.00	5240	9720	9730	9740
10000-1	0.00	100.00	10001	10100	10220	
10010-1	0.00	100.00	10002	10100	10110	
10020-1	0.00	100.00	10003	10110	10120	
10030-1	0.00	100.00	10004	10120	10130	
10040-1	0.00	100.00	10130	10140		
10050-1	0.00	100.00	10140	10150		
10060-1	0.00	100.00	10150	10160		
10070-1	0.00	100.00	10160	10170		
10080-1	0.00	100.00	10170	10180		
10090-1	0.00	100.00	10180	10190		
10100-1	0.00	100.00	10190	10200		
10110-1	0.00	100.00	10200	10210		
10120-1	0.00	100.00	10210	10280		
10130-1	0.00	100.00	10220	10230		
10140-1	140.13	100.00	10230	10240	10680	10730
10150-1	167.86	100.00	10240	10250		
10160-1	90.89	100.00	10250	10260		
10170-1	34.40	100.00	10260	10270	10760	

10180-1	93.05	100.00	10270	10280	10290	
10190-1	50.24	100.00	10290	10300	10690	10810
10200-1	115.61	100.00	10300	10310		
10210-1	13.08	100.00	10310	10320		
10220-1	328.75	100.00	10320	10330	10750	
10230-1	107.15	100.00	10330	10340	11850	
10240-1	119.65	100.00	10340	10350		
10250-1	94.29	100.00	10350	10360	10410	11160
10260-1	17.06	100.00	10360	10370		
10270-1	201.48	100.00	10370	10380	10390	
10280-1	95.44	100.00	10390	10400		
10290-1	62.14	100.00	10410	10420		
10300-1	168.38	100.00	10420	10430		
10310-1	38.14	100.00	1320	10510	10540	
10320-1	0.00	100.00	10530	10540	10550	
10330-1	113.08	100.00	10550	10560		
10340-1	81.13	100.00	10560	10570	11890	
10350-1	43.10	100.00	10580	10590		
10360-1	69.20	100.00	10590	10600		
10370-1	142.16	100.00	10630	10640	11110	
10380-1	44.61	100.00	10670	11400		
10390-1	48.87	100.00	10670	10680	10690	
10400-1	92.66	100.00	10710	10720	11750	
10410-1	0.00	100.00	10720	10730		
10420-1	77.14	100.00	10740	10750		
10430-1	12.61	100.00	10760	11880		
10450-1	36.42	100.00	10790			
10460-1	9.84	100.00	10790	10800	11820	11880
10470-1	0.00	100.00	10800	10810		
10510-1	282.07	100.00	11170	11860		
10530-1	0.00	100.00	1570	10920	10930	
10540-1	0.00	100.00	7440	10950	10960	
10550-1	0.00	100.00	10970	10980		
10570-1	8.94	100.00	11010	11020	11610	
10580-1	43.81	100.00	11030	11040	11280	
10590-1	0.00	100.00	11060	11070	11570	
10600-1	0.00	100.00	6920	11090	11100	11770
10620-1	0.00	100.00	6790	11130	11140	
10630-1	0.00	100.00	11160	11170	11870	
10670-1	0.00	100.00	11240	11250	11260	
10680-1	0.00	100.00	250	11260	11270	
10690-1	0.00	100.00	5530	11280	11290	
10700-1	0.00	100.00	7860	11300	11310	
10710-1	0.00	100.00	11320			
10720-1	0.00	100.00	1210	11330	11350	
10730-1	0.00	100.00	1230	11340		
10740-1	0.00	100.00	11350	11360		
10750-1	0.00	100.00	9300	11370	11390	
10760-1	0.00	100.00	4830	11380	11390	
10770-1	0.00	100.00	10660	11400	11410	
10790-1	0.00	100.00	1580	11430	11440	
10800-1	0.00	100.00	10920	11450	11460	
10810-1	0.00	100.00	7710	11480	11500	
10820-1	0.00	100.00	7610	11490	11500	11510



10830-1	248.43	100.00	11510	11530	11540
10840-1	0.00	100.00	2360	11520	11530
10850-1	0.00	100.00	9000	11960	11990
10860-1	0.00	100.00	2280	11550	
10870-1	0.00	100.00	8120	11570	11590
10880-1	59.22	100.00	7990	11580	11590
10900-1	0.00	100.00	10570	11610	11620
10910-1	0.00	100.00	5670	11680	11690
10920-1	0.00	100.00	8760	11710	11720 11730
10930-1	0.00	100.00	11730	11740	11750 12100
10940-1	0.00	100.00	1090	11790	11800
10950-1	38.45	100.00	11820	11830	
10960-1	0.00	100.00	11830	11840	
10970-1	94.93	100.00	11840	11850	11860
10980-1	0.00	100.00	11870		
10990-1	0.00	100.00	11890		
11000-1	0.00	100.00	11910	11940	
11010-1	764.00	100.00	11910		
11020-1	0.00	100.00	6440	11920	11930
11030-1	694.00	100.00	11900	11940	
11050-1	0.00	0.00	11810	11990	

