

SECTION 7

WATER DEMAND MANAGEMENT MEASURES

7.1 LAW

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:

(f) Provide a description of the supplier's water demand management measures. This description shall include all of the following:

- (1) A description of each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following:
 - (A) Water survey programs for single-family residential and multifamily residential customers.
 - (B) Residential plumbing retrofit.
 - (C) System water audits, leak detection, and repair.
 - (D) Metering with commodity rates for all new connections and retrofit of existing connections.
 - (E) Large landscape conservation programs and incentives.
 - (F) High-efficiency washing machine rebate programs.
 - (G) Public information programs.
 - (H) School education programs.
 - (I) Conservation programs for commercial, industrial, and institutional accounts.
 - (J) Wholesale agency programs.
 - (K) Conservation pricing.
 - (L) Water conservation coordinator.
 - (M) Water waste prohibitions.
 - (N) Residential ultra-low-flush toilet replacement programs.
- (2) A schedule of implementation for all water demand management measures proposed or described in the plan.
- (3) A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.

(4) An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of such savings on the supplier's ability to further reduce demand.

(g) An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, which offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following:

- (1) Take into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors.
- (2) Include a cost-benefit analysis, identifying total benefits and total costs.
- (3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost.
- (4) Include a description of the water supplier's legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.

(h) Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long term supply.

(h) Urban water suppliers that are members of the California Urban Water Conservation Council and submit annual reports to the council in accordance with the "Memorandum of Understanding Regarding Urban Water Conservation in California," dated September 1991, may submit the annual reports identifying water demand management measures currently being implemented, or scheduled for implementation, to satisfy the requirements of subdivisions (f) and (g).

7.2 WATER DEMAND MANAGEMENT MEASURES

The District has implemented several water conservation measures beginning as early as the 1980 Immediate Needs Study. Presently the District is not signatory to the Memorandum of Understanding (MOU) regarding Urban Water Conservation in California but the District does implement several of the Best Management Practices (BMP) identified in the MOU.

The District's 1986 Urban Water Conservation Plan (UWCP) took a list of conservation methods and assessed whether they were currently being implemented and, if not, what level of effort was required. This was also conducted for the District's 1990 UWCP and 1995 UWMP along with an initial screening and assessment. Table 7-1 lists a summary of conservation methods from the 1986 UWCP.

**Table 7-1
Status of 2000 Water Conservation Measures**

	2000 Status	Current Status
I. Education and Public Information		
A. Local Water Conservation Advisory Committee	X	+
B. Conservation Literature		
1. General Water Conservation Brochure	O	O+
2. Landscape Brochure with Plant List	+	+
3. Brochures for Specific Water Users	+	+
C. Previous Year's Use on Water Bills	X	X
1. Public Relations	O	O+
2. Public Speaking Presentations	O	O+
3. Demonstration Low Water-Using Landscapes	X	X
4. Promotional Campaign with Nurseries and Irrigators	X	X
5. Awards for Conservation Developments	X	X
D. Work with Large Water Users (Landscapers, Agriculture, and Parks)	+	O+
E. In-School Education	X	+
F. Information on Federal and State Laws and Programs	+	+
II. Water Management Programs		
A. Water Loss Reduction Techniques		
1. System-Wide Water Audit	+	O
2. Leak Detection Program		
a. For BCVWD's System	O	O+
b. For Customer's Side	X	O+
3. Meter Calibration and Replacement Program	O	O+
4. Corrosion Control	O	O+
5. Valve Mapping and Exercising Program	O	O+
B. Metering Existing Customers	O	O+
C. Device Distribution	+	+
D. Meter Loan Program, Construction Water Users	O	O
E. Water Waste Prohibition	O	O
F. Conservation Pricing	O	O
G. Financial Incentives	O	O
III. Regulations		
A. Environmental Impact Reports/Statements	O	O
B. Water Waste Reduction Program	+	+
C. Water Conservation Ordinances	+	+
1. Requirements for Large Water Users (Landscape, Agriculture, and Parks)	O	O
2. Self-closing Faucets - Commercial and Institutional	X	X
3. Low Water-Using Landscapes	X	+
4. Metering New Customers	O	O
5. Ultra-low-flow Toilets	X	+
IV. Water Shortage Contingency Plan	+	+
X =Recommended Implementation		
+ = Recommend Increased Effort		
O =Currently Implemented		
O+=Continue to Implement		

