

**UPPER TRINITY REGIONAL WATER DISTRICT
Draft Water Conservation Plan
February 2019**

Comments on Upper Trinity's Draft Water Conservation Plan Requested by March 25

Upper Trinity is pleased to provide this draft of its updated Water Conservation Plan. The update is required according to state law, and is a good practice to evaluate the effectiveness of the programs and practices that Upper Trinity has implemented to reduce peak and total water usage in its service area.

If you have any comments or questions, please forward to Blake Alldredge at balldredge@utrwd.com by March 25, 2019.

UPPER TRINITY REGIONAL WATER DISTRICT

Water Conservation Plan

May 2019

SECTION 1

Introduction

Water supply ~~has always been~~ is a key issue in the growth and development of communities in Texas. In recent years, the growing population and economic development of North Central Texas has led to increasing demands for water. Additional supplies to meet these demands will be both expensive and difficult to develop. Therefore, it is important that we make the most efficient use of existing supplies - - to minimize the need for new resources.

Effective water conservation can postpone or reduce the need for development of new water supplies, minimize the associated environmental impacts, and reduce the high cost of water supply development. Even with robust conservation measures, new sources of water will be needed; conservation alone is not enough. Therefore, to respond to the growing population of this region, the planning for new water resources must continue. Upper Trinity Regional Water District ("Upper Trinity") considers water conservation (including reuse of reclaimed wastewater) an integral part of this planning and water supply development process.

Upper Trinity was created in 1989 by the Texas Legislature to provide treated water service on a wholesale basis to towns, cities, and other water utility providers. Currently, Upper Trinity provides wholesale treated water service to ~~nineteentwenty~~ members and customers (serving ~~more than~~ twenty-~~threefive~~ communities) in Denton and Collin Counties (herein "Customers").

Recognizing the need for efficient use of existing water supplies, the Texas Commission on Environmental Quality ("TCEQ") has promulgated guidelines and requirements governing the development of water conservation plans for Wholesale Public Water Suppliers. Upper Trinity developed its original plans for Water Conservation and for Drought Contingency in May 1993, later amended in March 2005, ~~and~~ April 2009, ~~and~~ September 2012. This update of the Water Conservation Plan (the "Plan") has been coordinated with the suggested model water conservation plan prepared by Upper Trinity for Customers offering retail service; and, is consistent with the latest TCEQ requirements outlined below. This Plan also incorporates water conservation practices and strategies recommended by the Water Conservation Advisory Council ("Advisory Council"). The Advisory Council was created by the Texas Legislature to foster basic and enhanced water conservation measures and practices for Wholesale Public Water Suppliers like Upper Trinity.

Objectives

Water is a basic tenant in all aspects of sustainability. Water conservation is one critical element of a utility's effort to meet future water supply needs, in an economical manner and without sacrificing quality of life standards. The following are the central objectives of this Plan:

- Provide support ~~and incentives~~ to communities to maintain and continue sound conservation practices;
- Reduce water consumption from levels that would otherwise prevail without conservation efforts;

- Reduce the loss and waste of water, as evidenced by per capita water use;
- Continue to improve efficiency in the use of water;
- ~~Achieve~~Encourage greater reuse of reclaimed wastewater in helping to sustain an adequate supply; and
- Extend the adequacy of current water supplies by reducing ~~the pace of growth in the peak and total~~ demand for water.

In an effort to meet each of the above central objectives, Upper Trinity will provide leadership and technical assistance to its Customers in order to maximize water savings and water efficiency within its service area. Upper Trinity has ~~a designated~~dedicated staff Conservation Coordinator to lead its regional water ~~e~~Conservation program and to assist its Customers with implementation of their respective conservation strategies. Similarly, to coordinate and communicate consistent conservation strategies, Upper Trinity ~~is creating~~has created a work group within the Customer Advisory Council for the Regional Treated Water System to focus on water conservation matters. ~~and will~~Upper Trinity also encourages each Customer to designate a staff member as its Conservation Coordinator with the responsibility for implementing and reporting on its water conservation program. Retail utilities with 3,300 or more connections are required to designate a Conservation Coordinator according to the Texas Water Code Sec. 13.146.