\*\*\*\*\*  
 S U M M A R Y O F O R I G I N A L D A T A  
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Run Description: Basic Network

Job: City of McAllen  
 2016 Water System Model

P I P E L I N E D A T A

STATUS CODE: XX -CLOSED PIPE BN -BOUNDARY NODE PU -PUMP LINE  
 CV -CHECK VALVE RV -REGULATING VALVE

PIPE BND-HGL NUMBER	NODE NOS.		LENGTH (ft)	DIAMETER (in)	ROUGHNESS COEFF.	MINOR LOSS	
	#1	#2				COEFF.	(ft)
20	4150	20	942.0	10.0	120.00		0.00
30	10	20	612.0	10.0	120.00		0.00
40	20	4420	1265.0	10.0	120.00		0.00
50	10	40	1377.0	10.0	120.00		0.00
80	50	4410	1211.0	12.0	120.00		0.00
90	70	80	1932.0	8.0	120.00		0.00
110	60	80	602.0	8.0	120.00		0.00
120	80	100	673.0	8.0	120.00		0.00
130	4140	110	1050.0	8.0	120.00		0.00
140	70	4380	2595.0	12.0	120.00		0.00
150	110	220	562.0	12.0	120.00		0.00
160	100	120	663.0	12.0	120.00		0.00
170	120	60	625.0	12.0	120.00		0.00
180	60	30	673.0	12.0	120.00		0.00
190	30	40	1261.0	12.0	120.00		0.00
200	40	4040	249.0	12.0	120.00		0.00
250	120	10680	2053.0	16.0	120.00		0.00
260	170	4490	595.0	12.0	120.00		0.00
270	180	4570	1257.0	12.0	120.00		0.00
300	190	200	767.0	16.0	120.00		0.00
310	200	210	390.0	16.0	120.00		0.00
320	210	4450	1977.0	16.0	120.00		0.00
330	160	150	1201.0	12.0	120.00		0.00
340	150	140	717.0	12.0	120.00		0.00
350	140	130	599.0	12.0	120.00		0.00
360	220	4440	3210.0	12.0	120.00		0.00
370	130	220	1334.0	12.0	120.00		0.00
390	4180	240	736.0	8.0	120.00		0.00
400	240	4510	545.0	8.0	120.00		0.00
410	250	260	844.0	16.0	120.00		0.00
420	170	250	2080.0	16.0	120.00		0.00
430	230	270	2631.0	24.0	120.00		0.00
440	270	260	287.0	24.0	120.00		0.00

450	250	280	1401.0	8.0	120.00	0.00
460	280	4560	638.0	8.0	120.00	0.00
470	290	300	1325.0	8.0	120.00	0.00
490	300	4500	981.0	8.0	120.00	0.00
500	290	4520	757.0	8.0	120.00	0.00
510	320	330	754.0	16.0	120.00	0.00
520	320	310	714.0	36.0	120.00	0.00
530	310	340	1451.0	12.0	120.00	0.00
540	340	4580	1173.0	12.0	120.00	0.00
550	260	3790	1404.0	24.0	120.00	0.00
560	350	330	685.0	30.0	120.00	0.00
570	230	4590	1833.0	16.0	140.00	0.00
580	270	370	2177.0	12.0	120.00	0.00
590	370	4600	1857.0	12.0	120.00	0.00
600	370	390	1401.0	8.0	120.00	0.00
610	390	4680	1228.0	8.0	120.00	0.00
630	4190	420	880.0	8.0	120.00	0.00
640	420	4690	994.0	8.0	120.00	0.00
650	360	4750	1587.0	16.0	120.00	0.00
680	380	4710	797.0	16.0	120.00	0.00
690	400	4650	564.0	16.0	120.00	0.00
700	380	460	192.0	8.0	140.00	0.00
710	460	470	624.0	8.0	140.00	0.00
720	470	480	608.0	8.0	140.00	0.00
730	480	490	795.0	8.0	140.00	0.00
740	460	4790	507.0	8.0	120.00	0.00
750	500	440	186.0	8.0	120.00	0.00
760	490	510	596.0	8.0	120.00	0.00
770	510	520	826.0	8.0	120.00	0.00
780	520	530	1204.0	8.0	120.00	0.00
790	530	540	993.0	8.0	120.00	0.00
800	540	4810	799.0	8.0	120.00	0.00
810	540	550	994.0	8.0	120.00	0.00
820	550	560	726.0	24.0	120.00	0.00
830	560	570	910.0	24.0	120.00	0.00
860	440	600	1286.0	16.0	120.00	0.00
880	490	610	1350.0	8.0	140.00	0.00
890	610	620	477.0	12.0	120.00	0.00
900	550	630	2040.0	24.0	120.00	0.00
910	630	640	999.0	24.0	120.00	0.00
920	640	4870	1088.0	8.0	120.00	0.00
930	630	650	357.0	24.0	120.00	0.00
940	530	660	1345.0	8.0	120.00	0.00
950	660	670	688.0	8.0	120.00	0.00
960	670	650	1071.0	8.0	120.00	0.00
970	670	4910	597.0	8.0	120.00	0.00
980	680	690	689.0	8.0	120.00	0.00
990	660	690	1297.0	8.0	120.00	0.00
1000	340	700	3702.0	12.0	120.00	0.00
1010	700	710	407.0	12.0	120.00	0.00
1020	720	730	653.0	10.0	120.00	0.00
1030	730	710	379.0	10.0	120.00	0.00
1040	740	720	1111.0	10.0	120.00	0.00
1050	750	760	2231.0	10.0	120.00	0.00

