

# **CITY OF CERES, CALIFORNIA**

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## **2005 Urban Water Management and Conservation Plan**

**December 2005**

*Prepared for:*

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Municipal Utilities Department  
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CONTENTS

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# CITY OF CERES URBAN WATER MANAGEMENT PLAN

<b>1. INTRODUCTION .....</b>	<b>1-1</b>
1.1 CONTACT .....	1-1
1.2 PUBLIC PARTICIPATION .....	1-1
1.2.1 AGENCY COORDINATION.....	1-1
1.2.2 INTERAGENCY COORDINATION .....	1-2
<b>2. SUPPLIER SERVICE AREA.....</b>	<b>2-1</b>
2.1 SERVICE AREA .....	2-1
2.2 CLIMATE .....	2-1
2.3 OTHER DEMOGRAPHIC FACTORS .....	2-2
2.4 PAST DROUGHT, WATER DEMAND, AND CONSERVATION INFORMATION .....	2-2
<b>3. WATER SOURCES .....</b>	<b>3-1</b>
3.1 GROUNDWATER .....	3-1
3.2 LOCAL SURFACE WATER .....	3-4
3.3 IMPORTED WATER .....	3-4
3.4 RECYCLED WATER .....	3-5
<b>4. RELIABILITY PLANNING .....</b>	<b>4-1</b>
4.1 FREQUENCY AND MAGNITUDE OF SUPPLY DEFICIENCIES .....	4-1
4.2 PLANS TO ASSURE A RELIABLE WATER SUPPLY .....	4-2
4.3 RELIABILITY COMPARISON .....	4-2
4.4 THREE YEAR MINIMUM WATER SUPPLY .....	4-3
4.5 WATER TRANSFERS .....	4-3
<b>5. WATER USE.....</b>	<b>5-1</b>
5.1 WATER USE BY SECTOR .....	5-1
5.1.1 RESIDENTIAL SECTOR.....	5-2
5.1.2 COMMERCIAL SECTOR .....	5-2
5.1.3 INDUSTRIAL SECTOR.....	5-2
5.1.4 INSTITUTIONAL / GOVERNMENTAL SECTOR.....	5-2
5.1.5 LANDSCAPE / RECREATIONAL SECTOR .....	5-3
5.1.6 AGRICULTURAL SECTOR.....	5-3
<b>6. WATER DEMAND MANAGEMENT MEASURES .....</b>	<b>6-1</b>
6.1 DEMAND MANAGEMENT MEASURES .....	6-1
6.1.1 DMM #1 WATER SURVEY PROGRAMS FOR SINGLE FAMILY RESIDENTIAL AND MULTI-FAMILY RESIDENTIAL CUSTOMERS.....	6-1
6.1.2 DMM #2 – RESIDENTIAL PLUMBING RETROFIT .....	6-2

6.1.3	DMM #3 – SYSTEM WATER AUDITS, LEAK DETECTION, AND REPAIR.....	6-2
6.1.4	DMM #4 – METERING WITH COMMODITY RATES FOR ALL NEW CONNECTIONS AND RETROFIT OF EXISTING CONNECTIONS.....	6-2
6.1.5	DMM #5 – LARGE LANDSCAPE WATER AUDITS AND INCENTIVES ...	6-3
6.1.6	DMM #6 – HIGH-EFFICIENCY WASHING MACHINE REBATE PROGRAM .....	6-4
6.1.7	DMM #7 – PUBLIC INFORMATION PROGRAMS.....	6-5
6.1.8	DMM #8 – SCHOOL EDUCATION PROGRAMS.....	6-5
6.1.9	DMM #9 – CONSERVATION PROGRAMS FOR COMMERCIAL, INDUSTRIAL, AND INSTITUTIONAL ACCOUNTS .....	6-6
6.1.10	DMM #10 – WHOLESALE AGENCY PROGRAMS .....	6-6
6.1.11	DMM #11 – CONSERVATION PRICING .....	6-6
6.1.12	DMM #12 – WATER CONSERVATION COORDINATOR .....	6-8
6.1.13	DMM #13 – WATER WASTE PROHIBITION .....	6-8
6.1.14	DMM #14 – ULTRA-LOW FLUSH TOILET REPLACEMENT .....	6-8
<b>7.</b>	<b>SUPPLY AND DEMAND COMPARISON PROVISIONS .....</b>	<b>7-1</b>
7.1	SUPPLY AND DEMAND COMPARISON PROVISIONS.....	7-1
<b>8.</b>	<b>Water Shortage Contingency Plan .....</b>	<b>8-1</b>
8.1	WATER SHORTAGE CONTINGENCY PLAN .....	8-1
8.1.1	WATER SHORTAGE EMERGENCY RESPONSE.....	8-1
8.1.2	PREPARATION ACTIONS FOR A CATASTROPHE.....	8-2
8.1.3	SUPPLEMENTAL WATER SUPPLIES.....	8-2
8.1.4	LONG TERM ADDITIONAL WATER SUPPLY OPTIONS .....	8-2
8.2	WATER SHORTAGE CONTINGENCY ORDINANCE / RESOLUTION.....	8-2
8.2.1	RATIONING STAGES AND REDUCTION GOALS .....	8-3
8.2.2	PRIORITY BY USE.....	8-3
8.2.3	HEALTH AND SAFETY REQUIREMENTS .....	8-4
8.3	WATER ALLOTMENTS .....	8-4
8.4	MANDATORY PROHIBITIONS ON WATER WASTING .....	8-5
8.5	CONSUMPTION REDUCTION METHODS.....	8-5
8.6	EXCESSIVE USE PENALTIES.....	8-5
8.7	REVENUE AND EXPENDITURE IMPACTS AND MEASURES TO OVERCOME IMPACTS .....	8-5
8.8	MECHANISMS TO DETERMINE REDUCTIONS IN WATER USE .....	8-5
<b>9.</b>	<b>WATER RECYCLING.....</b>	<b>9-1</b>
9.1	PARTICIPATION IN REGIONAL RECYCLED WATER PLANNING .....	9-1
9.2	WASTEWATER COLLECTION AND TREATMENT IN CERES.....	9-1
9.2.1	WASTEWATER TREATMENT PROCESSES .....	9-1
9.2.2	REGIONAL WASTEWATER TREATMENT PLANT .....	9-1
9.3	RECYCLED WATER CURRENTLY BEING USED.....	9-2
9.3.1	POTENTIAL USES OF RECYCLED WATER .....	9-2
9.3.2	FEASIBILITY OF RECYCLED WATER USE .....	9-3

## TABLES

---

Table 1-1	Summary of Coordination Efforts to Include Agencies and Citizens in Planning and Notification.....	1-3
Table 2-1	Average Monthly Climate Conditions of the Ceres Region.....	2-1
Table 2-2	Population Projections of the City of Ceres From the Year 2005 .....	2-2
Table 3-1	Groundwater Well Pumping Rate and Water Quality Concerns .....	3-1
Table 3-2	Water Demand 2000-2004 (AF/Y).....	3-3
Table 3-3	Current and Projected Water Supplies (AF/Y).....	3-3
Table 4-1	Estimated Reliable Water Supply Production during Drought Scenarios (AF/Y) .....	4-2
Table 5-1	Projected Increase of Water Customers Served by Ceres (Customers/Year) .....	5-1
Table 5-2	Projected Water Required by Water Use Sector .....	5-2
Table 6-1	Rebate Funds Available Through PG&E (2005).....	6-4
Table 6-2	Existing Water Rates for Sectors within Ceres' Sphere of Influence ....	6-7
Table 7-1	Existing Untreated Groundwater Supply and Demand Projections (AF/Y) .....	7-1
Table 7-2	Treated Groundwater Supply and Demand Projections (AF/Y).....	7-2
Table 7-3	Existing Groundwater with Surface Water Supply and Demand Projections (AF/Y) .....	7-3
Table 7-4	Treated Groundwater with Surface Water Supply and Demand Projections (AF/Y) .....	7-4
Table 8-1	Water Rationing Stages and Reduction Goals .....	8-3
Table 8-2	Estimated Per Capita Health and Safety Water Consumption .....	8-4
Table 9-1	Wastewater Disposal and Recycled Water Use (AF/Y).....	9-2

## FIGURES

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Figure 3-1	Area of City of Ceres Groundwater Well Field.....	3-2
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## APPENDICES

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A	Resolution to Adopt the Urban Water Management Plan
B	Sample Resolution to Declare a Water Shortage Emergency
C	Water Shortage Contingency Plan
D	No Waste Ordinance
E	Turlock Groundwater Basin Study
F	Turlock Groundwater Management Plan

## Section 1

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# Introduction

The City of Ceres prepared this update of its Urban Water Management Plan during the fall of 2005. The updated plan was adopted by the City Council on November 28, 2005, and submitted to the California Department of Water Resources on December 16, 2005. A copy of the signed *Resolution of Plan Adoption* was attached to a cover letter addressed to the California Department of Water Resources, and a copy is included as Appendix A.

This plan includes information necessary to meet the requirements of the California Water Code Division 6, Part 2.6 (Urban Water Management Planning), with guidance from the staff of the CA Dept. of Water Resources and the document *Guidebook to Assist Water Suppliers in the Preparation of a 2005 Urban Water Management Plan*.

## 1.1 CONTACT

The Water supplier is a Municipality, and is not a Bureau of Reclamation Contractor or State Water Project Contractor.

The name of the person to contact regarding this Urban Water Management Plan is:

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## 1.2 PUBLIC PARTICIPATION

The City of Ceres has actively encouraged community participation in its urban water management planning efforts since the first plan was developed in 1985. Public meetings were held on the 1985, 1990, 1995, 2000 and 2005 plans. A public hearing is required for review and comment prior to the City Council's approval. A legal public notice for the hearing was published in the local newspaper, the Ceres Courier. Copies were posted at City facilities and the county library, and were distributed to the Ceres Unified School District.

### 1.2.1 AGENCY COORDINATION

To complete this update to the Urban Water Management Plan, City staff held in-house meetings and met with representatives of ECO:LOGIC Engineering. Efforts were also made to contact community and public interest organizations. Residential, commercial, and industrial

water users were notified of the development of the plan. A message concerning the plan was printed on their October, 2005 utility bills. Copies of the draft plan were available at City offices, the Ceres Unified School District, and the Stanislaus County Library - Ceres Branch.

The City Municipal Utilities Department, Administration Division's staff met with and coordinated the development of this plan with staff from the Water Division, Sewer Division, Planning and Community Development Department, Finance Department, Public Safety and Public Works Departments, and the City Manager's Office.

The Administration and Water Divisions also worked with various departments to develop the City's water conservation program and the 1991 *Water Shortage Contingency Plan* (Appendix C). The Contingency Plan outlines criteria for drought stages and water reduction goals.

The City originally developed and adopted a water conservation program in 1977. The conservation program has been expanded over the years and is in effect as the City's "No Waste Ordinance" (Appendix D).

### **1.2.2 INTERAGENCY COORDINATION**

The City of Ceres draws groundwater from a basin that is shared by other water purveyors. Several local and regional stakeholders were solicited for assistance in the draft of this and previous plans (Table 1-1).

The City notified the following entities about the plan:

Ceres Unified School District (CUSD). The CUSD has developed wells at several school sites within the City to provide groundwater for landscaping and recreation areas.

Turlock Irrigation District (TID). The District supplies electricity to the region and irrigation water to agricultural users. TID spearheaded the formation of the Turlock Groundwater Basin Association. TID has also studied the possibility of delivering domestic surface water to jurisdictions south of the Tuolumne River.

City of Modesto. The City of Modesto provides municipal water service (groundwater) to approximately 1,000 single family homes within the northwestern portion of Ceres.

Stanislaus County. The City supplies water to large County owned facilities that are located within 0.5 miles of the Ceres City limit.

Turlock Groundwater Basin Association. In June of 1995, the City Council adopted a resolution authorizing the Mayor to sign a Memorandum of Understanding concerning the formation and operation of the Association. Member agencies consist of public and private water agencies within the area bounded by the Tuolumne River on the north, the San Joaquin River on the west, and the Merced River on the south, otherwise known as the Turlock Ground Water Basin.

In September 1997, the Association formulated a *Groundwater Management Plan* to address the many diverse groundwater uses of urban and agriculture areas. This plan is currently being updated, with additional studies being conducted to provide a greater understanding of water use within the basin (Appendix G).