The 1986 and 1990 UWCPs focused on measures that reduced and/or regulated the water used for agricultural and landscape purposes. This was, and still is, the area with the greatest potential for water conservation. Such measures as the installation of drip irrigation systems and restructuring of water rates for irrigation have been implemented. The conservation measures focused on in the 1990 UWCP took three approaches: system modification, conservation incentives, and public education. Because of the extent of orchard irrigation within the District, it was believed that the greatest potential for current water conservation through system modification existed in the conversion to drip irrigation systems. Other measures were: the use of low flow equipment in new developments (i.e., ultra-low-flow water use toilets, shower flow restrictors, and self closing faucets), conservation incentives (which take the form of water rate increases and seem to have the greatest impact on reducing water consumption), and public education (which is used to emphasize a relationship between the individual consumer and the District). The latter also informs customers of conservation methods as well as instills conservation ethics.

As indicated in the 2000UWMP, the District was and is experiencing much new land development, which previously was used for agricultural purposes. This land is in the process of being turned into commercial and residential uses which use ULF toilets, low flow showerheads etc. Since the mid-1990s, the District's connection base has doubled which means that at least half of the new connections have low flow fixtures..

The District is requiring developers to install separate recycled water pipelines to serve street medians, parks, playgrounds, schoolyards and common areas. Initially these areas will be served with potable water, but will be converted over to recycled water in 2006. In addition the District is looking for opportunities to use recycled water for other non-potable uses. For example, the District has an agreement with an existing concrete "ready mix" plant to use recycled water as soon as it is available. This should occur within the next few years.

Table 7-2 summarizes and briefly describes the water demand management measures and indicates if the District in some form has implemented the measure.

**Table 7-2
Recommended Water Demand Management Measure and Their Status as of 2005**

Measure	Definition	Implemented (Y/N)
Water Survey Audits for Single-Family and Multi-Family Residential Customers	Inspect for leaks in households and to improve the efficiency of landscape irrigation water use.	N
Residential Plumbing Retrofits	Replace devices with high efficiency (low flow) devices. Retrofitting of residential toilets and showers with water saving devices.	N
Distribution System Water Audits	Reduce system leakage. Repair pipes.	Y
Metering with Commodity Rates	Test and replace defective meters. Meter all new connections.	Y
Large Landscapes Conservation Programs	Review water irrigation techniques such as water cycle times for golf courses, schools, parks, and cemeteries. Establish rotating use schedules for irrigation, which reduces the impact of peak demands. Convert to recycled water wherever possible.	Y
High-Efficiency Washing Machine Rebate	Customer rebates for high-efficiency (horizontal-axis) clothes washers.	N
Public Information Programs	Describe and make available water conservation information. Emphasize the relationship between the individual consumer water use to the total District water demand.	Y
School Education Programs	Teach water conservation methods and instill a conservation ethics.	Y
Conservation Programs for Commercial and Industrial Users	Evaluate existing sites water needs and recommend water efficiency measures. Look at opportunities to use recycled water.	Y
Wholesale Agency Assistance	Wholesale water suppliers to provide incentives or equivalent resources to benefit their retail suppliers. The District is not a wholesale water supplier.	N
Conservation Pricing	Charge irrigators for actual amount of water used. Eliminate reduced rate for irrigation water.	Y
Conservation Coordinator	Designate a water conservation coordinator to promote and enforce conservation programs	N
Water Waste Prohibitions	Develop methods to prohibit gutter flooding and single pass cooling systems and develop measures to encourage, recirculating water systems in conveyor car wash, commercial laundry systems, and in decorative fountains.	N
Ultra-Low-Flush Toilets	Incentive programs to replace high-water-using toilets.	N

Measures considered for this 2005 UWMP update fall into six categories: (1) inside residential, (2) industrial and commercial measures, (3) landscape measures, (4) distribution system measures, (5) public relation and education measures, and (6) pricing measures. The majority of the programs recommended will focus on regulating new developments. The new developments place additional strain on existing water supplies. Water conservation measures are easiest and most cost effective to install in new construction because there are no removal or replacement costs. A large percent of the total population increase in the City of Beaumont in the next 10 to 15 years will be as a result of new development; therefore less emphasis is placed on measures involving existing residential, industrial, and commercial customers.