## APPENDIX D COST ESTIMATING INFORMATION

Appendix D presents the data used in preparing the capital cost estimates for the recommended projects. The 5-year and 20-year recommended projects and associated capital costs are presented in Tables 6-5, 6-6, 6-7 and 6-8. The capital cost estimates include engineering, land acquisition and construction costs plus a 20 percent contingency. The engineering costs include estimated costs for surveying, geotechnical investigations, preliminary engineering, and design. Estimated land acquisition costs were assumed to be \$10,000 per acre. Construction costs were developed using bid tabulations for similar projects, computer software for estimating water treatment costs, and by conceptual estimating based on unit prices obtained from R.S. Means, 1997. All capital cost estimates presented in this plan are expressed in terms of 1997 dollars.

The cost estimates for the recommended projects were developed for each CIP category as described below.

### Raw Water Acquisition and Wastewater Reuse Projects

Raw water acquisition and wastewater reuse capital cost estimates are presented in Table D-1. The budget for additional Rio Grande water is based on a price of \$800 per acre-foot.

### Water Treatment and High Service Pumping Projects

Capital cost estimates for proposed Water Plant No. 3 are presented in Table D-2. Capital cost estimates for the razing of Water Plant No. 1 and ozonation for Water Plant No. 2 are presented in Table D-3. Cost estimates for the Plant No. 2 high service, transfer, and raw water pump improvements were based on incremental costs derived from the WTP No. 3 estimate and experience with similar type projects. The cost estimate for the Southwest Booster Station was similarly developed. The capital cost estimates for WTP No. 2 pump improvements and the Southwest Booster Station are presented in Table D-3.

### Elevated Storage Tank Projects

Cost estimates for the elevated storage tanks included in the master plan are based on leg type towers. A unit price of \$1.00 per gallon was used. Sitework and connecting piping were added to these unit costs. Table D-4 presents the capital cost estimates for the elevated tank and land acquisition projects.

### Water Distribution Main Projects

A summary of the various CIP piping projects and associated construction cost estimates for years 2001 and 2016 are presented in Tables D-5 and D-6, respectively. The master plan

assumes that proposed water lines are PVC DR 18 for 24" and smaller. Steel cylinder concrete pressure pipe (SCCPP) with a working pressure of 150 psi is planned for lines 30" and larger. The master plan assumes that proposed water lines will have 4 feet of cover. The cost estimates also include pavement cutting and replacement. Piping unit prices are shown in Table D-7 and capital costs for years 2001 and 2016 are shown in Tables D-8 and D-9, respectively.