Table 1-1  
**SUMMARY OF COORDINATION EFFORTS TO INCLUDE  
 AGENCIES AND CITIZENS IN PLANNING AND NOTIFICATION**

Entities	Coordination and Public Involvement Actions					
	Plan Writing	Contacted	Attended Meeting	Given Copy	Comments Received	Noticed of Adoption
Consultant	X	X	X	X	X	X
City of Ceres	X	X	X	X	X	
Residential		X				
Commercial		X				
Industrial		X				
City of Turlock		X				X
MID		X				X
CUSD		X		X		X
Turlock Ground. Basin Assoc.		X				X
TID		X				X
City of Modesto		X				X
Stanislaus County		X				X
Special Interest Groups		X				X
Public Library		X		X		X

## Supplier Service Area

### 2.1 SERVICE AREA

The City of Ceres is located in central Stanislaus County. The City supplies groundwater to nearly all residential, commercial, industrial, and institutional/governmental water users within city limits. The City also supplies water to several residential locations and complexes outside of the city limits, but within the Ceres Sphere of Influence.

### 2.2 CLIMATE

Ceres has a Mediterranean climate with hot and dry summers, and cool winters (Table 2-1). Annual precipitation averages approximately thirteen inches, and the area is subjected to long droughts. Deviation from the average annual precipitation was experienced in 1997/98 due to the El Nino conditions when considerably more precipitation than average occurred, and the last drought period extended from 1987 to 1992.

Table 2-1  
AVERAGE MONTHLY CLIMATE CONDITIONS OF THE CERES REGION

Month	Monthly Average $E_{10}$ (mm)	Average Rainfall (in)	Average Temp (°F)
Jan	0.87	2.37	45.72
Feb	1.71	2.14	50.86
Mar	3.43	1.94	55.2
Apr	5.24	1.08	60.11
May	6.7	0.46	66.36
June	7.4	0.09	72.31
July	7.85	0.03	76.93
Aug	6.75	0.04	75.37
Sept	4.93	0.2	71.82
Oct	3.37	0.64	63.81
Nov	1.66	1.36	53.06
Dec	0.87	2.1	46
Annual	4.23	12.35	61.38

Source: NOAA and CIMIS

## 2.3 OTHER DEMOGRAPHIC FACTORS

Ceres was incorporated as a city in 1918. The Tuolumne River lies north of the City, and the City of Modesto lies to the northwest. Development lies in several pockets just outside the City, but the City is predominately surrounded by agricultural land on the east, south, and southwest. The topography is relatively flat with an average elevation of approximately 90 feet above mean sea level.

The City's annual population growth rate has varied widely during the past decade. From 1990 to 2000, the population increased by approximately 7,614 residents. During the late 1980's and early 1990's, the City experienced a surge in population growth and new housing development. As the overall population has increased in the City and region, the demand for water has also increased. For purposes of this plan, the City has a future projected average growth rate of 250 homes per year and a population growth rate of 2.5%; estimated from average census data between 1995 and 2004 (Table 2-2).

Table 2-2  
POPULATION PROJECTIONS OF THE CITY OF CERES FROM THE YEAR 2005

	2005	2010	2015	2020	2025
City Population <sup>1</sup>	39,520	45,000	51,000	58,000	66,000

<sup>1</sup>Population estimates using a 2.5% growth rate.

The developed areas within the City consist of single family and multi family residential units; commercial establishments; and industrial, private, and governmental institutions. The City has established an ultimate growth boundary encompassing approximately 9.7 square miles. Upon development of the City to its ultimate boundary, a population of 75,000 is anticipated.

## 2.4 PAST DROUGHT, WATER DEMAND, AND CONSERVATION INFORMATION

The local region experienced a drought from 1987 through 1992. The City met its customer needs through water conservation and facility improvements. Improvements consisted of constructing a new enclosed water reservoir and well improvements which improved water pressure and flows especially during peak demands. The Sixth Street Well (1999) and the River Bluffs Well (2004) was added to increase the City's water production capacity.

Water conservation is one of several priority policies actively implemented in the City. The City enforces outdoor water-use restrictions, and the City provides community education through utility bill inserts and newsletters, advertisements, in-classroom presentations, water awareness poster contests, and community events. The City adopted *Water Efficient Landscape Guidelines and Standards* in 1993 for single family developments as well as multi-family, commercial, and industrial developments.

A *General Plan* was developed in 1997 with active community input and support, specifically addressing the land use planning relationships among growth, water, transportation, air quality, and other resources.

The City is part of the Stanislaus County Recycling Market Development Zone. The purpose of a zone is to enhance and expand recycling activities and opportunities by developing markets for recyclable materials, thus spurring the economy. Recycling, composting, and source reduction helps address both solid waste and water issues as the activities help preserve natural resources and conserves water.

The City's recycling program, started in 1990, has expanded over the years and is available to all residential, public, commercial, industrial, and institutional/governmental customers. In landscaping, the City actively promotes the usage of compost and mulches which improve soils and reduces water consumption.

## Section 3

# Water Sources

The sole source of water for the City of Ceres is groundwater from the Turlock Groundwater Basin. An additional future source is surface water from the Tuolumne River. The City of Ceres recently signed an agreement with the Turlock Irrigation District that will begin the process of supplying 10 million gallons per day (mgd) of drinking water to the City.

### 3.1 GROUNDWATER

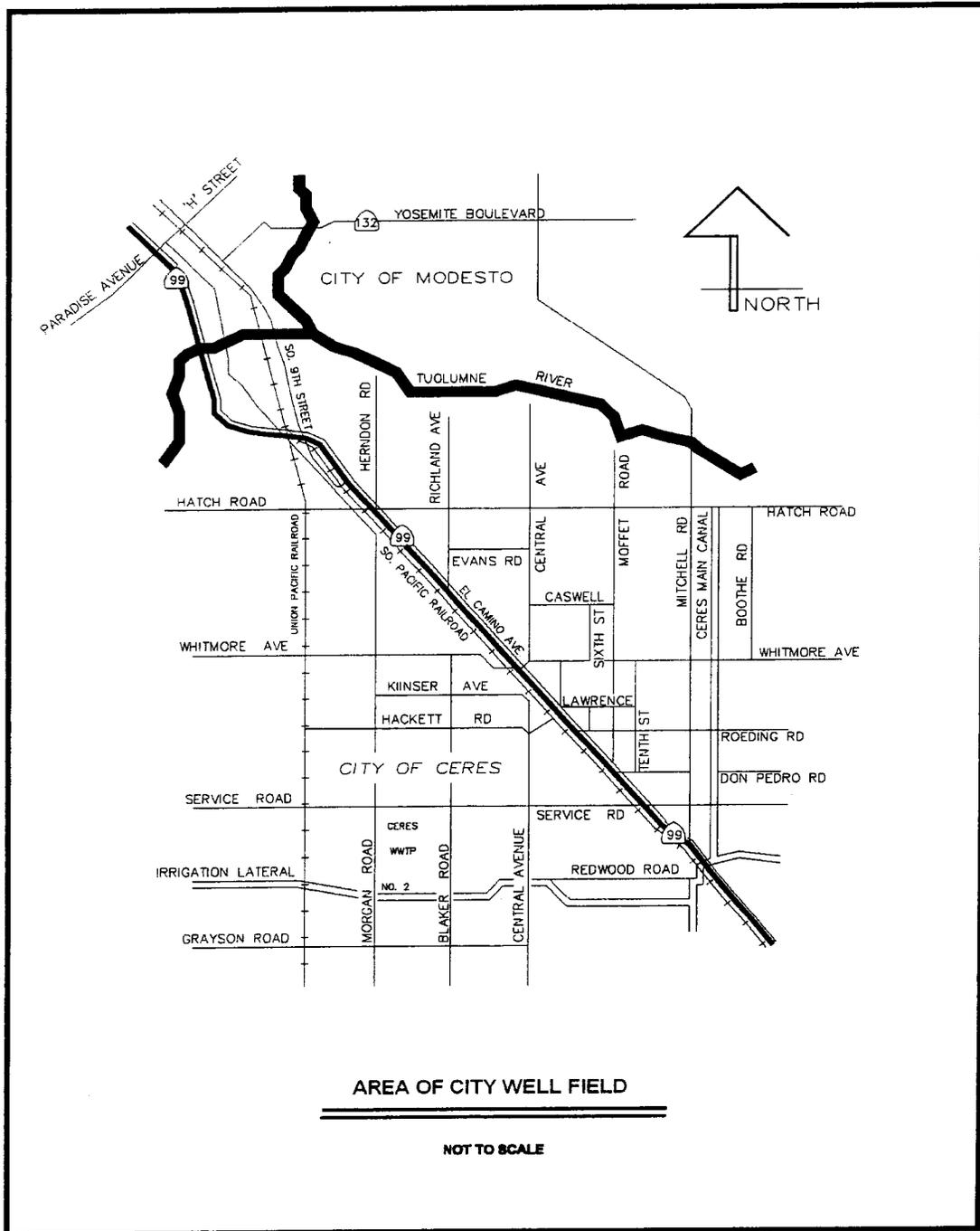
In recent years, it has become evident that the City of Ceres will need to treat water from some of its wells because the availability of wells meeting drinking water quality requirements is diminishing. Contaminants such as manganese and nitrate have limited the use of some existing wells and the majority of newly drilled test wells exhibit contaminants above the maximum contaminant level. Wellhead treatment of previously unusable well water will add to the potential supplies. All available groundwater wells are listed in Table 3-1, with corresponding water quality concerns and average pumping rates. Wells no. 19 and 22 are being monitored closely for contaminants.

Table 3-1  
GROUNDWATER WELL PUMPING RATE AND WATER QUALITY CONCERNS

Well Number	Pumping Rate (gpm)	Depth to Static Water (ft)	Depth to Pumping Water (ft)	In Service	Water Quality Concerns
1	1,400	65	119	Yes	Nitrate and Uranium
6	750	39	-	No	Nitrate and Uranium
14	250	54	-	No	Standby well, Manganese
16	350	-	118	Yes	
19	1,000	30	54	Yes	Nitrate and Uranium
20	1,800	62	105	Yes	
21	1,800	64	136	Yes	
22	1,600	53	136	Yes	Uranium
23	750	-	-	No	Nitrate
24	1,800	62	154	Yes	
27	1,200	97	141	Yes	
28	1,300	-	154	Yes	

The City obtains approximately 10,000 acre feet of water per year (AF/Y) from city wells (Figure 3-1). Water quality is within California Department of Health Services acceptable drinking water standards for six of the twelve wells; however, wellhead treatment is being considered for wells that exhibit compromised water quality.

Figure 3-1  
**AREA OF CITY OF CERES GROUNDWATER WELL FIELD**



Average water demand from 2000 through 2004 indicated a growth rate of 2.8% from all city water customers (Table 3-2). This rate is not dissimilar to the population growth, as the majority of growth within this time period was predominantly in the residential sector.

Table 3-2  
WATER DEMAND 2000 - 2004 (AF/Y)

	2000	2001	2002	2003	2004
City Produced Groundwater	9,019	9,452	10,067	9,802	10,142

Supply projections for potential sources are presented in Table 3-3. This table shows the maximum expected water supply from the existing wells with no contaminants of concern, wells with compromised water quality that may be treated after 2010, and potential surface water supplies that may become available after 2010.

Table 3-3  
CURRENT AND PROJECTED WATER SUPPLIES (AF/Y)

Water Supply Sources	2005	2010	2015	2020	2025
City Produced Groundwater <sup>1</sup>	12,000	16,000	20,000	20,000	20,000
Surface Water <sup>2</sup> (TID)	0	11,000	11,000	11,000	11,000
Recycled Water <sup>3</sup>	131	131	131	131	131
<b>Total</b>	<b>12,131</b>	<b>27,131</b>	<b>31,131</b>	<b>31,131</b>	<b>31,131</b>

<sup>1</sup>City is considering additional wellhead treatment for currently unused wells

<sup>2</sup>City has signed an agreement to procure wholesale surface water from Turlock Irrigation District.

<sup>3</sup>Recycled water is used within the Ceres Wastewater Treatment Facility for landscape irrigation.

Rainfall, river channels, as well as imported surface water via canals for agricultural irrigation, play a role in recharging the groundwater basin; however, the basin has historically experienced an overdraft after 1963. Estimates of historic basin overdraft have ranged from 70,000 – 85,000 AF/Y (Appendix F), with the majority of overdraft concern limited to the eastern part of the basin.

The *Turlock Groundwater Basin Water Budget 1952-2002* estimated the overdraft condition to have equilibrated, with annual 7,000 AF/Y increases of water storage (Appendix E). However, the basin is in a considerable overdraft condition compared to conditions experienced prior to 1962. The City of Ceres has been assisting the Turlock Groundwater Basin Association with information relevant to the City and has taken an active role in Association efforts to minimize overdraft conditions.