1.1 Texas Commission on Environmental Quality Rules

TCEQ rules governing the development of water conservation plans for Wholesale Public Water Suppliers are contained in Title 30, Part 1, Chapter 288, Subchapter A, and Rule 288.5 of the Texas Administrative Code. Copies of these rules are included in Appendix A. The rules define a water conservation plan as:

“A strategy or combination of strategies for reducing the volume of water withdrawn from a water supply source, for reducing the loss or waste of water, for maintaining or improving the efficiency in the use of water, for increasing the recycling and reuse of water, and for preventing the pollution of water.”

A. Basic Water Conservation Plan Requirements

TCEQ requires that water conservation plans for Wholesale Public Water Suppliers, like Upper Trinity, include the following components:

- *Utility Profile*: Information regarding population and customer data, water use data, water supply system data, and wastewater system data. (Section 2)
- *Goals*: Specific quantified five-year and ten-year targets for water savings to include goals for water loss programs, in gallons per capita per day (GPCD). (Section 3)
- *Accurate Metering Devices*: TCEQ requires that metering devices have an accuracy of plus or minus five percent (5%) for measuring water diverted from the supply source. (Section 4.1)
- *Record Management System*: A system to record water delivered, water sold, and water lost. (Section 4.2)

- *Program for Leak Detection & Repair, and Water Loss Accounting:* A program to detect and repair leaks, and water loss accounting for the water storage, delivery, and distribution system. (Section 4.3)
- *Wholesale Customer Requirements:* A requirement that every water supply contract entered into or renewed after official adoption of the water conservation plan, including any contract extension, include a provision that each successive wholesale customer develop and implement a water conservation plan with similar water conservation strategies to this Plan, including applicable elements of Title 30 TAC Chapter 288. (Section 4.4)
- *Reservoir Systems Operational Plan:* A requirement to provide a coordinated operational structure for operation of reservoirs owned by the water supply entity within a common watershed or river basin in order to optimize available water supplies. (Section 4.5)
- *Coordination with Regional Water Planning Group:* Document that the Plan has been coordinated with the Regional Water Planning Group to ensure consistency with the appropriate approved regional water plan. (Section 4.6)
- *Means of Implementation and Enforcement:* A strategy for implementing and enforcing the provisions of this Plan, as evidenced by an ordinance, resolution, or tariff, and a description of the authority by which the Plan is enforced. (Section 6)

B. Enhanced Water Conservation Strategies

Upper Trinity will also incorporate the following additional conservation strategies, as needed, to achieve the conservation goals stated in this Plan:

- *Program for Reuse and/or Recycling:* Upper Trinity has implemented a program of reclaiming and recycling treated wastewater effluent in order to further the efficient use of water. (Section 5.1)
- *Public Education Program:* Upper Trinity has implemented public education and outreach programs that include an informative school program, a literature program, special events and promotions program, a website [and social media](#) dedicated to water conservation, a public awareness program, and it provides speakers to various groups on conservation while coordinating with other North Texas water suppliers and Customers to promote water conservation. (Section 5.2)
- *Water Conserving Landscaping:* As part of its public education activities, Upper Trinity has implemented and fostered programs to support the conservative use of water in landscape by its Customers and their retail customers. (Section 5.3)
- *Landscape Water Management:* A strategy for implementing and achieving the efficient use and stewardship of water in landscape irrigation, including watering a maximum of two times per week and time-of-day watering provisions. (Section 5.4)
- *Enhanced Contract Language:* Upper Trinity will implement additional language in future contracts to continue to improve conservation and the efficient use of water. (Section 5.7)
- *Irrigation System Evaluations / Technical Assistance:* A program to provide [irrigation system evaluations and technical assistance](#) ~~technical assistance and training~~ to

Customers and their retail customers (residential, industrial, commercial, and institutional), if requested, regarding efficient and effective landscape watering practices. (Section 5.8)

- *ICI Program:* A facilities and processes audit program that will assist Customers and their retail industrial, commercial, and institutional (“ICI”) customers with audits of their facilities to explore the development of economical and practical water efficiency measures that will contribute to increased water conservation in their processes. (Section 5.9)

Other Strategies: Upper Trinity has developed model water conservation and drought contingency plans for use by its Customers (Section 5.15). In addition, Upper Trinity has a dedicated staff to lead its regional water conservation program and to assist Customers with implementation of their respective conservation strategies; and, has created a work group within Upper Trinity’s Customer Advisory Council. The Water Conservation Work Group meets regularly to focus on water conservation matters in order to better coordinate and communicate consistent conservation strategies and to discuss other conservation related matters (Section 5.16). Other strategies also employed by Upper Trinity include pressure controls to maintain System integrity to avoid the loss of water (Section 5.5), watershed protection measures (Section 5.6), and establishing a means for measuring success in water conservation (Section 5.11).