**TABLE D-1**  
**McALLEN CAPITAL IMPROVEMENT COSTS (X 1000)**  
**RAW WATER ACQUISITIONS**

CIP No.	Description	Quantity (acre-feet)	Unit Cost	Estimated Construction (ECC)	Contingency 20%	Project Total
1201	Reuse Upgrade - WWTP No. 2			\$14,730	\$2,946	\$17,676
1202	Reuse Upgrade - WWTP No. 3			\$15,690	\$3,138	\$18,828
1203	Year 2015 Water Rights Acquisition	10194	\$800	\$8,155	\$1,631	\$9,786

Total Estimated Capital Cost                      \$46,290

**TABLE D-2  
McALLEN CAPITAL IMPROVEMENT COSTS  
WATER TREATMENT PLANT NO. 3**

Process/Component		CIP 2102 Module A 1997 Capital Cost	CIP 2203 Module B 1997 Capital Cost	CIP 2204 Module C 1997 Capital Cost
<b>Raw Water Conveyance/Storage</b>				
Raw Water Pump Station		\$350,000	\$350,000	\$350,000
Stationary Screens		\$366,290	\$366,290	\$366,290
Raw Water Line (3,000 ft of 30-inch)		\$312,900	\$312,900	\$312,900
Raw Water Storage Reservoir (60 Mgal per module)		\$3,233,110	\$3,233,110	\$3,233,110
<b>WTP Chemical Feed Systems</b>				
Disinfection Systems		\$2,275,686	\$122,799	\$122,799
Coagulation System		\$77,859	\$77,859	\$77,859
Filter Aid/Coagulant Aid System		\$92,328	\$92,328	\$92,328
pH Adjustment System		\$72,150	\$72,150	\$72,150
Taste and Odor Control System		\$80,000	\$80,000	\$80,000
<b>WTP Unit Processes</b>				
Rapid Mixing		\$56,729	\$56,729	\$56,729
Flocculation Basins		\$482,956	\$482,956	\$482,956
Sedimentation Basins		\$2,880,036	\$2,880,036	\$2,880,036
Gravity Filters With Dual Media		\$2,246,504	\$2,246,504	\$2,246,504
Hydraulic Surface Wash System		\$218,813	\$218,813	\$218,813
Air-Water Backwash System		\$375,229	\$375,229	\$375,229
Filter Backwash Tower		\$231,223	\$231,223	\$231,223
Clearwell		\$790,192	\$790,192	\$790,192
Transfer Pumps (Clearwell to Ground Storage)		\$323,063	\$323,063	\$323,063
Ground Storage Tanks (2 @ 1Mgal ea)		\$1,000,000	\$1,000,000	\$1,000,000
High Service Pump Station		\$528,731	\$528,731	\$528,731
Sludge Lagoons		\$299,159	\$299,159	\$299,159
<b>Other</b>				
Standby Generator		\$200,000	\$200,000	\$200,000
Admin/Lab Building (3,000 sf @ \$100/sf)		\$270,000		
Maintenance Building (3,000 sf @ \$70/sf)		\$210,000		
<b>Subtotal</b>		<b>\$16,972,958</b>	<b>\$14,340,071</b>	<b>\$14,340,071</b>
<b>Sitework, Interface Piping</b>				
	18.0%	\$3,055,132	\$2,581,213	\$2,581,213
<b>Gen Contractor OH&amp;P</b>				
	9.0%	\$1,527,566	\$1,290,606	\$1,290,606
<b>Engineering</b>				
	6.0%	\$1,018,377	\$860,404	\$860,404
<b>Construction Phase Services</b>				
	6.0%	\$1,018,377	\$860,404	\$860,404
<b>Land</b>				
		\$0	\$0	\$0
<b>Legal, Fiscal, Admin</b>				
	0.7%	\$118,811	\$100,380	\$100,380
<b>Subtotal</b>		<b>\$6,738,264</b>	<b>\$5,693,008</b>	<b>\$5,693,008</b>
<b>Contingency</b>				
	20%	\$4,742,244	\$4,006,616	\$4,006,616
<b>Total Estimated Plant Capital Cost</b>		<b>\$28,453,000</b>	<b>\$24,040,000</b>	<b>\$24,040,000</b>
<b>\$/gal Capacity</b>		<b>\$1.78</b>	<b>\$1.50</b>	<b>\$1.50</b>

**TABLE D-3  
McALLEN CAPITAL IMPROVEMENT COSTS (X 1000)  
OTHER TREATMENT PLANT PROJECTS**

CIP No.	Description	Estimated Construction (ECC)	Engineering Basic Services 7%	Land Area	Surveying	Land Acquisition	Subtotal	Contingency 20%	Project Total
2101A	WTP No. 2 Raw Water PS	\$390	\$27	0	\$0	\$0	\$417	\$83	\$500
2101B	WTP NO. 2 HSPS & TPS	\$1,558	\$109	0	\$0	\$0	\$1,667	\$333	\$2,000
2201	Ozonation for WWTP No. 2	\$4,181	\$293	0	\$0	\$0	\$4,474	\$895	\$5,368
2202	Razing of Plant No. 1	\$350	\$25	30	\$60	\$0	\$435	\$87	\$521
2205	Southwest Booster Station	\$1,112	\$78	5	\$10	\$50	\$1,250	\$250	\$1,500