The Turlock Groundwater Basin Association's Groundwater Coordination Committee meets once a month and City employees take an active part in Committee activities. The Committee

is in the process of determining groundwater depth throughout the basin and compiling groundwater quality testing results for four (4) constituents: pH; electrical conductivity, nitrates, and chlorides. TID has a GIS technician who is taking the groundwater depth information from the various communities and plotting the information onto a map to show basin contours of groundwater levels. Communities submit the groundwater levels to the Committee each March and November. The Committee will be adding more water quality constituents to their data, and the information will be used as a tool in guiding the best locations for the development of new wells. The City of Turlock is keeping all information on an Access database that will be available to agencies in the affected areas of the Basin.

The Committee is trying to learn more about the basin and is monitoring CALFED's programs and the possible effects their projects may have on groundwater. The Stanislaus Groundwater Committee also maintains regular communication with the Turlock Groundwater Basin Association to keep abreast of pertinent information in the area.

### **3.2 LOCAL SURFACE WATER**

Basin groundwater levels have dropped and water quality has declined in some areas. Years of recurring drought and stricter water quality standards have made it necessary for many communities to explore additional water supplies.

The Surface Water Joint Powers Authority (JPA) was established in 1990. The JPA, made up of eight water agencies, looked at bringing surface water from the Tuolumne River to the agencies for domestic use. This includes the cities of Ceres, Hughson, Modesto, Turlock, and the communities of Delhi, Denair, Keyes, and Hilmar. In the mid 1990's, the Turlock Irrigation District established a proposed raw water rate in which to supply surface water. The majority of cities and special districts felt that the cost to bring in surface water was too high. In 1997, the JPA decided not to pursue the surface water project with TID and has been inactive since then; however, Ceres has negotiated and signed an agreement with TID to supply water from a surface water treatment facility to the City.

The City of Modesto supplies groundwater and surface water to its customers. Modesto and several other communities north of the Tuolumne River receive surface water from the Modesto Reservoir through an agreement with the Modesto Irrigation District (MID). A portion of the City of Modesto lies south of the River, and Modesto supplies well water to a portion of Ceres residents who were historically served by the Del Este Water Company. Modesto has approached the City of Ceres concerning the expansion of their surface water project, but only preliminary discussions have occurred to date. The City has now focused on surface supplies that may become available from the Turlock Irrigation District.

### **3.3 IMPORTED WATER**

The City is exploring the concept of importing water during water supply shortages caused by severe droughts or disasters such as earthquakes. Imported water would be used to meet health and safety requirements. As noted above, MID provides water from the Modesto Reservoir to

the City of Modesto and several other areas north of the Tuolumne River. Should it become necessary to supply additional water to the City of Ceres, and if an agreement were made with the affected communities, additional pipeline would need to be installed to connect the two systems. Technical aspects of this scheme have not been pursued beyond initial negotiations.

### **3.4 RECYCLED WATER**

The City expanded its secondary wastewater treatment facility in 1989 to handle 2.6 million gallons per day of wastewater. During the past several years, the City has undergone extensive engineering and environmental studies in order to further increase the capacity of the wastewater treatment facility. In 2000, the City garnered bids to rehabilitate the existing plant to allow for expanded hydraulic and aeration capacity. However, the project did not increase the facility's disposal capacity.

The City has an existing agreement with the City of Modesto to allow Ceres to export a portion of Ceres' wastewater (currently 1.25 mgd) to Modesto's treatment facility. Modesto has a series of large lagoons that provide secondary wastewater treatment with eventual discharge to the San Joaquin River.

Since 2004, the City has been discharging up to 1.0 mgd of treated effluent to the City of Turlock wastewater treatment plant. Discharge of wastewater to the City of Turlock has the potential to be expanded to a maximum of 5.9 mgd in the future.

The City explored the possibility of constructing a tertiary treatment plant. This would allow for increased uses of recycled water for irrigation purposes. Recycled water is considered a reliable resource because it is consistently available. Due to significant costs to build a tertiary treatment plant, install dual piping to parks and other large landscaped areas, and the Regional Water Quality Board's reluctance to add another surface water discharge to the San Joaquin River, the City decided against pursuing this alternative.

Treated wastewater is reused for landscape irrigation purposes at the treatment site. The City's existing wastewater treatment facility is designed to allow 74% of the treated wastewater to percolate into the ground, which is recharged to the groundwater table beneath the percolation ponds.

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## Reliability Planning

A reliable water source is crucial for any City. Reliability is a measure of a water service system's expected success in supplying short term and long term water needs. To plan for long term water supply reliability, Cities need to examine an array of supply augmentation and demand reduction options to determine the best course of action for meeting water service needs. In addition to climate, other factors that can cause water supply shortages are earthquakes, chemical spills, and energy outages at pumping and storage facilities. Changes in aquifer water quality also impact the availability of groundwater supplies, and these impacts have affected several of the City's wells in the past.

Below and elsewhere in this document is information on the City's past experience in facing reduced water supplies, and the measures taken to reduce the impact of shortages. Information is provided on the City's water conservation programs that are enforced to help reduce groundwater overdraft, and there is also information about the City augmenting the water supply with surface water in the future.

### 4.1 FREQUENCY AND MAGNITUDE OF SUPPLY DEFICIENCIES

California experienced a severe drought during 1976/77. A Citywide ordinance was adopted in 1977 to restrict all residential, commercial, industrial, and institutional/governmental landscape watering during the summer months and prohibit water wasting. A water conservation program has been in effect since 1977, with some modifications.

Up to 1987, the City's water conservation program was only enforced during the regular working hours of City employees. In 1987, the City hired water conservation officers on a seasonal basis to work evenings and weekends. Water Division staff continue to enforce the program during regular business hours. The restricted hours for outdoor landscape irrigation have expanded from four hours, to six hours, and then to seven hours per day. The length of the program expanded from three months of the year to year-round in 1991. The City Council modified the *Ceres Municipal Code* to issue warnings and fines to water users who violate the water conservation program.

During the drought of the late 1980's and early 1990's, the City was better prepared to handle drought impacts due to the following actions:

1. Deepening of wells during the 1976/77 drought
2. Drilling of additional wells in the 1980's and 1990's
3. Continued enforcement of the water conservation program
4. Successful voluntary rationing on the part of the community
5. An effective water education program involving the media, local schools, an annual water awareness poster contest, and promotion of water awareness month
6. Distribution of free water conservation kits, including low-flow showerheads, faucet aerators, toilet tank displacement bags, and toilet leak detection dye tablets

## 4.2 PLANS TO ASSURE A RELIABLE WATER SUPPLY

Active water efficiency improvements will be necessary to meet the City's projected water demand. The City will continue to examine supply enhancement options, including additional groundwater recharge, wellhead treatment options, and surface water transfer from the Turlock Irrigation District. Recycled water is also a reliable water source because it is consistently available; therefore, the City will continue to study recycled water use options where groundwater degradation is not a result.

## 4.3 RELIABILITY COMPARISON

Severe drought conditions occurred in 1976 and 1977, and some of the City's shallow wells were seriously compromised by the lowering groundwater levels. Infrastructure improvements and water conservation allowed the City to continue to supply 100% of the water demand during the drought period of 1987 to 1992. In 1993, California received above normal precipitation, ending the 1987 - 1992 drought. However, the years after 2000 have been regarded as below normal or dry water years.

For planning purposes, reliability of water supply is examined by comparing water supply in a normal year to the supply that would be available during a drought period. Table 4-1 compares the water supplied to the City during a normal water year (2000) to the projected water supply associated with a hypothetical decreased percentage of supply for the reliability scenarios of a single dry year (1977) and multiple dry years (1989-1992).

The percentages of water supply reduction presented below are conservative estimates because the groundwater capacity of the Ceres' well field has not been compromised since infrastructure improvements were instituted during the last drought. The reduction percentages range between 5 – 15% of normal year water supply and are aligned with the reductions of surface water runoff in the basin and supply reduction estimates of other local communities that primarily rely on surface water. Although these percent reductions may not be fully applicable to existing groundwater well conditions, the use of surface water to augment Ceres' water supplies requires consideration of climatic shortages of all projected supplies.

Table 4-1  
ESTIMATED RELIABLE WATER SUPPLY PRODUCTION  
DURING DROUGHT SCENARIOS (AF/Y)

Normal Water Year (2000)	Single Dry Water Year (-10%)	Multiple Dry Water Years		
		Year 1 (-5%)	Year 2 (-10%)	Year 3 (-15%)
9020	8118	8569	8118	7667

#### **4.4 THREE YEAR MINIMUM WATER SUPPLY**

In the early 1990's, the Turlock Irrigation District (TID) discontinued operation of some of their large irrigation wells in an effort to reduce the rate of a groundwater overdraft to help the cities of Ceres and Turlock. TID also shortened the irrigation season and reduced the amount of water deliveries to farmers for several years.

Based on the water shortage stages and triggers outlined in Appendix C, a water shortage condition may be declared. The most recent driest three-year historic sequence for the City's water supplies was from 1990 to 1992. Early in the drought period, the City took stronger measures to reduce per capita water consumption by increasing public awareness. The City also made pump improvements and planned for an enclosed water storage reservoir, which was constructed in 1991. A 2.3 million gallon reservoir has been designed and is expected to be completed by 2006.

Because shortages can have serious economic and environmental impacts, the City makes every effort to limit water shortages to no more than 25%, and the City's *Water Shortage Contingency Plan*, outlines measures to address water shortages of up to 50%.

Based on experiences during the recent drought, the City recognized that it is better to enter into a water shortage alert early to establish necessary water reduction goals, to gain public support and participation, and to reduce the likelihood of more severe shortage levels later. As the community continues to become more water efficient, it may become more difficult for customers to reduce their water use during water shortages ("demand hardening"). City staff does not believe water customers have reached demand hardening, because there are still potential water efficiency improvement opportunities in residential plumbing fixtures, appliances, and landscapes in commercial, industrial, and institutional sectors.

#### **4.5 WATER TRANSFERS**

The City will continue to evaluate dry year water transfer options with surrounding water suppliers. As mentioned above, Ceres may turn to the Modesto Irrigation District, the City of Modesto and other communities supplied with MID treated surface water if there is a severe shortage of water.

## Water Use

### 5.1 WATER USE BY SECTOR

The need for improved information on water usage resulted in the City developing an accounting of customer types and consumption. The City designed its billing system to identify each customer by sector and usage category. For instance, the City is able to distinguish a commercial customer using water primarily for landscape irrigation from a nursing home facility needing water for health and safety reasons. Accordingly, each would have different needs and different rationing allocations if rationing became necessary.

The City of Ceres' population increased by about 2.5% per year between 2000 and 2004. This growth rate has been consistent with previous planning reports and census documents and was used here to estimate the projected increase of residential water customers within the City service area (Table 5-1). The rates of increasing customer connections for the different water use sectors was calculated between 2000-2004, and the rates for each sector were used to estimate the projected customers and water use through 2025 (Table 5-2). Unaccounted-for system water loss was calculated at 10% of total water usage until the majority of the system is metered, with a corresponding 5% reduction in water loss after 2010. This rate will be refined as the City of Ceres' water distribution system is converted to a metered system.

Table 5-1  
PROJECTED INCREASE OF WATER CUSTOMERS SERVED BY CERES (CUSTOMERS/YEAR)

Water Use Sectors	2000	2005	2010	2015	2020	2025
Res. Single/Multi Family						
Metered	133	140	3,000	6,000	11,000	16,000
Unmetered	7,588	8,950	7,000	6,000	3,000	0
Commercial						
Metered	223	259	320	420	550	670
Unmetered	85	96	50	30	20	0
Industrial						
Metered	63	87	130	180	250	350
Unmetered	9	10	10	8	4	0
Landscape Irrigation						
Metered	85	118	130	150	170	200
Unmetered	2	2	1	0	0	0
Metered Recycled Water <sup>1</sup>	1	1	1	1	1	1
<b>Total</b>	<b>8,189</b>	<b>9,670</b>	<b>10,650</b>	<b>12,790</b>	<b>15,000</b>	<b>17,230</b>

<sup>1</sup>Currently, some of the treated water from the WWTP is used by the City for irrigation.

Table 5-2  
**PROJECTED WATER REQUIRED BY WATER USE SECTOR (AF/Y)**

Water Use Sectors	2000	2005	2010	2015	2020	2025
Residential Single/Multi Family	7,170	8,200	9,300	10,600	12,100	13,800
Commercial	729	870	1,100	1,400	1,700	2,100
Industrial	62	100	200	300	500	700
Landscape Irrigation	490	600	730	890	1,090	1,330
Unaccounted-For System Losses	800	1,000	1,100	700	800	900
<b>Total</b>	<b>9,251</b>	<b>10,800</b>	<b>12,500</b>	<b>13,900</b>	<b>16,200</b>	<b>18,900</b>

### 5.1.1 RESIDENTIAL SECTOR

In Ceres, residential customers averaged 3.1 persons per housing unit in the 2000 U.S. census. Single family residences dominate the area, but there are also duplexes, triplexes, fourplexes and larger multi-family complexes. There are nine mobile homes parks within the City.