Upper Trinity will continue to evaluate and implement water conservation strategies and practices that will further the conservation of its water supplies. This Plan sets forth a program of long-term strategies under which Upper Trinity can maintain and continue existing conservation results, plus improve the overall efficiency of water use and conserve its water resources. Shorter-term strategies that address specific water management conditions (i.e., periods of drought, unusually high water demands, unforeseen equipment or system failure, or contamination of water supply sources) are provided in Upper Trinity’s Drought Contingency Plan.

SECTION 2

Water Utility Profile

Upper Trinity’s Regional Treated Water System (“System”) provides services to its wholesale Customers through two water treatment plants (Thomas E. Taylor Water Treatment Plant in Lewisville, and the Tom Harpool Water Treatment Plant in Providence Village), and a system of pipelines and pump stations that deliver water to each Customer at specified points of delivery. The System does not include facilities “downstream” of such points of delivery (i.e., internal, retail distribution system). Upper Trinity currently obtains its raw water from Lewisville Lake, Ray Roberts Lake, Jim Chapman Lake and from the reuse of water imported from Jim Chapman Lake. A dependable supply of water from these sources is confirmed and enabled by various contractual agreements between Upper Trinity and the respective water rights holders.

Upper Trinity’s service planning area, as established by the Region C Water Planning Group, includes all communities currently served plus additional portions of Denton, Grayson, Wise and Cooke counties. See Figure 2.1 for a map of Upper Trinity’s planning (service) area.