Total Estimated Capital Cost      \$9,890



**TABLE D-4  
McALLEN CAPITAL IMPROVEMENT COSTS (X 1000)  
ELEVATED STORAGE PROJECTS**

CIP No.	Description	Estimated Construction Cost		Engineering Basic Services 7%	Land Area	Surveying	Land Acquisition	Contingency 20%	Project Total
		Tower	Sitework, Piping 25%						
3101	Future Water Tower Sites (2 ac/site)	\$0	\$0	\$0	4	\$8	\$40	\$10	\$58
3102	Proposed Water Tower No. 1 (2.0mg)	\$2,000	\$500	\$140	2	\$4	\$0	\$429	\$3,073
3201	Proposed Water Tower No. 2 (2.0mg)	\$2,000	\$500	\$140	2	\$4	\$0	\$429	\$3,073
3202	Proposed Water Tower No. 3 (2.0mg)	\$2,000	\$500	\$140	2	\$4	\$0	\$429	\$3,073
3203	Proposed SW Water Tower (0.5mg)	\$500	\$125	\$35	2	\$4	\$0	\$108	\$772

Note: CIP 3101 has 2 tank sites (Tower No. 2 on Nolana Loop and the SW tower)

Total Estimated Capital Cost      \$9,277

**TABLE D-5  
McALLEN CAPITAL IMPROVEMENT COSTS  
YEAR 2001 PIPING  
ESTIMATED CONSTRUCTION COSTS**

CIP No.	Street/Road	From	To	Size In.	Length LF	Price/LF	Total
4101-A	Water Treatment Plant No. 2	Discharge Header	Distribution System	30	1,525	\$104.30	\$159,058
4101-B	Water Treatment Plant No. 2	Discharge Header	Distribution System	36	805	\$120.02	\$96,616
4102-A	Water Treatment Plant No. 2	Discharge Header	Distribution System (23rd)	24	1,495	\$74.52	\$111,407
4102-B1	Water Treatment Plant No. 2	Discharge Header	Distribution System (Hwy 83)	24	1,420	\$74.52	\$105,818
4102-B2	Water Treatment Plant No. 2	Discharge Header	Distribution System (Hwy 83)	36	2,550	\$120.02	\$306,051
4102-C	Bicentennial	Water Treatment Plant No.2	Houston	30	2,590	\$104.30	\$270,137
4102-D1	Bicentennial	Houston	Business 83	30	2,905	\$104.30	\$302,992
4102-D2	Bicentennial	Business 83	Ebony	24	1,370	\$74.52	\$102,092
4102-D3	Business 83	Bicentennial	West to Existing 16"	20	2,775	\$67.28	\$186,702
4102-D4	Business 83	Bicentennial	East to Existing 12"	16	2,970	\$52.81	\$156,846
4103-A	Bicentennial	Nolana Loop	Dove Ave.	16	5,210	\$52.81	\$275,140
4103-B	Bicentennial	Dove Ave.	Trenton Rd.	16	5,410	\$52.81	\$285,702
4103-C	Trenton Rd.	Bicentennial	N. Col Rowe Rd.	16	5,980	\$52.81	\$315,804
4103-D	Nolana Water Tower	Tower	Distribution System	20	300	\$67.28	\$20,184
4103-E	Dove Water Tower	Tower	Distribution System	20	300	\$67.28	\$20,184
4103-F	Ware Rd.	Business 83	South of Pecan Blvd.	12	3,265	\$40.08	\$130,861
4103-G1	Hackberry	West of Jackson Rd.	McColl Rd.	16	1,715	\$52.81	\$90,569
4103-G2	McColl Rd.	Hackberry	Tamarack	16	3,835	\$52.81	\$202,526
4103-H	Nolana Loop	Rooth Rd.	Ware Rd.	24	2,850	\$74.52	\$212,382
4103-I	N. Rooth	Dove Ave.	Lark Ave.	16	2,480	\$52.81	\$130,969
4103-J	10th Street	Houston	Erie	12	1,035	\$40.08	\$41,483
4104-A	Trenton Rd.	Bicentennial	N. Rooth	16	4,800	\$52.81	\$253,488
4104-B1	Trenton Rd.	N. Rooth	Ware Rd.	16	2,645	\$52.81	\$139,682
4104-B2	Ware Rd.	Existing 12"	Trenton Rd.	16	2,363	\$52.81	\$124,790
4104-B3	Mile 5 N. Rd./N. Ware Rd.	Trenton Rd.	Bentsen Rd.	24	4,692	\$74.52	\$349,648
4104-B4	Bentsen Rd.	Mile 5 North Rd.	Water Treatment Plant No. 3	36	2,115	\$120.02	\$253,842
4104-C1	Water Plant No. 3	Plant No. 3	Mile 6 North Rd.	30	1,550	\$104.30	\$161,665
4104-C2	Mile 6 North Rd.	Bentsen Rd.	Ware Rd.	24	1,315	\$74.52	\$97,994
4104-C3	Ware Rd.	Mile 6 North Rd.	Mile 5 North Rd.	16	5,820	\$52.81	\$307,354
4104-D1	Mile 6 North Rd.	N. Ware	N. Rooth	24	4,605	\$74.52	\$343,165
4104-D2	N. Rooth	Canton Rd.	North of Trenton Rd.	16	5,760	\$52.81	\$304,186
4104-E1	Canton Rd.	N. Rooth	N. 23rd Street	20	2,770	\$67.28	\$186,366
4104-E2	Canton Rd.	23rd (FM 1926)	N. 10th Street	16	4,950	\$52.81	\$261,410
4104-E3	Canton/N. Col Rowe Rd.	N. 10th Street	Trenton Rd.	16	9,880	\$52.81	\$521,763