### 5.1.2 COMMERCIAL SECTOR

The City has a mix of commercial customers, ranging from antique stores, insurance offices, car washes and gas stations, to medical complexes, restaurants, and regional shopping centers.

### 5.1.3 INDUSTRIAL SECTOR

The City has an industrial sector, with several developed and partially developed industrial parks. The establishments are considered “dry industries” and do not use a considerable amount of water. The industrial sector has recently expanded at a slower rate than residential and commercial.

### 5.1.4 INSTITUTIONAL / GOVERNMENTAL SECTOR

The Ceres Unified School has 18 building sites. Because of population increases, the District has recently expanded the number of school sites by one new high school and four new elementary schools. New wells were drilled at these sites for irrigation purposes only. The District had the new wells installed so that the City would not charge for irrigation water, and this saves the District water and sewer costs because the City’s non-residential sewer rates are based on metered water usage.

A major hospital, Memorial Hospital, was closed in 1994. Stanislaus County bought the 15.3 acre site in the late 1990's. The old hospital building is currently being used for storage, but newer areas of the complex has been converted to a drug and alcohol rehabilitation center for County residents. Eventual occupation is expected to be 66 beds for adults, 3 beds for teenagers, 12 beds for pregnant women, a childcare center, and an adolescent day treatment/school for 30 students. The site has a well for landscape irrigation purposes.

The City supplies water to several large complexes outside of the City limits. The large complexes include the Stanislaus County Jail, Police Training Facility, Community Services Agency, Department of Environmental Resources, and Agricultural Center.

#### **5.1.5 LANDSCAPE / RECREATIONAL SECTOR**

The City owns 14 park sites. Eleven are developed and maintained by the City, and the remaining three are in various stages of development. A well was drilled in Strawberry Fields Park, which provides irrigation water to the park and median strips in the adjoining area. A storm drain detention basin is located at each park site. The future park on Boothe Road will receive irrigation water from a well that is located at the Sam Vaughn school site. The other two future parks will receive untreated well water for irrigation purposes.

A golf course is located along the Tuolumne River in the northeastern section of the City. The golf course is irrigated with the course's own well. A cemetery is located in central Ceres and also relies on its own well.

#### **5.1.6 AGRICULTURAL SECTOR**

Prior to 1990, treated wastewater was used to irrigate 93 acres of agricultural land near the City's wastewater treatment plant; however, the City no longer has any agricultural customers.

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## Water Demand Management Measures

### 6.1 DEMAND MANAGEMENT MEASURES

The City of Ceres is committed to implementing water conservation programs, and this section discusses water conservation measures in depth.

The City of Ceres is not a signatory to the Memorandum of Understanding regarding the Urban Water Conservation in California and is therefore not a member of the California Urban Water Conservation Council (CUWCC).

For the purpose of responding to the Urban Water Management Planning Act, the City will address the fourteen Demand Management Measures (DMM), and descriptions of the City's water conservation programs are provided below.

#### 6.1.1 DMM #1- WATER SURVEY PROGRAMS FOR SINGLE FAMILY RESIDENTIAL AND MULTI-FAMILY RESIDENTIAL CUSTOMERS

The City has recently considered offering free residential water use surveys to single-family and multi-family customers, which include interior and exterior audits of water use.

Interior audits generally include measuring the flow rates of existing plumbing fixtures, tests for toilet leakage, installing low-flow showerheads and faucet aerators, installing toilet tank displacement bags, and providing information to clients about ultra-low flush toilets.

Exterior audits include a general landscape survey. This would include measuring landscaped areas, testing the sprinkler system for irrigation efficiency and distribution uniformity; teaching the customer how to set the irrigation controller; developing a three-season (spring, summer, and fall) irrigation schedule based on soil type; evapotranspiration, and irrigation system recommending sprinkler system repairs or improvements; and providing flyers on water efficient landscaping design and plants. Multi-family surveys would be similar, but require coordination with owners/managers, tenants, and landscaping services.

Audit reports would likely include the number of people in the household, number of bathrooms, age of appliances (washing and dishwashing machines), and lot and landscaped area square footage.

At the present time, the City does not have the personnel to perform complete surveys; however, the City currently provides water conservation kits that are easy for customers to install. When distributing the kits, the City records the customer's address, age of home, and number of bathrooms in anticipation of initiating a survey program within the next five years.

The City distributes the interior and exterior "Water Conservation Checklist" that was developed by the California Department of Water Resources. In addition to the checklist, the

City distributes flyers on landscaping designs (e.g. grouping similar water use plants into hydrozones, reducing turf areas, planting low water use plants, etc.) and lawn watering guides. The guides illustrate a simple technique to determine watering time required to meet lawn irrigation demands. Using the techniques contained in the guide, a resident measures the application rate of their sprinkler system and a table in the guide determines the watering time for the three irrigation seasons of the year. Upon request, the City's Water Division instructs customers in residential areas how to program their landscape irrigation controllers.

The City will continue to evaluate staff requirements to implement a complete survey program within the next five years.

### **6.1.2 DMM #2 – RESIDENTIAL PLUMBING RETROFIT**

The City encourages retrofitting plumbing in existing structures with water conserving fixtures, such as ultra-low flush toilets. The City distributes free kits that include low flow showerheads, kitchen and bathroom faucet aerators, toilet tank displacement bags, and toilet tank leak detection tablets. Each kit is designed to meet the needs of one household based on the number of bathrooms, showers, etc. The City has advertised the availability of the kits on the City website, in the newspaper, utility bill inserts, and Annual Water Quality Reports. The kits are also handed out during the beginning of Water Awareness Month at the Ceres Annual Street Faire and over the counter at the Public Works and Municipal Utilities Departments. Prior to 2000, 647 kits had been distributed, and 57 kits have been distributed since that time.

The City will continue to implement this DMM.

### **6.1.3 DMM #3 - SYSTEM WATER AUDITS, LEAK DETECTION, AND REPAIR**

The distribution system consists of approximately 145.25 miles of pipeline, and City maintenance personnel routinely check the water distribution system for leaks. Special equipment was purchased to aid detection of water leaks, and the City water distribution repair crews quickly respond to complete necessary repairs. Through this effort, unaccounted water losses have been reduced; however, the distribution system losses cannot be accurately calculated until the water system is completely metered.

The City has permanently incorporated this DMM into its operation and maintenance procedures.

### **6.1.4 DMM #4 - METERING WITH COMMODITY RATES FOR ALL NEW CONNECTIONS AND RETROFIT OF EXISTING CONNECTIONS**

Since 1992, meters have been installed for all new residential units, but most existing single family residential water users have yet to be metered. A meter retrofit program will need to be instituted during the next few years to meet the mandated deadline for complete metering by 2025. The rate of projected meter retrofit has been illustrated in Table 5-1; however, this rate of meter installation was estimated and the program will need to be reviewed and approved by the City Council. Loan and grant programs, available from the California Department of Water

resources, will be investigated and pursued to provide financial assistance to complete meter installation of all City customers. Water for the majority of multi-family housing, commercial, industrial, and institutional/governmental facilities is metered, and the metered rate structure described below encourages water conservation.

The monthly flat water fee for single family homes is \$15.30. The City has an inclining multi-block rate structure for metered water users. The first 20,000 gallons of water use is charged at \$0.75 per 1,000 gallons, with a minimum charge of \$10.70. The next 30,000 gallons of water is charged at \$0.80 per 1,000 gallons, the next 150,000 is also charged \$0.80 per 1,000 gallons, and any water over 200,000 gallons is charged \$0.78 per 1,000 gallons.

The City will continue to read non-residential meters and bill accordingly. The City also conducts periodic reviews of customer water use to evaluate the potential for system leakage by comparing current water use with historic data, and notifies the customer of any irregularities. The City's Water Division installs residential water meters, and the residential meters are paid for by the developer through building permit fees. Contractors install meters for non-residential development.

This DMM is continually evaluated, and the rate structure is reassessed during the City's financial planning processes.

#### **6.1.5 DMM #5 - LARGE LANDSCAPE CONSERVATION PROGRAMS AND INCENTIVES**

Due the drought and the passage of AB 325 in 1993, the City Council adopted Water Efficient Landscape Guidelines and Standards. The guidelines were revised in 1994. The City worked with landscape designers and contractors, the Building Industry Association, and local developers in developing and revising the guidelines. The guidelines apply to all new single family, multifamily, commercial, and industrial developments. The program is designed to reduce water consumption through the use of trees, shrubs, vines, ground cover, and grasses that are suitable for growing in the Central Valley. The City has compiled a suggested plant list, and efficient irrigation systems are also required for new construction to reduce consumption.

Landscape and irrigation plans are required to be submitted prior to construction. In an effort to simplify the submittal process, single family developers and owners may choose pre-approved City Standard Plans. They may also submit plans using a prescriptive format method (where not more than 35% of the landscape area is planted in turf) or the water allowance method (where a maximum amount of water may be applied to the landscape area). All developers, other than for single-family residences, are required to submit plans using one of these methods. The guidelines also apply to existing development if extensive remodeling is to occur where the value of the project exceeds 50% of the assessed valuation.

The City has water efficient landscapes in new traffic medians, and some of the older medians have been landscaped with appropriate plants. The benefits include heightened public awareness of attractive, low water-use landscapes, and the City is actively demonstrating its commitment to improved efficiencies in public water use. In addition to saving water, City maintenance crews have experienced fewer street and gutter repairs as a result of less runoff.

The City has conducted onsite evaluations and worked with existing condominium and apartment owners/managers with large landscaped areas to reduce over-watering. Generally, recommendations have included shorter irrigation times, reducing slopes of turf areas, or replacing high water use areas with drought resistant plants. Recommendations have also included replacing sprinkler heads with more efficient devices that service landscaped areas and resetting existing devices to reduce overspray onto hardscapes.

The City has continuously worked with local school districts to improve water use efficiency on landscapes and playing fields.

All City parks are closely monitored for water waste and leak detection. The City has over 198 acres of parkland of which 88 acres are undeveloped. A project is being evaluated to drill shallow irrigation wells in each park so they may be removed from the potable water supply. The City has extensively revised the irrigation systems at the parks, and many sprinkler heads have been replaced with low-flow nozzles. Efficient sprinkler heads reduce the number of gallons of water per minute applied, which reduces runoff, ponding, flooding, and drift onto hardscapes. Irrigation cycles are adjusted to ensure no area is watered more than three days per week. The City hired a new staff person in the Parks Division to monitor water cycles, adjust sprinkler times as needed, and make repairs to the controllers and irrigation systems.

The City will continue to implement this DMM.

#### 6.1.6 DMM #6 – HIGH-EFFICIENCY WASHING MACHINE REBATE PROGRAM

The City of Ceres is provided natural gas service by Pacific Gas & Electric. PG&E provides rebates for energy-efficient appliances to its customers (Table 6-1), and the City has posted the information and link to receive these rebates on the City’s website. The City is also pursuing additional guidance from PG&E to make the rebate program information available to City clients in English and Spanish language flyers that will be distributed in billing notices and available for collection at City offices. The City will continue to assess the feasibility of this DMM, and to expand City participation to include the provision of drop-off or collection areas for old machines that have been abandoned during rebate programs.

Table 6-1  
REBATE FUNDS AVAILABLE THROUGH PG&E (2005)

Appliance	Rebate (\$)
Washing Machines	35 - 75
Dishwashers	30
Refrigerators	35
Air Conditioners	200 - 625
House Fans	100
Heat Pumps	200 - 625
Water Heaters	30

### **6.1.7 DMM #7 - PUBLIC INFORMATION PROGRAMS**

Public education programs present a great opportunity for improving conservation. With increased awareness of limited water supplies, customers can be motivated to change habits, install water saving devices, and irrigate more efficiently. Accordingly, the City promotes water conservation year round. The City distributes public information through utility bill inserts, annual water quality reports, brochures, information tables/displays, and at special events and presentations.

The outdoor water-use schedule has been printed in Spanish and English. The City has also publicized the outdoor water-use schedules in the local newspaper. Magnets displaying the irrigation schedules are distributed to new customers who sign up for water services. The City also developed a video library available to the public which includes information on water wise gardening (drip irrigation, landscape planning, and drought tolerant plant selection) and soil amendments that help conserve water (composting and mulching).