7.3 BMP 1-WATER SURVEYS PROGRAMS FOR SINGLE-FAMILY RESIDENTIAL AND MULTI-FAMILY RESIDENTIAL CUSTOMERS

The District presently does not implement this demand management measure in performing water audits for single-family and multi-family residential sites.

7.3.1 Implementation or Scheduled Implementation

The District's long range goal is to develop guidelines for implementing a water survey for single and multi-family residential customers. Initially this will be in the form of information items, bill stuffers, etc. to inform customers how to monitor their consumption. Some guidelines will be provided so those customers can compare themselves to a "baseline".

7.4 BMP 2-RESIDENTIAL PLUMBING RETROFIT

Minimal (Limited) Kit Delivery Program; this type of kit may include a variety of water saving devices. A limited kit could contain shower flow restrictors, toilet tank displacement bag, and toilet tank leak detection dye tablets together with installation information, leak detection, and repair tips. These kits are intended for use in non-conserving showerheads and toilets in accordance with City and county ordinances.

7.4.1 Implementation or Scheduled Implementation

This measure is not presently implemented. The District will be considering providing Minimal (Limited) Kits in the implementation of such a measure for existing devices. New residential construction already incorporates low flow fixtures.

7.4.2 Methods to Evaluate Effectiveness

The technology for each of the items in the kit has been successfully demonstrated. Shower flow restrictors constrict the flow rate to 3 gpm compared to unrestricted showerheads that have a rated flow of 5 to 8 gpm. Toilet tank displacement bags lessen the amount of water used to flush by holding a small amount of water out of use. Non-conserving toilets fitted with tank displacement bags use 4.8 gallons per flush, versus 5.5 gallons per flush for non-conserving toilet. Toilet leaks are detected using leak detection tablets. The tablets are placed in the toilet tank, turning the water a bright color.

If the water is leaking from the tank to the toilet bowl, the water in the toilet bowl will

turn color.

7.4.3 Estimate of Existing Conservation Savings

This program is cost effective to consumers. The installation of these fixtures will reduce current water and wastewater flows significantly and will have direct economic benefits in deferred sewage treatment facility enlargement and deferred water supply alternatives.

Water and monetary savings offset the cost to the District and the consumer for the purchase and installation of the retrofit kits.

7.5 BMP 3- SYSTEM WATER AUDITS, LEAKS DETECTION AND REPAIR

Water distribution lines are routinely checked and/or tested for leaks; when leaks are found they are promptly repaired.

The distribution system water audit compares the amount of water produced (from wells, surface supplies) by the District to the amount of water used by consumers (as reported by metering readings). The difference is unmetered water. After allowing for authorized unmetered uses such as fire fighting, main flushing, and public use, it can be assumed that the remaining unmetered water is explained by inaccurate meter readings, malfunctioning valves and leakage, and theft.

7.5.1 Implementation or Scheduled Implementation

The District has an ongoing schedule to inspect facilities and periodically calibrate master water meters. The District has already implemented leak detection. Water system audits are generally done at least once a year

7.5.2 Methods to Evaluate Effectiveness

The District annually reviews data records to confirm that unaccounted for water losses stay within an acceptable range of 5% to 7%.

7.6 BMP 4-METERING WITH COMMODITY RATES FOR ALL NEW CONNECTIONS AND RETROFIT OF EXISTING CONNECTIONS

Purveyors are required to place water meters on all new service connections per California State law. The District fully meters all customer sectors.

7.6.1 Implementation or Scheduled Implementation

Prior to the 1980s, the District's method of billing on any land 0.81 acres or more was a fixed rate schedule independent of water use. In 1982 the District changed the billing method to reflect a varying rate structure based on water use.

The District presently replaces old meters under the Meter Exchange Program, which started in the early 1980s. The District continues to change out every meter on ten year intervals. The District plans to continue to conduct its meter calibration and replacement program.

7.6.2 Methods to Evaluate Effectiveness

Use daily District-wide pumping records to evaluate consumption. Utilize customer water bills to analyze water use consumption patterns.