TABLE D-7  
PVC WATER LINES (C900 & C905) & SCCPP  
UNIT PRICE CALCULATIONS  
MCALLEN WATER SYSTEM MASTER PLAN

PRICING (National Average)

PIPE SIZE	PIPE SIZE	"A" dimension	"B" dimension	bed cover dimension	PRICING LENGTH	PVC PIPE (including instal.)	SAW CUT PAVEMENT	EXCAVATE	BEDDING (CEM STBL SD)	BACKFILL (CEM STBL SD)	COMPACTION (vibrating roller)	PAVEMENT REPLACEMENT	SUBTOTAL	SUBTOTAL UNIT PRICE	DISINFECT & TEST	FIRE HYDR	GATE VALVE	WET CONN	SERV CONN	SUBTOTAL	TOTAL	UNIT PRICE
[IN]	[FT]	[FT]	[FT]	[FT]	[FT]	[\$]	[\$]	[\$]	[\$]	[\$]	[\$]	[\$]	[\$]	[\$/FT]	[%]					[\$]	[\$]	[\$/FT]
12	1.00	1	1	3	300	\$5,367.00	\$840.00	\$906.00	\$365.09	\$1,200.00	\$199.97	\$530.00	\$9,408	\$31.36	1	1	1	0	0	\$3,249	\$12,657	\$42.19
16	1.33	1	1	3	300	\$8,898.00	\$840.00	\$1,062.59	\$431.77	\$1,333.33	\$234.52	\$588.89	\$13,389	\$44.63	1	1	1	0	0	\$3,289	\$16,678	\$55.59
18	1.50	1	1	3	300	\$10,626.00	\$840.00	\$1,145.08	\$465.90	\$1,400.00	\$252.71	\$618.33	\$15,348	\$51.16	1	1	1	0	0	\$3,308	\$18,657	\$62.19
20	1.67	1	1	3	300	\$12,954.00	\$840.00	\$1,230.37	\$500.57	\$1,466.67	\$271.52	\$647.78	\$17,911	\$59.70	1	1	1	0	0	\$3,334	\$21,245	\$70.82
24	2.00	1	1	3	300	\$14,736.00	\$840.00	\$1,409.33	\$571.48	\$1,600.00	\$310.99	\$706.67	\$20,174	\$67.25	1	1	1	0	0	\$3,357	\$23,531	\$78.44
30	2.50	1.5	1.5	2.5	300	\$22,011.00	\$840.00	\$2,214.67	\$1,126.28	\$1,833.33	\$488.71	\$971.67	\$29,486	\$98.29	1	1	1	0	0	\$3,450	\$32,936	\$109.79
36	3.00	1.5	1.5	2.5	300	\$26,082.00	\$840.00	\$2,567.00	\$1,285.84	\$2,000.00	\$566.40	\$1,060.00	\$34,401	\$114.67	1	1	1	0	0	\$3,499	\$37,900	\$126.33