The City will continue to implement this DMM and provide public information services and materials to increase public awareness of water conservation and resource management.

### **6.1.8 DMM #8 - SCHOOL EDUCATION PROGRAMS**

The City works closely with the Ceres Unified School District to promote conservation of water and other resources, and prevent water wasting at school facilities.

The City provides occasional water conservation presentations to lower and upper grade classrooms, where students are given conservation materials to take home and share with family members. The City has also provided State Water System Maps to some of the schools.

The City has been involved with the Water Awareness Committee of Stanislaus County, and the promotion of Water Awareness Month. The Committee sponsored water awareness poster contests for all fifth-grade students in the county. Receptions have been held for winning students and their teachers and principals, and awards were given out. In some years, a calendar was published showing one or more winning poster(s), with water awareness and conservation facts incorporated into the calendars. The calendars were then distributed to fifth-grade teachers throughout the County. Although participation was eliminated in 2001 because of staff shortages, the City will continue to assess the feasibility of renewed participation.

In addition to elementary school education, the City participates with the Stanislaus County Office of Education's Stanislaus/Tuolumne Environmental Education Project (STEED) Region VI B of the California Regional Environmental Education Consortium (CREEC) network. A representative of the City attends the Committee meetings to plan future teacher workshops and activities. The City also provides an annual donation to STEED. STEED has put on workshops including the Project Water Education for Teachers (WET) training. The City's representative has participated in giving training on water conservation, pollution prevention, and recycling.

The City will continue to implement this DMM and investigate ways to expand water conservation education into local high schools.

### **6.1.9 DMM #9 - CONSERVATION PROGRAMS FOR COMMERCIAL, INDUSTRIAL, AND INSTITUTIONAL ACCOUNTS**

Commercial and industrial water conservation activities are very important for reduction of wasted water. Nearly all non-residential water users are metered, and the monthly utility bills show the amount of water used and appropriate charges. This gives commercial clients a method for measuring monthly water consumption. The benefits of user consumption awareness could lead to increased conservation and alert users of possible leaks within their system.

The City has adopted *Water Efficient Landscape Guidelines and Standards*, which pertain to commercial and industrial developments that are new or where significant remodeling or expansion plans are proposed. Commercial and industrial establishments must abide by the City's outdoor water use schedule for landscape watering, and are subject to warnings and fines for wasting water.

The City coordinates review of commercial and industrial building applications between the Building Department, Public Works Department, Planning Department, Economic Development Division, and Public Safety Department. Developers are required to install water efficient landscapes on new construction, and new commercial and industrial developments are required to install ultra-low flush toilets and urinals. Only after review of the plans are completed and requirements are met, will the City issue construction permits. Historically, the City has not provided water to what are considered "wet industries".

The City encourages developers, who propose large landscape areas, to install separate meters for landscape irrigation. This helps the developers monitor outdoor water usage, which can be a major tool to conserve water and an additional incentive to save on sewer fees because sewer charges are based on the amount of metered water used by consumers.

In the early 1990's the City purchased portable meters, which the City issues on a temporary basis to contractors that need water for construction. The contractors pay according to the amount of water used, and this has reduced water wasting on construction sites by an unknown amount.

The City will continue to implement this DMM.

### **6.1.10 DMM #10 – WHOLESALE AGENCY PROGRAMS**

The City does not currently have an agreement for wholesale water delivery to customers; however, the negotiations with Turlock Irrigation District for surface water delivery will include a complete assessment of conservation measures and demand management measures to be incorporated into all subsequent agreements.

### **6.1.11 DMM #11 - CONSERVATION PRICING**

The City is currently only partially metered. Nearly all of the multifamily, commercial, industrial, institutional, and governmental facilities are metered. Since 1992, all new single

family residential units were required to be metered; however, the single family homes are currently billed at a flat rate. The City has an inclining block rate structure for metered non residential water customers (Table 6-2).

Sewer rates of single family residential units are billed a flat monthly charge (\$20.90), and sewer rates for non-single family residential units are based on water used. For instance there is a sewer charge of \$2.00 per 1,000 gallons of water supplied per month, with a minimum charge of \$12.00. Accordingly, some large property owners installed separate meters for outdoor irrigation to help lower sewer charges. Should water shortages occur, these meters will assist the City to develop equitable rationing allocations, if needed, for non-residential customers. The benefits of this DMM are to decrease customer water costs and water use through price incentives.

The City will reassess rate structures as financial planning and administrative conditions warrant.

Table 6-2  
EXISTING WATER RATES FOR SECTORS WITHIN CERES' SPHERE OF INFLUENCE

	Rate
<i>Flat</i>	
Single Family House	\$15.30
Low Income Residence	\$9.95
Duplex (Also House + Mobile Home)	\$29.91
Triplex	\$34.36
Fourplex	\$39.02
Additional Unit Rate (Above fourplex)	\$4.66
<i>In County</i>	
Single Family House	\$22.95
Duplex	\$40.37
Triplex	\$51.54
Fourplex	\$58.53
Commercial	\$10.70
<i>Metered</i>	
Minimum	10.70 Per 1000 GAL.
First 20,000 GAL.	\$0.75 Per 1000 GAL.
Next 30,000 GAL.	\$0.80 Per 1000 GAL.
Next 150,000 GAL.	\$0.80 Per 1000 GAL.
All over 200,000 GAL.	\$0.78 Per 1000 GAL.
<i>Metered In County</i>	
Minimum	\$17.17 Per 1000 GAL.
First 20,000 GAL.	\$1.21 Per 1000 GAL.
Next 30,000 GAL.	\$1.28 Per 1000 GAL.
Next 150,000 GAL.	\$1.28 Per 1000 GAL.
All over 200,000 GAL.	\$1.25 Per 1000 GAL.

### **6.1.12 DMM #12 - WATER CONSERVATION COORDINATOR**

The City has employed a seasonal water conservationist nearly every year since 1987. For several years, in the late 1980's and early 1990's two seasonal conservationists were hired. The conservationists work during the warm months of the year to provide public education and enforcement of the water conservation program. Water Division staff provide enforcement during regular work hours and the remainder of the year. In addition, the Municipal Utilities Department Administration Division develops public education aspects of the water conservation program (promotion, utility bill inserts, etc.); distributes water conservation kits; and produces reports showing the number of water violation warnings and fines issued.

The Water Conservation Program is coordinated by the Director of Municipal Utilities, and approximately 20% of the Directors' time is spent dealing with various aspects of the Water Conservation Program.

The City will continue to implement this DMM.

### **6.1.13 DMM #13 - WATER WASTE PROHIBITION**

The City established a no waste ordinance in 1977, which is actively enforced. Enforcement includes educating customers, patrolling streets watching for water wasters, and issuing warnings and fines for violations. See Appendix D for the no waste ordinance and information on regulations, restrictions, and enforcement. All violations are reported monthly/annually. The City has seen a reduction in the number of violations since the early 1990's. Enforcement costs are part of the City's budget.

The City has permanently incorporated this DMM into its ordinances, and the City will continue to implement this DMM.

### **6.1.14 DMM #14 - ULTRA-LOW FLUSH TOILET REPLACEMENT**

An incentive program to replace toilets with ultra-low flush (ULF) models was recently considered. The City is considering developing an ordinance to require installation of ULF toilets within a certain time frame from resale of property, and as a condition of remodeling permits for construction. In the current California housing market, homeownership changes about once every five years. A mandatory replacement program would reduce water consumption and wastewater flows. Although this alternative would conserve water, it is not necessarily cost effective to residential water users whose water bills are not based on metered usage. The majority of the water that is used in the City is by residential users.

Since 1992, a State law requires that ULF toilets use only 1.6 gallons per flush or less and low flush urinals be installed in all new construction. Accordingly, the new schools, businesses, and residences in Ceres have water saving toilets. A ULF toilet rebate program is expected to increase City staff needs, but will be further evaluated within the next five years.

## Supply and Demand Comparison Provisions

### 7.1 SUPPLY AND DEMAND COMPARISON PROVISIONS

The water supply and demand comparisons below present an estimate of whether the projected water demand will be satisfied by water supplied from existing wells, wells treated for contaminants compromising water quality, and surface supplies anticipated to be delivered by a wholesale water agency.

Table 7-1 compares current water supply to projected water demand. The current water supply is calculated from the pump rates of the existing City wells that have no water quality concerns. This comparison indicates the existing supply would not provide sufficient water for the year 2010, and the supply is not sufficient to meet water demand during single or multiple dry water years.

Table 7-1  
EXISTING UNTREATED GROUNDWATER SUPPLY AND DEMAND PROJECTIONS (AF/Y)

Water Supply Sources	2005	2010	2015	2020	2025
<i>Normal Water Year</i>					
Groundwater Supply	12,000	12,000	12,000	12,000	12,000
Projected Water Demand	10,800	12,500	13,900	16,200	18,900
Supply greater than Demand (%)	10	-4	-16	-35	-58
<i>Single Dry Year</i>					
Groundwater Supply	10,800	10,800	10,800	10,800	10,800
Projected Water Demand	10,800	12,500	13,900	16,200	18,900
Supply greater than Demand (%)	0	-16	-29	-50	-75
<i>Multiple Dry Year 1</i>					
Groundwater Supply	11,400	11,400	11,400	11,400	11,400
Projected Water Demand	10,800	12,500	13,900	16,200	18,900
Supply greater than Demand (%)	5	-10	-22	-42	-66
<i>Multiple Dry Year 2</i>					
Groundwater Supply	10,800	10,800	10,800	10,800	10,800
Projected Water Demand	10,800	12,500	13,900	16,200	18,900
Supply greater than Demand (%)	0	-16	-29	-50	-75
<i>Multiple Dry Year 3</i>					
Groundwater Supply	10,200	10,200	10,200	10,200	10,200
Projected Water Demand	10,800	12,500	13,900	16,200	18,900
Supply greater than Demand (%)	-6	-23	-36	-59	-85

The comparison presented in Table 7-2 illustrates the projected water demand and the supply provided by the existing wells and additional wells that are provided with wellhead treatment for the well's contaminant of concern within the next five to ten years. This comparison indicates groundwater supplies within the City of Ceres would satisfy water demand through the year 2015 under single and multiple dry water years.

**Table 7-2  
TREATED GROUNDWATER SUPPLY AND DEMAND PROJECTIONS (AF/Y)**

Water Supply Sources	2005	2010	2015	2020	2025
<i>Normal Water Year</i>					
Groundwater Supply	12,000	16,000	20,000	20,000	20,000
Projected Water Demand	10,800	12,500	13,900	16,200	18,900
Supply greater than Demand (%)	10	22	31	19	6
<i>Single Dry Year</i>					
Groundwater Supply	10,800	14,400	18,000	18,000	18,000
Projected Water Demand	10,800	12,500	13,900	16,200	18,900
Supply greater than Demand (%)	0	13	23	10	-5
<i>Multiple Dry Year 1</i>					
Groundwater Supply	11,400	15,200	19,000	19,000	19,000
Projected Water Demand	10,800	12,500	13,900	16,200	18,900
Supply greater than Demand (%)	5	18	27	15	1
<i>Multiple Dry Year 2</i>					
Groundwater Supply	10,800	14,400	18,000	18,000	18,000
Projected Water Demand	10,800	12,500	13,900	16,200	18,900
Supply greater than Demand (%)	0	13	23	10	-5
<i>Multiple Dry Year 3</i>					
Groundwater Supply	10,200	13,600	17,000	17,000	17,000
Projected Water Demand	10,800	12,500	13,900	16,200	18,900
Supply greater than Demand (%)	-6	8	18	5	-11

Additional comparisons in Table 7-3 indicate the existing well supply (without treatment) and an additional surface water supply provided by Turlock Irrigation District will satisfy the projected water demands to the year 2025. However, the excess water available during single and multiple dry years is less than 10% of capacity in 2025, and additional water sources would need to be evaluated before that time.