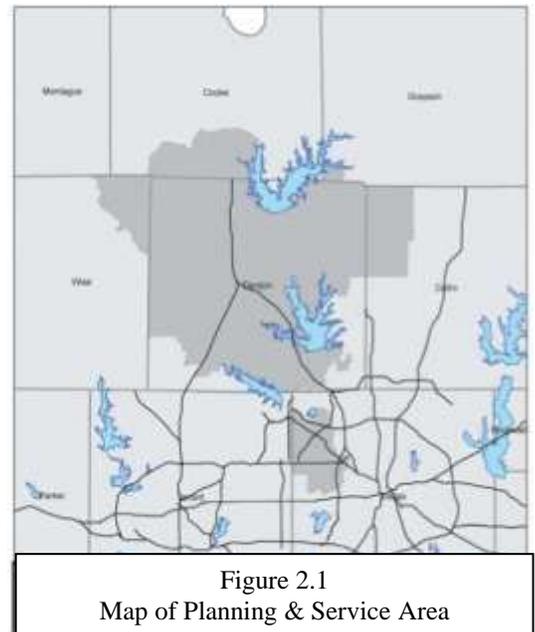


Figure 2.1
Map of Planning & Service Area

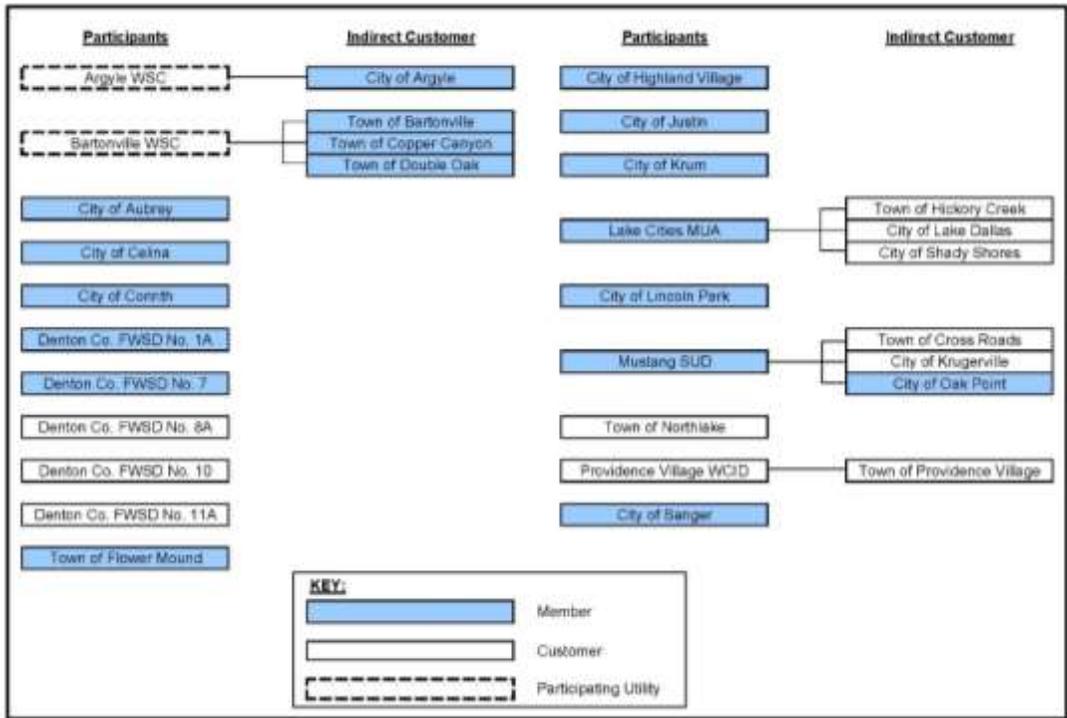


Figure 2.2
Upper Trinity Wholesale Water Customers

Using surface water supplies, Upper Trinity currently provides treated water service to nineteentwenty Customers serving more than twenty-fivethree communities in Denton and Collin Counties. Figure 2.2 lists both direct Customers of Upper Trinity and the other communities served indirectly.

Projections of water needs are based on dry-year demands and population growth anticipated by Customers, and reviewed and considered by Upper Trinity. Actual water usage will vary from year to year depending on climatic conditions, and on growth and development within the service area and on various factors affecting retail customers within a Customer’s residential, commercial, industrial and institutional customer categories. Upper Trinity’s population projections and raw water demand projections for its planning area are included in the 20164 Region C Water Plan, and the 20172 State Water Plan.

Some Upper Trinity Customers also use groundwater for a portion of their water supply. In Denton County, groundwater resources are very limited; the County has been included in a “Priority Groundwater Management Area” by the TCEQ, and a groundwater conservation district has been created to manage and conserve groundwater resources within the County. One of the key purposes of Upper Trinity’s regional water program is to avoid further draw-down of these limited ground-water resources, and to make surface water available as a more reliable and sustainable source for further growth in Upper Trinity’s service area. To this end, conservation, reuse, and the development of additional water supply resources that will allow for additional reuse supplies, will contribute greatly to the conservation program’s success.

Appendix B of this Plan includes an updated water utility profile for Upper Trinity, based on the format recommended by TCEQ. The water utility profile includes additional information regarding

population and Customer data, water use data, water supply system data, and wastewater system data.

SECTION 3

Water Conservation Planning Goals

As a wholesale water supplier, Upper Trinity does not have a direct relationship with retail customers who are the ultimate consumers of the treated water it provides to its Customers. Further, Upper Trinity doesn't have ordinance or policy power over such retail customers or their use of treated water supplied in wholesale transactions with Customers. As a result, and as noted in Section 4.4 ~~below~~ and Section 5.7, Upper Trinity has limited control or influence over the use of water being purchased by its Customers. ~~Some-~~It's anticipated that Upper Trinity Customers ~~are projected to will~~ require increased supplies for their future growth and development, which may result in increases to historical municipal per capita use, ~~—~~ during and following periods of population growth. Reasons for such potential increases include:

- Upper Trinity's service area continues to transform from a historically rural to a primarily urban land use, causing some communities to experience an increase in per capita water use.
- Some Upper Trinity Customers will experience substantial population growth in future years, generating changes in commercial and economic activity. With a growing infrastructure of retail industrial, commercial, and institutional customers using water supplied by Upper Trinity to its wholesale Customers, increases in municipal per capita water use can be expected for these communities.
- The municipal per capita use for Upper Trinity's System can be affected by changes in per capita use for its Customers. It can also be affected by how much water Upper Trinity is asked to supply to different communities with widely varying growth factors and water usage characteristics. Nonetheless, Upper Trinity's water conservation efforts are expected to significantly influence per capita water use that could otherwise result from continued growth in its service area. Upper Trinity will make every effort to measure and quantify savings achieved through the programs it implements, and will encourage its Customers to measure savings from the programs they implement, as well.