UNIT PRICES AND SOURCES FOR PVC DR 18 & SCCPP

12	PVC					\$17.89	\$1.40	\$4.53	\$4.00	\$12.00	\$1.00	\$5.30				\$980	\$2,175	\$1,700	\$150
16	PVC					\$29.66	\$1.40	\$4.53	\$4.00	\$12.00	\$1.00	\$5.30				\$980	\$2,175	\$3,600	\$150
18	PVC					\$35.42	\$1.40	\$4.53	\$4.00	\$12.00	\$1.00	\$5.30				\$980	\$2,175	\$3,600	\$150
20	PVC					\$43.18	\$1.40	\$4.53	\$4.00	\$12.00	\$1.00	\$5.30				\$980	\$2,175	\$4,600	\$171
24	PVC					\$49.12	\$1.40	\$4.53	\$4.00	\$12.00	\$1.00	\$5.30				\$980	\$2,175	\$5,650	\$195
30	SCCPP					\$73.37	\$1.40	\$4.53	\$4.00	\$12.00	\$1.00	\$5.30				\$980	\$2,175		\$0
36	SCCPP					\$86.94	\$1.40	\$4.53	\$4.00	\$12.00	\$1.00	\$5.30				\$980	\$2,175		\$0
UNITS						[\$/FT]	[\$/FT]	[\$/CY]	[\$/CY]	[\$/CY]	[\$/CY]	[\$/SY]				\$/item	\$/item	\$/item	\$/item
SOURCE						M86 & **	M38	M52	Valley Contr.	Valley Contr.	M48	M361				M81	M80	M87	*

Note: M = Means Heavy Construction Cost 1997 Edition \*\* US Filter and GHA

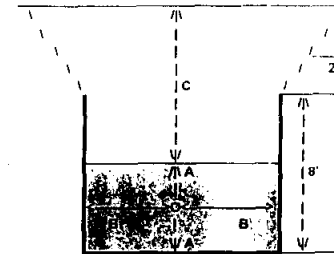
City Adjustment = 95 %  
FINAL UNIT PRICES (For work in valley - See Means pg. 427)

Contingency = 0 %  
CONSTRUCTION COST (including contingency)

TRENCH DIMENSIONS:

SIZE	PRICE
[IN]	[\$/FT]
12	\$40.08
16	\$52.81
18	\$59.08
20	\$67.28
24	\$74.52
30	\$104.30
36	\$120.02

SIZE	PRICE
[IN]	[\$/FT]
12	\$40.08
16	\$52.81
18	\$59.08
20	\$67.28
24	\$74.52
30	\$104.30
36	\$120.02



Pipe Mat'l cost as % of total cost/LF		
12	10.01	24%
16	20.24	36%
18	25.25	41%
20	32	45%
24	37.16	47%
30	43.8	40%
36	55.6	44%

Since pipe material price is a large component of the total cost and since we are using PVC prices from US Filter in McAllen and SCCPP prices from Gifford-Hill-American in Grand Prairie, use City Index of 95 in lieu of Means 90.