Table 7-3  
**EXISTING GROUNDWATER WITH SURFACE WATER SUPPLY AND DEMAND PROJECTIONS (AF/Y)**

Water Supply Sources	2005	2010	2015	2020	2025
<i>Normal Water Year</i>					
Groundwater Supply	12,000	12,000	12,000	12,000	12,000
Surface Water Supply	0	11,000	11,000	11,000	11,000
Projected Water Demand	10,800	12,500	13,900	16,200	18,900
Supply greater than Demand (%)	10	46	40	30	18
<i>Single Dry Year</i>					
Groundwater Supply	10,800	10,800	10,800	10,800	10,800
Surface Water Supply	0	9,900	9,900	9,900	9,900
Projected Water Demand	10,800	12,500	13,900	16,200	18,900
Supply greater than Demand (%)	0	40	33	22	9
<i>Multiple Dry Year 1</i>					
Groundwater Supply	11,400	11,400	11,400	11,400	11,400
Surface Water Supply	0	10,450	10,450	10,450	10,450
Projected Water Demand	10,800	12,500	13,900	16,200	18,900
Supply greater than Demand (%)	5	43	36	26	14
<i>Multiple Dry Year 2</i>					
Groundwater Supply	10,800	10,800	10,800	10,800	10,800
Surface Water Supply	0	9,900	9,900	9,900	9,900
Projected Water Demand	10,800	12,500	13,900	16,200	18,900
Supply greater than Demand (%)	0	40	33	22	9
<i>Multiple Dry Year 3</i>					
Groundwater Supply	10,200	10,200	10,200	10,200	10,200
Surface Water Supply	0	9,350	9,350	9,350	9,350
Projected Water Demand	10,800	12,500	13,900	16,200	18,900
Supply greater than Demand (%)	-6	36	29	17	3

The final comparison of normal, single, and multiple dry water years in Table 7-4 illustrates the projected water demand and supplies from existing wells, treated wells, and surface water. The additional projected groundwater supplies after 2010 are estimates of water from existing wells with treatment to remediate the water quality concern, and additional surface supplies after 2005 are estimates of water that may become available from the Turlock Irrigation District.

This comparison indicates the addition of treated groundwater and surface water will satisfy projected water demand beyond the year 2025. These supply options are currently being explored by the City of Ceres to satisfy projected demand for the next twenty years.

Table 7-4  
**TREATED GROUNDWATER WITH SURFACE WATER SUPPLY AND DEMAND PROJECTIONS (AF/Y)**

Water Supply Sources	2005	2010	2015	2020	2025
<i>Normal Water Year</i>					
Groundwater Supply	12,000	16,000	20,000	20,000	20,000
Surface Water Supply	0	11,000	11,000	11,000	11,000
Projected Water Demand	10,800	12,500	13,900	16,200	18,900
Supply greater than Demand (%)	10	54	55	48	39
<i>Single Dry Year</i>					
Groundwater Supply	10,800	14,400	18,000	18,000	18,000
Surface Water Supply	0	9,900	9,900	9,900	9,900
Projected Water Demand	10,800	12,500	13,900	16,200	18,900
Supply greater than Demand (%)	0	49	50	42	32
<i>Multiple Dry Year 1</i>					
Groundwater Supply	11,400	15,200	19,000	19,000	19,000
Surface Water Supply	0	10,450	10,450	10,450	10,450
Projected Water Demand	10,800	12,500	13,900	16,200	18,900
Supply greater than Demand (%)	5	51	53	45	36
<i>Multiple Dry Year 2</i>					
Groundwater Supply	10,800	14,400	18,000	18,000	18,000
Surface Water Supply	0	9,900	9,900	9,900	9,900
Projected Water Demand	10,800	12,500	13,900	16,200	18,900
Supply greater than Demand (%)	0	49	50	42	32
<i>Multiple Dry Year 3</i>					
Groundwater Supply	10,200	13,600	17,000	17,000	17,000
Surface Water Supply	0	9,350	9,350	9,350	9,350
Projected Water Demand	10,800	12,500	13,900	16,200	18,900
Supply greater than Demand (%)	-6	46	47	39	28

The City of Ceres is pursuing sufficient water supplies to meet customer needs through 2025, and will continue its commitment to conservation programs and new construction efficiency standards. Until the additional supplies are available, the City may need to enter into advanced water shortage response stages to ensure that it can meet the needs of the community during drought periods.

The City Council, through a public hearing process has the authority to respond to emergencies and enact revisions to the *Municipal Code* to further increase water conservation and regulations.

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# Water Shortage Contingency Plan

## 8.1 WATER SHORTAGE CONTINGENCY PLAN

In 1991, in accordance with the requirements of Assembly Bill 11, the City developed a comprehensive water shortage contingency plan. The plan is consistent with the provisions of the City's emergency response procedures to implement during an interruption of water supplies including, but not limited to a regional power outage, an earthquake, or other disaster.

### 8.1.1 WATER SHORTAGE EMERGENCY RESPONSE

Prior to 1991, the City had very limited water storage facilities. The wells pumped water directly into the distribution system. In 1991, a 1.5 million gallon enclosed water reservoir was constructed. This reservoir supplies water for essential needs in the case of emergencies. The City has chlorination pumps at each well site that may be put into operation when needed. The City also has standby generators at two well sites (Hatch/Moffet Well and Kinser Well) and at the enclosed reservoir. There is also an angle drive at the Smyrna Well. Operation testing and maintenance are performed routinely on these items.

The City has identified specific water-critical customers, such as nursing homes, schools, etc. The City also supplies water to major consumers outside of the City limits, mainly the Stanislaus County Jail, Community Services Agency, Environmental Resources Department, and Agricultural Center.

Likely potable water distribution sites have been identified. This includes the City's enclosed reservoir site. The City can contact bottled water companies in cases of emergencies. Canals containing non-potable water traverse the community. Local trucking firms, dairies, wineries, and breweries can transport water along with the City's fire tanker trucks. Residents would need to boil or disinfect non-potable water. In addition to the fire tanker trucks, the City has two water pumper trucks normally used for flushing sewer lines that may be used to transport non-potable water for fire fighting purposes.

The City recognizes that greywater can be a valuable resource in outdoor water use. The California Uniform Building Code, which has been adopted by the City, allows for the installation of greywater systems for single family homes. Most residences produce 20 to 40 gallons of greywater per person per day. Property owners wanting to install greywater systems would need to obtain permits from the City's Building Department.

The City recognizes the importance of water demand management measures in reducing water demand and will continue to implement these measures. Also, the City would increase media attention to the water supply situation during a shortage and would step up public water education programs.

When a water shortage appears imminent, a City water shortage response team would be activated by the City Council, City Manager, and Director of Municipal Utilities. The team includes the City Manager's Office, Municipal Utilities Department, Public Works Department, Public Safety Department (Emergency Services and Police), Management Services, Finance Department, and Planning and Community Development Department.

### **8.1.2 PREPARATION ACTIONS FOR A CATASTROPHE**

Below is an example of actions the City would undertake if a catastrophe were imminent or declared.

1. Determine extent of water shortage
2. Activate the water shortage response team
3. Monitor existing storage
4. Obtain additional water supplies
5. Develop alternative water supplies
6. Determine where immediate funding will come from
7. Contact and coordinate with other agencies
8. Put employees and contractors on-call
9. Communicate with the public

### **8.1.3 SUPPLEMENTAL WATER SUPPLIES**

To offset future potential water shortages due to a drought or disaster, the City will keep communication open with the City of Modesto, affected communities, and MID or TID to deliver additional water, if needed.

Ceres may also draw additional water from existing supplies by doing the following:

1. Rehabilitate existing wells
2. Reactivate abandoned wells by adding wellhead treatment

### **8.1.4 LONG TERM ADDITIONAL WATER SUPPLY OPTIONS**

To meet future long term water demand beyond 2020, the City will continue working on the possibility of bringing in surface water to supplement groundwater. Recycled water opportunities will also be further studied.

## **8.2 WATER SHORTAGE CONTINGENCY ORDINANCE / RESOLUTION**

The City adopted a no waste ordinance in 1977, and the City adopted a Water Shortage Contingency Plan in 1991 (Appendix C). The City reviewed its Water Shortage Contingency Plan and found that it is sufficient to meet the City's needs as a planning and action guide. The City developed a draft resolution to declare a Water Shortage Emergency (Appendix B).

### 8.2.1 RATIONING STAGES AND REDUCTION GOALS

The City has developed a four-stage action plan (Table 8-1) to invoke during a declared water shortage. The plan includes voluntary and mandatory rationing, depending on the causes, severity, and anticipated duration of water supply shortages, if known. Action stages may be triggered by a shortage at any time of the year. If it appears that it may be a dry year, mainly due to insufficient precipitation and further dropping of the groundwater table, the City can take action in advance of a crisis. Any combination of at least three of the criteria will institute the Stage actions.

Table 8-1  
**WATER RATIONING STAGES AND REDUCTION GOALS**

Stage	Phasing Criteria	Water Demand Reduction Goal	Program Type
Stage 1 Minimal	<ul style="list-style-type: none"> <li>*Below average rainfall in the previous 12-24 months.</li> <li>*10% or more of City wells out of service due to noncompliance with drinking water standards or drop in static groundwater levels.</li> <li>*Irrigation allotments by local irrigation districts reduced by 15%.</li> <li>*Extended warm weather patterns typical of summer.</li> </ul>	15% reduction	Voluntary / Mandatory
Stage 2 Moderate	<ul style="list-style-type: none"> <li>*Below average rainfall in the previous 24-36 months.</li> <li>*Prolonged periods of low water pressure.</li> <li>*10% or more of City wells out of service due to noncompliance with drinking water standards or drop in groundwater.</li> <li>*Irrigation allotments by local irrigation districts reduced by 25%.</li> <li>*Extended warm weather patterns typical of summer.</li> </ul>	25% reduction	Voluntary / Mandatory
Stage 3 Severe	<ul style="list-style-type: none"> <li>*Below average rainfall in the previous 36-48 months.</li> <li>*Prolonged periods of low water pressure.</li> <li>*10% or more of City wells out of service due to noncompliance or drop in groundwater levels.</li> <li>*Irrigation allotments by local irrigation districts reduced by 35%.</li> <li>*Extended warm weather patterns typical of summer.</li> </ul>	35% reduction	Voluntary / Mandatory
Stage 4 Critical	<ul style="list-style-type: none"> <li>*Below average rainfall in the previous 48-60 months.</li> <li>*Prolonged periods of low water pressure.</li> <li>*10% or more of City wells out of service due to noncompliance with drinking water standards or drop in groundwater levels.</li> <li>*Irrigation allotments by local irrigation districts reduced by 50%.</li> <li>*Extended warm weather patterns typical of summer.</li> </ul>	50%+ reduction	Voluntary / Mandatory

### 8.2.2 PRIORITY BY USE

Priorities for use of available water during shortages are listed below according to ranking.

1. Minimum health and safety allocations - for interior residential needs (includes single family, multifamily, and mobile homes, and convalescent and incarceration facilities); and fire fighting and public safety needs
2. Commercial, industrial, institutional/governmental operations - for maintaining economic base of community
3. Existing landscaping - trees and shrubs
4. New demand - proposed construction projects

### 8.2.3 HEALTH AND SAFETY REQUIREMENTS

Based on information provided by the California Department of Water Resources, commonly accepted estimates of interior residential water use in the United States are presented in Table 8-2. These water use estimates indicate per capita health and safety water requirements for various appliances and fixtures. A health and safety allotment of 68 gallons per capita per day (gpcd) is essential for basic interior water use with no habit or plumbing fixture change. However, if there is prolonged water shortage or a disaster, then customers would be required to make changes in their interior water use habits (for instance, not flushing toilets unless necessary or taking less frequent showers). These reductions will be reinforced through a public awareness campaign during periods of threatened water supply.

Table 8-2  
ESTIMATED PER CAPITA HEALTH AND SAFETY WATER CONSUMPTION

Unit	Non-Conserving Fixtures			Habit Changes			Conserving Fixtures <sup>2</sup>		
	Daily Use	Unit Use	gal/day	Daily Use	Unit Use	gal/day	Daily Use	Unit Use	gal/day
Toilets	5 flushes	5.5 gpf	27.5	3 flushes	5.5 gpcd	16.5	5 flushes	1.5 gpf	7.5
Shower	5 min	4.0 gpm	20.0	4 min	3.0 gpm	12.0	5 min	2.0 gpm	10.0
Washer <sup>1</sup>	12.5 gpcd		12.5	11.5 gpcd		11.5	11.5 gpcd		11.5
Kitchen	4 gpcd		4.0	4 gpcd		4.0	4 gpcd		4.0
Other	4 gpcd		4.0	4 gpcd		4.0	4 gpcd		4.0
Total (gpcd)			68.0			48.0			37.0
				<i>Reduction (%)</i>		29.4			22.9

1 Reduced washer use results from larger loads.

2 Fixtures include ULF 1.6 gpf toilets, 2.0 gpm showerheads, and efficient clothes washers.

### 8.3 WATER ALLOTMENTS

The City provides information on drought and water supply conditions through the public communication methods previously described. The City considered specific water use allotments, but such allotments could only be applied to metered water users. Metered users comprise approximately 7% of the City's customers. The City determined that it might be inequitable to levy allotments on some users, but not all. Accordingly, the City notifies customers of action levels, rules and regulations under the action levels, and water reduction goals. New customers are made aware of this information at the time of applying for service.