Upper Trinity does, however, control the operation of its own water treatment and transmission system and ~~it~~ can take direct action to maximize the water use efficiency of System operation. Upper Trinity adopts the following water conservation and efficiency goals within the System:

- Maintain the level of ~~unaccounted-for~~ water loss in the System below five percent (5%) annually;
- Maintain a program of universal metering of Customers and regular meter calibration; and, meter replacement and repair;
- Maintain a program of leak detection and repair;
- Continue to utilize wastewater reuse as a major source of future water supply, to the maximum extent feasible;
- Continue to recycle wash-water from Upper Trinity water treatment plants, to the

maximum extent feasible;

- Continue to implement other in-house water conservation efforts;
- Continue to raise public awareness of water conservation and encourage responsible public behavior through a coordinated public education programs;
- Encourage landscape water management strategies on a routine basis to help instill good habits and responsible stewardship for water conservation;
- Maintain and promote a first-class demonstration program for water-smart practices in landscape and gardening;
- Expand public education about the need to protect water quality through a continuing program for watershed protection.

Upper Trinity has developed 5-year and 10-year water conservation goals as part of the Plan. Table 3.1 below shows the [2021 Region C Plan projection for 2020 of 189 gallons per capita per day \(GPCD\) projected municipal per capita water use as the baseline. Region C estimated this baseline GPCD on the demand that would be expected during a hot, dry year. Utilizing a dry year GPCD allows Upper Trinity to evaluate the full benefit of its water conservation activities and their effectiveness at reducing water usage. for Upper Trinity, as recommended by Region C Water Planning Group and approved by the Texas Water Development Board \(“TWDB”\).](#) This table also shows Upper Trinity’s goals for municipal per capita water use with a reduction for results in implementing this Plan; and, as supported by plans to be implemented by Upper Trinity Customers.

**Table 3.1
Per Capita Water Use Goals**

	5-Year GPCD Goal (Gallons)	10-Year GPCD Goal (Gallons)
Average Per Capita Use Per Day	204	208
Less Projected Reduction Due to Strategies of this Plan	29	38
Water Conservation Goal	175	170

Description	Baseline⁴	5- Year Goal	10-Year Goal
		2024	2029
<u>Total Per Capita Use (GPCD)¹</u>	189	<u>170</u>	<u>165</u>
<u>Water Loss (GCPD)²</u>	2	<u>9.5</u>	<u>9.5</u>
<u>Water Loss (Percentage)³</u>	2%	<u>5%</u>	<u>5%</u>

[1. Total GPCD = \(Total UTRWD Customer Use ÷ UTRWD Population Served\) ÷ 365](#)

[2. Calculated as 5% of Baseline GPCD.](#)

[3. Goal to maintain UTRWD Water Loss Percentage below 5%.](#)

[4. Baseline is 2020 Region C for total per capita use, and 2014-2017 average for water loss per capita and water loss percent.](#)

SECTION 4

Basic Water Conservation Strategies

This section outlines Upper Trinity's basic water conservation program strategies that will be implemented to achieve and exceed the stated water conservation goals above.

4.1 Accurate Supply Source Metering

Upper Trinity measures all raw water diversions using meters with an accuracy of plus or minus two percent (2%) in accordance with AWWA standards. Said meters are calibrated annually in accordance AWWA standards. When necessary, Upper Trinity will repair or replace meters not conforming to an accuracy of plus or minus two percent (2%).

4.2 Monitoring and Record Management of Water Deliveries, Sales and Losses

Upper Trinity regularly monitors all water deliveries and sales to all Customers. All critical data, such as raw water conveyance to water treatment plants or to Customers, treated water pumped, and ~~unaccounted-for~~ water ~~loss~~, ~~is~~are available ~~monitored~~ on a regular basis ~~as needed~~. All water sources and water delivered to Customers is metered and recorded, as follows:

- Water delivered to all Customers is measured by individual meters with an accuracy of plus or minus two percent (2%) in accordance with AWWA standards, and in most cases with rate-of-flow controllers. Said meters are read monthly by Upper Trinity personnel, with the meter readings being used to invoice Customers. Meters are calibrated and tested annually, and as needed, in accordance with AWWA standards. Customers may witness the calibrations of these meters.
- Treated drinking water leaving the District's water treatment plants and pumping facilities is also measured by meters with a minimum accuracy of plus or minus two percent (2%).
- Upper Trinity monitors ~~unaccounted-for~~ water ~~loss~~ in its treatment and transmission system to its Customers. (For Upper Trinity, ~~unaccounted-for~~ water ~~loss~~ is defined as the amount of raw water diverted to or received at the treatment plants, less metered sales to Customers, less water used during the treatment process, and water used for line flushing and construction purposes.)