**TABLE D-8**  
**McALLEN CAPITAL IMPROVEMENT COSTS (X 1000)**  
**WATER MAIN PROJECTS BY 2001**

CIP No.	Estimated Construction (ECC)	Engineering Basic Services 7%	Conveyance Line Length ft	Surveying \$	Contingency 20% \$	Project Total \$
4101-A	\$159.06	11.13	1525	3.05	34.65	208.00
4101-B	\$96.62	6.76	805	1.61	21.00	126.00
4102-A	\$111.41	7.80	1495	2.99	24.44	147.00
4102-B1	\$105.82	7.41	1420	2.84	23.21	139.00
4102-B2	\$306.05	21.42	2550	5.10	66.51	399.00
4102-C	\$270.14	18.91	2590	5.18	58.85	353.00
4102-D1	\$302.99	21.21	2905	5.81	66.00	396.00
4102-D2	\$102.09	7.15	1370	2.74	22.40	134.00
4102-D3	\$186.70	13.07	2775	5.55	41.06	246.00
4102-D4	\$156.85	10.98	2970	5.94	34.75	209.00
4103-A	\$275.14	19.26	5210	10.42	60.96	366.00
4103-B	\$285.70	20.00	5410	10.82	63.30	380.00
4103-C	\$315.80	22.11	5980	11.96	69.97	420.00
4103-D	\$20.18	1.41	300	0.60	4.44	27.00
4103-E	\$20.18	1.41	300	0.60	4.44	27.00
4103-F	\$130.86	9.16	3265	6.53	29.31	176.00
4103-G1	\$90.57	6.34	1715	3.43	20.07	120.00
4103-G2	\$202.53	14.18	3835	7.67	44.88	269.00
4103-H	\$212.38	14.87	2850	5.70	46.59	280.00
4103-I	\$130.97	9.17	2480	4.96	29.02	174.00
4103-J	\$41.48	2.90	1035	2.07	9.29	56.00
4104-A	\$253.49	17.74	4800	9.60	56.17	337.00
4104-B1	\$139.68	9.78	2645	5.29	30.95	186.00
4104-B2	\$124.79	8.74	2363	4.73	27.65	166.00
4104-B3	\$349.65	24.48	4692	9.38	76.70	460.00
4104-B4	\$253.84	17.77	2115	4.23	55.17	331.00
4104-C1	\$161.66	11.32	1550	3.10	35.22	211.00
4104-C2	\$97.99	6.86	1315	2.63	21.50	129.00
4104-C3	\$307.35	21.51	5820	11.64	68.10	409.00
4104-D1	\$343.16	24.02	4605	9.21	75.28	452.00
4104-D2	\$304.19	21.29	5760	11.52	67.40	404.00
4140-E1	\$186.37	13.05	2770	5.54	40.99	246.00
4104-E2	\$261.41	18.30	4950	9.90	57.92	348.00
4104-E3	\$521.76	36.52	9880	19.76	115.61	694.00
4105-A1	\$213.63	14.95	5330	10.66	47.85	287.00
4105-A2	\$52.50	3.68	1310	2.62	11.76	71.00
4105-A3	\$145.23	10.17	4020	8.04	32.69	196.00
4105-A4	\$22.44	1.57	560	1.12	5.03	30.00
4105-B1	\$112.82	7.90	2815	5.63	25.27	152.00
4105-B2	\$141.00	9.87	2670	5.34	31.24	187.00
4105-C	\$119.44	8.36	2980	5.96	26.75	161.00
4105-D	\$117.83	8.25	2940	5.88	26.39	158.00
4105-E	\$107.41	7.52	2680	5.36	24.06	144.00
4105-F	\$43.09	3.02	1075	2.15	9.65	58.00
4105-G	\$180.36	12.63	4500	9.00	40.40	242.00
4106-A	\$307.41	21.52	7670	15.34	68.85	413.00
4106-B	\$349.30	24.45	8715	17.43	78.24	469.00
4106-C	\$215.23	15.07	5370	10.74	48.21	289.00
4106-D	\$311.82	21.83	7780	15.56	69.84	419.00
4106-E	\$117.23	8.21	2925	5.85	26.26	158.00
4106-F	\$115.63	8.09	2885	5.77	25.90	155.00
	\$9,501.23		172275			12,614.00

**TABLE D-9  
McALLEN CAPITAL IMPROVEMENT COSTS (X 1000)  
WATER MAIN PROJECTS BY 2016**

CIP No.	Estimated Construction (ECC)	Engineering Basic Services 7%	Conveyance Line Length ft	Surveying \$	Contingency 20% \$	Project Total \$
4201-A	786.56	\$55	10555	21.11	172.55	1,035.00
4201-B	460.77	\$32	8725	17.45	102.09	613.00
4201-C	232.36	\$16	4400	8.80	51.49	309.00
4201-D	250.85	\$18	4750	9.50	55.58	333.00
4201-E	353.03	\$25	6685	13.37	78.22	469.00
4201-F	428.82	\$30	8120	16.24	95.02	570.00
4202-A	121.10	\$8	1800	3.60	26.64	160.00
4202-B	244.25	\$17	4625	9.25	54.12	325.00
4202-C	426.44	\$30	8075	16.15	94.49	567.00
4203-A1	324.65	\$23	8100	16.20	72.72	436.00
4203-A2	375.55	\$26	9370	18.74	84.12	505.00
4203-B1	531.26	\$37	13255	26.51	118.99	714.00
4203-B2	180.16	\$13	4495	8.99	40.35	242.00
4204-A	189.06	\$13	3580	7.16	41.89	251.00
4204-B	22.36	\$2	300	0.60	4.91	29.00
4205-A	341.11	\$24	5070	10.14	75.03	450.00
4205-B	1,336.09	\$94	25300	50.60	296.04	1,776.00
	6,604.42		127205			8,784.00

**APPENDIX E**  
**RESPONSES TO TWDB COMMENTS**

1. Calibration of the hydraulic model of the existing distribution system is discussed in Appendix C.
2. Paragraph 3.6.4 A concerning the capacities of Reynosa treatment plants has been corrected.
3. A discussion of service connections is provided in paragraph 5.3. Using 3 persons per connection for McAllen seemed appropriate given the type and size of city it is. Also, the use of that number did not drive the major planning recommendations.
4. Comments on the projected population of Reynosa have been added to paragraph 4.2A.
5. The statements are correct and there does not appear to be any discrepancy.
6. The statement about TWDB population projections has been corrected.
7. The statement about the Texas Water Plan has been corrected.
8. The additional support items required to support funding applications were beyond the scope of the master planning contract. They will be prepared on a project-by project basis.