7.7 BMP 5-LARGE LANDSCAPE CONSERVATION PROGRAMS AND INCENTIVES

Presently the City of Beaumont reviews, on a project-by-project basis, the conditions of approval for landscape practices. This approved Landscape Ordinance for New Construction encourages landscaping using low-water-using plants. Irrigation systems with automatic controllers and valves are required on all commercial and industrial developments to control excessive water use. Landscaping practices that require excessive water use will be re-evaluated on a project-by-project basis.

The District also establishes rotating use of schedules for irrigation for those irrigation customers, which reduces the impact of peak demands. The District is encouraging the use of recycled water for these areas.

7.7.1 Implementation or Scheduled Implementation

The City of Beaumont's landscape ordinance has been implemented and in effect since 1995.

7.7.2 Methods to Evaluate Effectiveness

Water usage in new landscaped areas particularly during the typical dry months from May through September may be compared on a "per acre" basis with existing landscaped areas, which were not affected nor required prior to the implementation of the Landscape Ordinance.

Surveys, landscape information training, water bill historical water use and other programs will also assess effectiveness.

7.7.3 Estimate of Existing Conservation Savings

A 20 percent savings in water use through water efficient landscape is possible, compared to traditional landscaping water use for existing commercial, industrial, or governmental landscape.

7.7.4 Evaluation

Because many new developments are currently under construction, a current evaluation of the method has not been determined. However, future assessments should be possible to more accurately estimate the cost savings and water demand reduction of this method.

7.8 BMP 6-HIGH-EFFICIENCY WASHING MACHINE REBATE PROGRAMS

The District and the City of Beaumont presently do not have a rebate program in place for the replacement of old clothes washers.

7.9 BMP 7-PUBLIC INFORMATION PROGRAMS

The District participates and exhibits at public events such as fairs to provide information and promote water conservation. At these events the District provides information on water consumption, costs, and water quality. The District also has available brochures that provide the general public with information on water quality and water conservation.

7.9.1 Implementation or Scheduled Implementation

The public information programs are ongoing and information is provided as needed.

7.10 BMP 8-SCHOOL EDUCATION PROGRAMS

The District presently does not make a special effort to promote water conservation at local schools. District staff is available on an “as requested” basis however. Teachers at the schools may periodically discuss with students, awareness and importance of water conservation.

7.10.1 Implementation or Scheduled Implementation

District staff may consider coordinating with School District staff, events where information packets on water conservation and water savings techniques can be distributed to students.

7.11 BMP 9-CONSERVATION PROGRAMS FOR COMMERCIAL, INDUSTRIAL, AND INSTITUTIONAL (CII) ACCOUNTS

The District does not make a special effort to audit water use by commercial and industrial users but does work with local commercial and industrial users to promote water conservation as needed particularly with recycled water use. The District “standard” metering practice for large commercial/industrial customers is to install multiple, parallel small diameter (2-in) meters. These meters are more accurate at low flows than larger meters and provide an opportunity to monitor consumption. Malfunctioning meters are easily detected. If any of the meters read “high” or “low” they are replaced. The District also installs “Performance Meters” on all new fire services to meter fire suppression water use. The District works with existing and new commercial and industrial users to determine if recycled water can be incorporated and used in their operation such as a concrete ready mix business.

7.11.1 Implementation or Scheduled Implementation

The District will continue to implement this measure on an as need basis.

7.11.2 Methods to Evaluate Effectiveness

Water bills show the water customer the amount of water used in previous billing period. All commercial and industrial users are provided with historical usage on their bill. This allows customers to compare their water usage with the same period of the previous year and to monitor their water usage over time. The District is available to assist customers, if requested, to review methods to improve water use effectiveness.

7.12 BMP 10-WHOLESALE AGENCY ASSISTANCE PROGRAMS

The District is not a wholesale water supplier and therefore does not provide financial assistance or resources to advance water conservation efforts to retail water suppliers.

7.13 BMP 11-CONSERVATION PRICING

The District has eliminated a reduced water rate for high agricultural water users. These users pay the prevailing rate as set by the District for the volume of water used.

7.13.1 Implementation or Scheduled Implementation

The District will continue to review their rate structure to eliminate non-conserving pricing structures.

7.13.2 Methods to Evaluate Effectiveness

Review billing records and pricing structures.