A goal of Upper Trinity's water conservation program is to maintain ~~unaccounted~~ water ~~loss~~ below five percent (5%).

Upper Trinity encourages its Customers to consider implementing Advanced Metering Infrastructure (AMI) within their ~~retail distribution~~ system, and several have already done so. The benefits of AMI include improved billing procedures, alerting retail customer to potential leaks, and greater customer service and satisfaction. Upper Trinity has information about AMI on its website, and can be provided upon request by Customers.

4.3 Program for Leak Detection & Repair, and Water Loss Accounting

Upper Trinity's metering program for raw and treated water is described in Sections 4.1 and 4.2 above. As evidenced by a ~~historically~~ low level of ~~unaccounted-for~~ water ~~loss~~, Upper Trinity has an effective program to control, detect and repair leaks:

- In most projects, Upper Trinity's water pipelines consist of ductile iron pipe, reinforced

concrete cylinder pipe, or steel cylinder pipe with an internal protective liner and an external protective coating and/or polywrap. Because of the multi layers of material, these pipelines have very long service lives and are not subject to excessive leaks.

- Most joints in Upper Trinity pipelines are designed with bell and spigot joint construction, including a rubber gasket. Some joints are welded. For larger lines other than ductile iron, each joint is also coated with grout for corrosion protection.
- All Upper Trinity pipelines are constructed in legally defined and identified rights-of-way, properly registered with authorities in each county. Most are in exclusive rights of way on private property, protecting the pipelines from possible damage by a third party.
- Upper Trinity routinely inspects its facilities and pipelines for leaks or mechanical problems. Repairs are undertaken as soon as practicable in order to minimize waste.
- Upper Trinity operates a program for identification of construction projects adjacent to Upper Trinity facilities and pipelines in order to minimize leaks caused by pipeline damage during construction.
- Upper Trinity's metering program allows comparison of metered flows in the System with metered deliveries to Customers, which can be used to identify leaks.
- Upper Trinity's regular monitoring of ~~unaccounted-for~~ water loss provides a further check for problems in the transmission system.

4.4 Requirement for Water Conservation Plans by Wholesale Customers

Contracts for the wholesale purchase of water by Upper Trinity Customers provide that the wholesale Customer will develop water conservation and an emergency water demand management plan appropriate and adequate for local conditions and circumstances. These plans are subject to review and approval by Upper Trinity. Any new contract for wholesale water service entered and any renewed or extended contract with a Customer after the adoption of this Plan will require the Customer to adopt similar water conservation strategies as outlined in this Plan, and providing enforcement thereof. In addition, each Customer has agreed to coordinate with Upper Trinity the implementation of any action to limit or curtail water supplies to minimize adverse impact on Upper Trinity's water system operations, and on adequacy of service, and to promote public understanding of the need for and terms of such limitation or curtailment.

Current wholesale contracts utilized by Upper Trinity include some version of the following provisions:

It is the policy of the District to prepare, adopt, and maintain a regional water conservation plan which incorporates loss reduction measures and demand management practices ~~which to~~ insure that the System's available water supply ~~of the System~~ is conserved and used in an economically efficient and environmentally sensitive manner. Similarly, it is the policy of the District to prepare, adopt and maintain a drought and emergency ~~conditions~~ contingency plan to protect and maintain an adequate ~~for~~ water supply to ~~Customers~~ Customer needs. Each Customer agrees to cooperate fully in the implementation of ~~both the District's water conservation, drought, and emergency contingency plans related to the District's wholesale service~~. Further, in coordination with the District's plans, and Customer agrees to adopt and enforce such or similar the District's plans or plans that are substantially similar thereto related to Customer's retail service for

~~use within its respective jurisdiction. Customer may be required by State or Federal agencies to implement a water conservation plan; also, the District reserves the right to require Customer to implement a water conservation and drought contingency plans that will result in the highest practicable levels of water conservation and efficiency achievable with the Customer's physical and regulatory jurisdiction. The Customer's water conservation and drought contingency plans are~~ subject to approval by District.

Towns and cities have ordinance powers and greater capability to manage and enforce their own water conservation programs, as compared to a wholesale water supplier. Thus, in order to encourage local initiative and to respond to the diversity of powers, needs, and circumstances, Upper Trinity allows each Customer to develop its own conservation program, but Upper Trinity's contracts allow for its approval of such programs. To assist its Customers, Upper Trinity provides a model water conservation plan for all wholesale customers ~~for to~~ use in developing their own water conservation plans.