## **8.4 MANDATORY PROHIBITIONS ON WATER WASTING**

As previously mentioned, a no waste ordinance has been in effect since 1977 (Appendix D). The ordinance prohibits various wasteful water uses such as outdoor irrigation during high evaporation times, having leaky sprinklers or fixtures, and washing of hardscapes without first obtaining a waiver. Warnings and penalties are levied for infractions to the ordinance.

## **8.5 CONSUMPTION REDUCTION METHODS**

Examples of consumption reduction methods that could be instituted during a drought period include: use prohibitions (especially for landscape irrigation); additional water conservation enforcement; voluntary rationing, mandatory rationing; reduction of water pressure in water lines where feasible; flow restrictions; expansion of leak detections and repair programs; installation of water kits, plumbing fixture replacements; restrictions on building permits; installation of pool covers; and water shortage pricing.

## **8.6 EXCESSIVE USE PENALTIES**

Any customer violating the regulations and restrictions on water use set forth in the City's no waste ordinance shall receive a written warning for the first such violation. Upon a second violation, the customer shall receive another warning. A third violation within a twelve month period triggers the levy of a \$20.00 fine. A fourth violation triggers a \$50.00 fine; a fifth violation triggers a \$100.00 fine; and a sixth violation triggers a \$200.00 fine. At this point the City may install a water meter at the customer's expense (if a meter is not present). Subsequent fines are levied at \$200.00 each.

## **8.7 REVENUE AND EXPENDITURE IMPACTS AND MEASURES TO OVERCOME IMPACTS**

Water rates need to be set up to enable water suppliers to cover the costs in pumping, storing, treating, and delivering water. Revenues need to be collected to build reserves for future water system repairs, maintenance, and replacement. Water shortages increase costs to the water supplier by increasing expenses for public educational campaigns, stricter conservation efforts, and facility development. Other costs for repairs, maintenance, and replacement are fixed.

As previously stated, the majority of customers are billed a flat rate. Water revenue from metered customers could fall due to decreased water usage. In order to mitigate the financial impacts of a water shortage, the City would need to rely on reserves and increased water rates, when justified.

## **8.8 MECHANISMS TO DETERMINE REDUCTIONS IN WATER USE**

With normal water supply conditions, water production is recorded daily at each wellhead. Totals are reported weekly to the Water Services Supervisor, and monthly to the Director of Municipal Utilities.

Reporting escalates with advanced stages of water shortages. During water emergency shortages, production figures would be reported to the Water Services Supervisor hourly, and to the Director of Municipal Utilities and City Manager daily. Reports would also be provided to the City Council and the Public Safety Department. If reduction goals are not met, the City Council would be notified so that additional action may be taken (water shortage emergency).

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## Water Recycling

### 9.1 PARTICIPATION IN REGIONAL RECYCLED WATER PLANNING

The City has studied recycled water uses and development. The City is a member of the Turlock Groundwater Basin Association's Groundwater Coordination Committee which meets monthly. Water recycling and groundwater recharge has been discussed at the Committee meetings. Over the years, the City has received literature and information from the WaterReuse Association.

### 9.2 WASTEWATER COLLECTION AND TREATMENT IN CERES

The City of Ceres manages wastewater collection and treatment for all of Ceres except for the area north of Hatch Road and west of Central Avenue. This area is served by the City of Modesto's wastewater treatment facility. Some of Modesto's treated wastewater is reused for groundwater recharge, and agricultural irrigation (a portion is discharged to the San Joaquin River). On average the City of Ceres' wastewater treatment plant handles an inflow of 2.9 mgd.

Currently, the City of Modesto's facility accepts about 1.25 million gallons of wastewater from Ceres per day. This area includes homes and businesses in the northwestern portion of Ceres and in the County adjacent to Ceres' city limits. Approximately 1 mgd of treated wastewater is sent south to the City of Turlock for discharge to the San Joaquin River, and this collection system has the potential to be expanded to 5.9 mgd in the future.

The City hired consultants to analyze current treatment processes at Ceres' wastewater treatment facility, and to recommend expansion and disposal alternatives. One of the alternatives examined was to upgrade the treatment facility to a tertiary level. This alternative would allow the use of recycled water. A study was done to examine areas in the City where recycled water could be used (such as parks, landscape medians, golf courses, etc.) A detailed analyses of the alternative proved that a tertiary wastewater treatment plant and additional pipelines to distribute recycled water would be too expensive.

#### 9.2.1 WASTEWATER TREATMENT PROCESSES

The City's secondary wastewater treatment plant consists of the following: 1) headworks / pump station; 2) aeration ponds; and 3) and percolation / evaporation ponds. No wastewater is discharged to a surface body of water.

#### 9.2.2 REGIONAL WASTEWATER TREATMENT PLANT

The City of Ceres does not have a regional wastewater treatment plant. The City of Modesto

has expressed interested in developing a region-wide secondary treatment facility at their Jennings Road site. As mentioned previously, some of Ceres wastewater is already discharged to Modesto and Turlock, and discharge meters record Ceres' wastewater flows to both treatment facilities.

### 9.3 RECYCLED WATER CURRENTLY BEING USED

The City of Ceres recycles a portion of its wastewater by using it for onsite landscape irrigation. The secondary treated water percolates into the ground for groundwater recharge. The quality of this percolated water is monitored. Some of the treated wastewater evaporates into the air. The City's treated wastewater is not discharged to a river or any other body of water at this site. The treatment plant and adjoining stormwater basin (which handles a portion of the City's storm water), provides habitat for wildlife and plants.

Table 9-1 presents information on wastewater disposal and recycled water uses. The projected wastewater flows were calculated using the 1.8% rate of flow increase experienced during the period from 2000-2004.

Table 9-1  
WASTEWATER DISPOSAL AND RECYCLED WATER USE (AF/Y)

Destination	2005	2010	2015	2020	2025
Ceres WWTP (evap / perc ponds)	2,000	2,200	2,500	2,800	3,100
Ceres WWTP (recycled water)	131	131	131	131	131
Turlock WWTP	1,200	2,000	2,500	3,000	3,500
Modesto WWTP	1,300	2,000	3,000	4,000	5,000
<b>Total</b>	<b>4,640</b>	<b>6,400</b>	<b>8,200</b>	<b>10,000</b>	<b>11,800</b>

#### 9.3.1 POTENTIAL USES OF RECYCLED WATER

As mentioned previously, the City had considered upgrading its existing secondary wastewater treatment plant to a tertiary wastewater treatment plant. However, this alternative proved to be too expensive and the City will not pursue this option at this time.

Even though the City will not upgrade its treatment plant to a tertiary level in the foreseeable future, the City still notes the following potential uses of recycled water:

1. Groundwater recharge
2. Irrigation of fodder and food crops
3. Irrigation of parks, playgrounds, school, and other large landscapes, such as golf

- courses, cemeteries, and freeway landscaping
- 4. Filling of tanker trucks for fire fighting, dust control during construction projects, and flushing of sanitary sewers
- 5. Certain commercial and industrial processes (such as cooling towers, etc.)

### **9.3.2 FEASIBILITY OF RECYCLED WATER USE**

The City of Ceres encourages recycled water use when it is technically and financially feasible. As mentioned above, the City studied the feasibility of constructing a tertiary wastewater plant and the installation of pipeline to distribute treated water, and found the alternative too costly.

In the future, should the City need to revisit the issue of supplying recycled water for additional uses (if grant funds became available, etc.), the City would need to do the following: determine the level of wastewater treatment; perform a financial analysis for the distribution of recycled water (including the installation costs of additional pipelines and right of way acquisitions); determine the optimal use of recycled water; determine the rates charged for recycled water use; determine the potential number and type of recycled water users; determine environmental impacts and benefits; and encourage public acceptance of wastewater recycling.

Here is a water recycling planning outline the City is considering to pursue for the future:

1. Market Assessment and Survey
2. Information Needed from Potential Users
3. Feasibility Study
4. Facility Plan/Project Report
5. Maps and Diagrams
6. Study Area Characteristics
7. Water Supply Characteristics and Facilities
8. Wastewater Characteristics and Facilities
9. Treatment Requirements for Discharge and Reuse
10. Reclaimed Water Market
11. Project Alternative Analysis
12. Recommended Plan
13. Construction Financing Plan and Revenue Plan
14. Design
15. Construction

Appendix A

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**Resolution to Adopt Urban Water Management Plan**

RESOLUTION ADOPTING THE 2005 CITY OF CERES URBAN WATER  
MANAGEMENT PLAN UPDATE

The City Council  
CITY OF CERES, CALIFORNIA

WHEREAS, the Department of Water Resources requires that water suppliers submit an updated Urban Water Management Plan every five years on years that end in five (5) or zero(0), and

WHEREAS, water suppliers must submit an updated plan as required to become eligible for drought assistance or any funds controlled by the Department of Water Resources, including grant money, and

WHEREAS, staff requested quotes from four (4) firms to perform this work, and

WHEREAS, ECO:Logic Engineering was awarded the contract to update the Plan, and

WHEREAS, Staff worked with ECO:Logic to prepare the attached Plan for approval and adoption, and

NOW, THEREFORE, BE IT RESOLVED that the City Council of the City of Ceres does hereby approve a resolution adopting the 2005 City of Ceres Urban Water Management Plan Update.

PASSED AND ADOPTED by the Ceres City Council at a regular meeting thereof held on the twenty-eighth day of November, 2005, by the following vote:

AYES: Councilmembers Cannella, Mantarro Moore, Phipps, Vierra, Mayor Moore

NOES: None

ABSENT: None



DELINDA MOORE, Mayor  
City of Ceres

ATTEST:

  
BRENDA SCUDDER HERBERT, City Clerk

SEAL IMPRESSED

Appendix B

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**Sample Resolution to Declare a Water Shortage  
Emergency**

THE CITY COUNCIL  
City of Ceres  
Stanislaus County, California  
Date\_\_\_\_\_

WHEREAS, pursuant to California Water Code Section 350 et seq., the Council has conducted duly noticed public hearings to establish the criteria under which a water shortage emergency may be declared; and,

WHEREAS, the City is the water purveyor for the property owners and inhabitants of Ceres; and,

WHEREAS, the demand for water service is not expected to lessen; and,

WHEREAS, when the combined total amount of water supply available to the City from all sources falls at or below the Stage II triggering levels described in the 1995 Urban Water Management Plan, the City will declare a water shortage emergency. The water supply would not be adequate to meet ordinary demands and requirements of water consumers without depleting the City's water supply to the extent that there may be insufficient water for human consumption, sanitation, fire protection, and environmental requirements. This condition is likely to exist until precipitation and groundwater recharge dramatically increases or until water system damage resulting from a disaster or accident is repaired and normal water service is restored.

NOW, THEREFORE, BE IT RESOLVED that the City Council of the City of Ceres hereby concurs with the City Manager's findings, determination, and conclusions that a water shortage emergency condition exists that threatens the adequacy of the water supply.

FURTHERMORE, the City Manager is directed to determine the appropriate Rationing Stage and implement the City's Water Shortage Emergency Response. Said emergency shall remain in effect until the City's water supply is deemed adequate. After the water system is deemed adequate, the City Council shall terminate the declaration of an emergency at the next regularly-scheduled Council meeting.

BE IT FURTHER RESOLVED that the Council shall periodically conduct proceedings to determine additional restrictions and regulations which may be necessary to safeguard the adequacy of the water supply for domestic, sanitation, fire protection, and environmental requirements.