7.14 BMP 12-CONSERVATION COORDINATOR

The District presently does not have a designated conservation coordinator.

7.14.1 Implementation or Scheduled Implementation

The District will review staff needs and make recommendation to the Board to possibly implement this measure. The District is a small agency and funding a full time water conservation coordinator would have significant financial impacts. The District will investigate opportunities to incorporate water conservation “duties” within the existing staffing or if this can be accomplished regionally through the STWMA.

7.15 BMP 13-WATER WASTE PROHIBITION

Section 9.6 of the District’s Rules Governing Water Service states the following:

It is a violation of these Regulations:

- 3) To cause or permit the waste of water from the water system or to maintain or cause or permit to be maintained any leaky outlets, apparatus or plumbing fixtures through which water is permitted to waste;
- 4) To use water for washing sidewalks and driveways in a manner that prevents the usual and customary use of public streets and sidewalks by others;
- 5) To permit water sprinklers to spray onto sidewalks and streets or to permit water to run from the consumer’s property onto public sidewalks and streets to cause risk and/or damage to the public or to public and private property;

Section 15 of the District’s Rules Governing Water Service states the following:

No person, firm or corporation shall use, deliver, or apply waters received from this District in any manner that causes the loss, waste, or the application of water for unbeneficial purposes. Within the meaning of this Regulation, any waters that are allowed to escape, flow, and run into areas which do not make reasonable beneficial use of such waters, including but not limited to streets, gutters, drains, channels, and uncultivated lands, shall be presumed to be wasted contrary to the prohibitions of these Rules and Regulations.

The Regulations for Water Service have a series of warnings/penalties. The first notice is a written warning; the second offense results in a doubling of the water charges until full compliance is attained. After the third offense, the District can terminate water service to the customer.

7.15.1 Implementation or Scheduled Implementation

The District already has the ordinance regulation in place.

7.16 BMP 14-RESIDENTIAL ULTRA-LOW-FLUSH TOILETS (ULFT) REPLACEMENT PROGRAMS

The California Code of Regulations, Title 24, regulated by Part 5 of the California Plumbing Code, which is a division of the California Building Standards, requires ULFTs in all new construction starting January 1, 1994. The District does not presently have a program for replacement or a rebate program for replacement of old pre-1994 toilets.

7.16.1 Implementation or Scheduled Implementation

The City of Beaumont requires all new construction and remodel projects to install ULFTs.

7.17 OPPORTUNITIES FOR DEVELOPMENT OF DESALINATED WATER

At the present time and for the foreseeable future there are few opportunities for the development and use of desalinated water. The groundwater in the area has very low TDS and providing desalination systems would not be needed. However, as part of an agreement between the City of Beaumont (and other dischargers) with the Santa Ana Regional Water Quality Board to maximize the use of recycled water, the City and other discharges have agreed to install desalination systems on either the drinking water side or the treated wastewater side in exchange for an increase in the Basin Water Quality Objectives. This was done in Resolution R8-2004-001 of the Santa Ana Regional Water Quality Control Board. The Beaumont Basin Watermaster's initial estimate is that this will not be needed for decades.

One of the impediments to desalination is brine disposal. The Santa Ana Regional Interceptor (SARI) will need to be extended from the Riverside/San Bernardino area to Beaumont. This will require a significant capital investment and may require increasing the overall capacity of the existing pipeline.

The best current opportunities for the District to be involved with desalination is through a joint project with another agency such as the Santa Ana Watershed Project Authority (SAWPA), the Chino Desalting Authority, or others. In exchange for District financial participation, the District would receive an equivalent amount of the agency's State Project Water. BCVWD has been collecting a "new water source" fee from all new development for several years now to finance such an endeavor. It is possible this could be extended to participation in a sea water desalination project on the same exchange terms.

7.18 DISTRICT'S LEGAL AUTHORITY

The District was formed originally as the Beaumont Irrigation District on March 17, 1919 under the statutes of 1897, page 254 as amended, know as “an Act to provide for organization and government of irrigation districts....[etc].” The District currently exists and operates under the provisions and authority of the Irrigation District Law, California Water Code section 20500, et seq. The District has the legal authority to impose regulations relative to water use and adopt rates as appropriate for water service.