4.5 Reservoir System Operation Plan

Upper Trinity currently purchases raw water from the City of Dallas and City of Denton out of Lewisville Lake and Ray Roberts Lake. In addition, Upper Trinity has a contract for up to 14.4 million gallons of raw water per day from Jim Chapman Lake in the Sulphur River Basin. Further, Upper Trinity has received a permit from TCEQ for the reuse of raw water being imported to the Trinity River Basin, treated to potable water standards, utilized by its Customers, returned to state streams via effluent discharges, and then diverted by Upper Trinity for a second treatment, delivery, and use by its Customers.

Water from Jim Chapman Lake is pumped by pipeline to Lewisville Lake. Treated wastewater effluent from Upper Trinity's ~~three (3)~~four (4) water reclamation facilities and from treatment plants operated by certain Customers is returned to the Lewisville Lake watershed. Upper Trinity relies on the Cities of Dallas and Denton (and the U. S. Army Corps of Engineers) for the operation of Lewisville Lake and Ray Roberts Lake. In addition, the water rights holders of Jim Chapman Lake have developed a water supply operating plan which allows for overdrafting of the reservoir when it is relatively full and also protects the firm annual yield of the reservoir should the drought of record occur. Upper Trinity manages its use of water from these four sources (Lewisville Lake, Ray Roberts Lake, Jim Chapman Lake and from Reuse) on a system-wide basis to make maximum use of the most efficient or most available source.

4.6 Coordination with Regional Water Planning Groups

Appendix C includes a copy of a letter sent to the Chair of Region C Water Planning group to coordinate Upper Trinity's updated Plan with Region C. In addition, copies of the updated adopted Plan have been provided to the Executive Director of TCEQ and the Executive Administrator of the TWDB.

SECTION 5

Enhanced Water Conservation Strategies

This section outlines enhanced water conservation strategies that Upper Trinity will include as part of its water conservation program.

5.1 Reuse and Recycling of Reclaimed Wastewater

Upper Trinity has completed construction of ~~three (3)~~four (4) regional water reclamation facilities with a total treatment capacity of ~~approximately eight (8)~~10.44 million gallons per day. These regional facilities provide wastewater treatment services to ~~fourteen (14)~~twelve (12)

municipalities, ~~and five (5) six (6)~~ special districts ~~and one (1) utility~~. Reuse is practiced on ~~the one~~ plant site for service water and irrigation of landscape.

Upper Trinity has constructed facilities and sells treated wastewater effluent to one of its Customers for golf course irrigation. Upper Trinity continues to ~~promote~~ advocate for additional opportunities, where feasible, to expand recycle and reuse markets.

Upper Trinity reuses up to 60% of the water it diverts from Jim Chapman Lake pursuant to a TCEQ reuse permit. The reuse permit is for a single reuse and pass-through cycle of the water imported from Jim Chapman Lake in the Sulphur River Basin. An extensive daily accounting system provides for management of this reuse project.

5.2 **Public Education Program**^[JP1]

As a regional wholesale water supplier, Upper Trinity does not interact directly with retail water customers at whom typical water conservation public education efforts are aimed. However, Upper Trinity's public education program is intended to assist and supplement the public education efforts of its Customers.

The ultimate success of any water conservation program is dependent on an informed public. The individual retail customers must have an awareness of the benefits and needs for water conservation. They must also have knowledge of how to contribute to the success of the Plan. Upper Trinity's public education and information program, including dedicated staff for this program, is designed in cooperation with Customers to provide information to as many of the Customers' retail customers as possible. The elements of Upper Trinity's education program are described below.

- *Informative School Program.* ~~This program currently provides area schools with textbook covers containing water conservation messages. Upper Trinity is working with local school districts to integrate the *Waters to the Sea: Trinity River* into middle school science classrooms. This engaging, multimedia interactive program connects the students to environmental history, hydrology, ecology and water quality and conservation. Also, water conservation is demonstrated to students using a watershed model. The EnviroScape model provides hands-on interaction to show at least twenty different ways of protecting and conserving water.~~ Educational tours of Upper Trinity's water treatment plants and demonstration garden are ~~also~~ available, promoting water conservation and water quality protection. Also, water conservation is demonstrated to students using a watershed model. The EnviroScape model provides hands-on interaction to show at least twenty different ways of protecting and conserving water. Additional "stations" that Upper Trinity may use during a tour include a stream erosion trailer and a rainfall simulator to demonstrate watershed protection principles that can protect water quality in local reservoirs. Upper Trinity hosts approximately 200 – 300 students every year. Additional Educational opportunities may include poster contests, classroom presentations, curriculum aids and materials, and teacher workshops.
- *Literature Program.* As part of its water conservation literature program, brochures are designed to educate the public on various water conservation methods. Upper Trinity will make available water conservation brochures covering the following topics:
 - Saving water outdoors,
 - Saving water indoors,