PASSED AND ADOPTED by the Ceres City Council at a regular meeting thereof held on the \_\_\_\_\_ day of \_\_\_\_\_, by the following vote:

AYES:

NOES:

ABSENT:

Mayor

ATTEST:

City Clerk

Appendix C

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**Water Shortage Contingency Plan**

CITY OF CERES  
DROUGHT DEMAND MANAGEMENT PLAN

DROUGHT STAGE	PUBLIC AGENCY ACTIONS	REQUESTED CONSUMER ACTIONS	PENALTIES FOR EXCESSIVE USE
<u>Stage I</u>	<ol style="list-style-type: none"> <li>1. Notify all customers of the water shortage.</li> <li>2. Mail or publicize information to customers explaining the importance of significant water use reductions.</li> <li>3. Provide technical information to customers on ways to improve water use efficiency.</li> <li>4. Publicize the availability of residential water conservation kits (low flow shower heads, kitchen and bathroom aerators, toilet tank displacement bags, and toilet leak detection tablets).</li> <li>5. <u>Remind</u> customers of the need to save water (conduct media campaign).</li> <li>6. <u>Water Conservation Program</u> - Enforcement of existing water conservation program as listed below with heavy enforcement from April through October.               <ol style="list-style-type: none"> <li>a. Outdoor water use prohibited daily from 12:00 p.m. to 7 p.m.</li> <li>b. Outdoor water use permitted 3 days per week. Even addresses: Tuesday, Thursday, and Saturday. Odd addresses: Sunday, Wednesday, and Friday. (Some construction activities exempted.)</li> <li>c. Vehicle, boat, and equipment washing requires an on/off nozzle on hose.</li> <li>d. Washing asphalt, concrete or building exteriors prohibited without permission.</li> <li>e. Prohibit irrigation flooding and water running or spraying off property.</li> <li>f. Leaky faucets, sprinklers or plumbing fixtures to be repaired within 24 hours.</li> <li>g. Recirculating pumps required on evaporative coolers.</li> <li>h. Restaurants encouraged to serve water on request.</li> </ol> </li> </ol>	<p style="text-align: center;"><u>Residential Customers</u></p> <ol style="list-style-type: none"> <li>1. Implement voluntary water use reductions (15%).</li> <li>2. Voluntarily install water conservation kits, remodel with low flow fixtures, and install water efficient landscaping and irrigation systems.</li> <li>3. Adhere to Water Conservation Program.</li> </ol> <p style="text-align: center;"><u>Commercial, Industrial, and Governmental Customers</u></p> <ol style="list-style-type: none"> <li>1. Implement actions listed under Residential Customers.</li> <li>2. Research water re-use options.</li> <li>3. Improve cooling efficiency.</li> </ol>	<ol style="list-style-type: none"> <li>1. Two warnings "Notice of Ordinance Violation".</li> <li>2. Levy fines "Notice of Intention to Impose a Fee for Water Wasting": \$20, first fine; \$50, second fine; \$100, third fine; \$200, fourth and subsequent fines.</li> <li>3. Installation of water meters</li> <li>4. Discontinue water service, levy shut-off, and re-connection fees.</li> </ol>

**DROUGHT  
STAGE**

**PUBLIC AGENCY ACTIONS**

**REQUESTED CONSUMER  
ACTIONS**

**PENALTIES FOR EXCESSIVE USE**

DROUGHT STAGE	PUBLIC AGENCY ACTIONS	REQUESTED CONSUMER ACTIONS	PENALTIES FOR EXCESSIVE USE
<u>Stage II</u>			
Moderate		<u>Residential, Commercial, Industrial, and Governmental Customers.</u>	1. One warning.
15% to 25%			2. Levy heavy fine:
reduction in total		1. Adhere to measures listed in Stage I, except implement voluntary use reduction by 25%.	\$50 first fine; \$100 second fine; \$200 third fine; \$300 fourth and subsequent fines.
water production	1. In addition to actions listed in Stage I, items 1. through 5., the City shall establish stricter water use reduction measures.	2. Comply with landscaping ordinance for new landscaping.	3. Penalties listed in Stage I, items 3 and 4.
	2. <u>Water Conservation Program</u> - Heavy enforcement each month (not limited to April through October with conservation officers working year round).		
	a. Prohibit outdoor water use from 10:00 a.m. to 8:00 p.m. daily.		
	b. Restrict outdoor water use to 2 days per week.		
	c. Continue restrictions listed in Stage I, items 6.c. through 6.i.		
	d. New landscaping to comply with existing and future landscape ordinances.		
	3. Request customers to voluntarily reduce water use by <u>25%</u>		
	4. Institute rate changes to cause further conservation. Explain new rate schedule to customers.		
	5. Forecast future actions. Explain further reductions planned in succeeding stages.		
	6. Intensify leak detections and repairs.		
	7. Reduce water use for street cleaning, water main and hydrant flushing, and landscaping around public buildings and parks.		

**DROUGHT  
STAGE**

**PUBLIC AGENCY ACTIONS**

**REQUESTED  
CONSUMER ACTIONS**

**PENALTIES FOR EXCESSIVE  
USE**

Stage III

1. Continue measures listed in Stage II, and include the following:

Severe  
25% to 35%  
reduction in total  
water production

a. Hire an additional water conservation officer.

b. Possibly enact mandatory retrofit of showerheads to low flow; and toilets to ultra low flow when building remodeling occurs.

c. Require pool covers for all new pool permits.

d. Prohibit the filling and running of water fountains.

e. Reduce pressure to 35 PSI in the system.

1. Manage water consumption to stay within water reduction goals.  
Suggest weekly water meter reading for metered customers.

1. Penalties listed in Stage II for wasting.

**DROUGHT  
STAGE**

**PUBLIC AGENCY ACTIONS**

**REQUESTED CONSUMER  
ACTIONS**

**PENALTIES FOR EXCESSIVE  
USE**

Stage IV

1. All of the Stage III measures intensified and include the following:

Critical

35% to 50%

reduction in total  
water production

a. Monitor water production weekly for compliance with necessary reductions.

b. Require that no potable water supplied by the City be used outdoors by residents, businesses, industries, hospitals/convalescent homes, schools, cemeteries, parks or landscape meters except for irrigating vegetable gardens (a maximum of twice weekly), bushes, and trees (a maximum of once weekly)

Possibly require that groundcover, flowerbeds and turf to be irrigated with gray water or re-claimed wastewater. (Bushes and trees could be irrigated with gray water or re-claimed wastewater, also).

c. Prohibit the filling of swimming pools.

d. Possibly prohibit the issuance of building permits for new construction during this stage.

e. Hire an additional water conservation officer.

1. Adhere to measures in Stage III.

2. Reduce irrigation as listed in the Section listed under Public Agency Actions.

3. Wash vehicles, boats, etc., at car washes utilizing recycled water.

4. Delay new construction.

1. Penalties and charges listed in Stage III.

Appendix D

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**No Waste Ordinance**

## **Municipal Code 13.04.130**

The City shall provide a comprehensive water conservation program through limitations on water usage and through public education. Landscaping systems shall be properly designed, installed, maintained and operated to prevent the wasting of water. The use of drought-tolerant landscaping shall be encouraged. Serving water in restaurants only upon customer request shall be encouraged.

A. Utility customers shall not be permitted to waste water.

1. Acts constituting water wasting shall include, but shall not be limited to, any of the following acts:
  - a. Failure to comply with the following schedule when watering lawns, plants, or garden, or using outdoor water for other purposes.
    - (1) No lawn/garden watering, or other outdoor use, will be allowed between twelve o'clock (12:00) noon and seven o'clock (7:00) P.M., every day.
    - (2) Dwellings or establishments with odd-numbered street addresses shall use outdoor water only on Sundays, Wednesdays and Fridays.
    - (3) Dwellings or establishments with even-numbered street addresses shall use outdoor water only on Tuesdays, Thursdays and Saturdays.
    - (4) No dwelling or establishment may use outdoor water on Mondays unless a determination is made of special circumstances by the Director of Public Works or his designee. In no case shall any facility water more than three (3) days a week.
  - b. Watering lawns or gardens such that excess water leaves the property or area being watered.
  - c. Watering outdoor landscaping while raining.
  - d. Washing vehicles, equipment or boats using an open hose which is not equipped with a shut-off nozzle.
  - e. Hosing down driveways, streets, parking lots and building exteriors without the consent of the Director of Public Works or his designee except for valid health or safety reasons.
  - f. Having leaky faucets or plumbing fixtures on the premises.
  - g. Operating evaporated coolers which are not equipped with a recirculating pump.
2. Should the Department of Public Works determine that any utility customer, or person using the utilities with the consent of the customer, has violated the provisions or subsection A1 of this Section, regarding water wasting, the utility customer shall be served, either personally, by mail or by posting at the residence or business premises of the customer, a notice of ordinance violation (warning) stating the acts or conduct which constitutes the violation. The second such notice of ordinance violation shall notify the customer of the penalty fees assessed for further violations.
3. Should a utility customer or person using the utilities with the consent of the customer, violate the provisions of subsection A1 of this Section, after being served with the second notice of ordinance violation, then such utility customer shall be served with a notice of intention to impose a fee for violation of said ordinance provisions. Said notice shall:
  - a. Identify the date, time and circumstances of the violation.

- b. State the amount of the fee to be imposed.
- c. Advise the customer of his appeal rights as provided herein.

The notice of intention to impose a fee for violation of said ordinance provisions shall be served in the same manner as the notice of ordinance violation as provided in subsection A2 of this Section.

- 4. When a utility customer is served with one or more notices of intention to impose a fee within a twelve (12) month period, the utility customer's account shall be assessed a monetary penalty as may be fixed and established from time to time by resolution of the City Council.

- 5. A utility customer shall have the right to appeal either the notice of ordinance violation or the imposition of any penalty fee assessed to his account for water wasting. The appeal hearing shall be held before the Director of Public Works or his designee, who shall make the final administrative determination regarding the matter. The customer shall be allowed to present such witnesses and evidence as he may desire and may be represented by an attorney or other representative of his choosing. The City may be represented by the City Attorney or his designee. The appeal hearing may be done by telephone.

The utility customer must request an appeal hearing in writing within fifteen (15) days from the date of service of the notice of ordinance violation; or in the case of the imposition of a penalty fee, within fifteen (15) days of the service of the notice of intention to impose a fee for water wasting. The request for hearing shall be addressed to the Public Works Department and shall be deemed served only when received by the City. Failure to properly serve the request for hearing within the fifteen (15) day period shall be deemed a waiver of the right to appeal the matter and the penalty fee will be assessed against the customer's account.

The hearing officer shall give written notice by mail to the utility customer of the date and time of the appeal hearing, which hearing shall be held not sooner than ten (10) days from receipt of the request for hearing and not longer than thirty (30) days. The decision of the hearing officer shall be final. If the violation is upheld, the penalty fee shall be assessed to the customer's account.

- 6. Any utility customer who has been assessed three (3) or more penalty fees within a one-year period may be required to install a water meter upon the premises and the customer shall be required to pay the reasonable cost of the water meter and its installation.
- 7. Failure of any utility customer to pay the penalty fees imposed as provided herein or to pay for the cost of a water meter and its installation as required shall be grounds to discontinue utilities until compliance is obtained.
- 8. The City Council does hereby designate the Water Supervisor, the Maintenance Workers, Classes I, II, or the Senior Maintenance Worker working in the Water Division, or the Water Conservation Officers as the persons authorized to investigate violations and to serve any notices required by the provisions of this subsection.

- B. All water services installed shall have an approved wheel valve where the service pipe enters the house and/or structure, ahead of any branch line, including irrigation system, and on the house side of any meter or idler. No water

distribution system shall be connected so as to contaminate the City water supply either by cross connection or otherwise.

C. Multiple Units:

1. Number of Services to Separate Parcels: Separate parcels under single control or management shall be supplied through individual service connections unless otherwise authorized by the Deputy Director of Public Works.
2. Service to Multiple Units: Separate houses, buildings, living or business quarters on the same parcel or on adjoining parcels, under a single control or management, may be served at the option of the applicant, by either of the following methods:
  - a. Through separate service connection to each unit, provided that the pipeline system from each service is independent of the others, and it is not interconnected. Turning off the service to a unit turns off all water to the inside of the unit.
  - b. Through a single service connection to the entire premises; provided that the water piping for all units is interconnected. If multiple units are served through a single service, the property owner shall be responsible for the payment of charges for all services supplied to all units. The owner shall sign an agreement with the City to hold the City harmless for any damage that may occur due to the water being disconnected for nonpayment of charges.

D. No person shall supply water in any way for use outside the premises to which the service is assigned (or appurtenant) without the special permission of the Director of Public Works.

E. Access to service connections and water meters must be provided at all times.

F. All persons must keep their service pipes in good order at their own expense and may be held liable for damages which may result from their failure to do so.

G. It is unlawful for any person to interfere, adjust or tamper with City service connections, valves or meters or to construct a bypass around a meter or service. Should the owner or occupant of the premises turn on the curbstop or permit or cause it to be turned on, or aid or abet any other person in doing so after it has been shut off by the City for reasons of delinquency or for other causes, or because ordered off by owner or former occupant, the City shall again shut off the service and/or remove the meter, or seal the curb stop, and a charge to be set by resolution shall be collected before service is restored. For any service installed after January 1, 1980, any connection made to the City water service without either an idler or a meter shall be considered tampering and shall subject the violator to the same punishment as provided herein. (Ord. 99-889 Exh. C (part), 1999: Ord. 95-849, 1995: Ord. 95-842, 1995: Ord. 93-810, 1993: Ord. 91-779, 1991: Ord. 91-775, 1991: Ord. 90-750, 1990: Ord. 89-724, 1989: Ord. 88-707, 1988: Ord. 88-701, 1988: Ord. 81-572, 1981: Ord. 80-550, 1980)