- [Use of native plants and wildflowers in low water-use landscaping,](#)
 - [Efficient irrigation methods,](#)
 - Retrofitting existing structures with high efficiency showerheads and high efficiency toilets.
- *Special Events and Promotions.* For special events sponsored by Customers, Upper Trinity makes available water conservation promotional items such as Texas Smartscape [CD's bookmarks](#), toilet-leak test kits, Upper Trinity water bottles, water conservation booklets, [T-shirts](#), [pet waste bag holders](#), etc. Upper Trinity also hosts special events focused on conserving water in the landscape and on protecting water quality.
 - *Website and Social Media.* Upper Trinity has included a section on its website dedicated to water conservation. Conservation publications, [videos, and links to other resources](#) are also available online. [Upper Trinity has Facebook and Twitter pages, and a YouTube channel, where water conservation and watershed protection information can be distributed](#) ~~is~~ [are provided as well.](#)
 - *Speaking Engagements.* Speakers and presentations are available from Upper Trinity, which promote water conservation ideas to environmental groups, garden clubs, senior citizen centers, youth groups, civic groups, and other citizen and professional groups.
 - *Public Awareness Campaign.* Upper Trinity will promote the importance of conservation by placing public service announcements [and advertisements](#) on radio, ~~or~~ television, [digital billboards and websites](#) or by promoting newspaper articles [and advertisements](#) in newspapers with general circulation in the service area. In accomplishing this strategy, Upper Trinity ~~will~~ [may](#) partner with other entities to promote a regional conservation message on radio, television and other media.
 - *Regional Cooperation.* Upper Trinity will [continue to](#) coordinate with other North Texas water suppliers and Customers to benefit all entities in promoting water conservation.

5.3 Water Conserving Landscaping

As part of its public education program, Upper Trinity has a Water Wise Demonstration Garden [\(located at its headquarters in Lewisville, TX\)](#) employing **Texas SmartScape**[®] principles. **Texas Smartscape** was developed in cooperation with cities, utilities and other agencies, including Upper Trinity, to educate citizens on the ecological, economic and aesthetic benefit of using landscape plants, shrubs, grasses and trees that are native or adapted to the regional climate and local conditions.

The goal of the Water Wise Garden is to demonstrate that outdoor landscapes can be both practical and beautiful, using earth-friendly techniques that conserve water resources and protect water quality. Upper Trinity encourages each Customer to use the Water Wise Garden to demonstrate how to conserve water in landscape practice. Further, the Water Wise Garden is available to garden clubs, developers, and customers throughout the North Texas region to advance public knowledge of water conservation in home and business landscapes. Throughout the year, the Water Wise Garden is used to [promote water conservation and watershed protection during help train Master Gardeners in Denton County, and as the venue for various public education tours](#) ~~programs~~ [— all promoting water conservation.](#)

[Upper Trinity encourages Customers and residents to use the Texas A&M AgriLife Research and Extension Center at Dallas – Water University plant database and landscape design tool, ‘ULandscapelt,’ to help residents plan their own landscape with native and adaptive plants. The Water University website is \[wateruniversity.tamu.edu\]\(http://wateruniversity.tamu.edu\).](#)

5.4 Landscape Water Management

To promote the efficient use and stewardship of water and to provide a consistent message throughout Upper Trinity’s service area, Upper Trinity urges each Customer to include the following landscape water management strategy into their respective water conservation plans:

- *Watering Maximum of Two Times per Week.* Limit outdoor watering (automatic systems or hose-end sprinklers) to no more than two (2) times per week. Watering with hand-held hoses, soaker hoses or drip irrigation is allowed any time. [\(At this time, this strategy is voluntary until Stage 1 of Upper Trinity’s Drought Contingency Plan is initiated. Upper Trinity will continue to evaluate the necessity and feasibility of implementing mandatory watering maximum of two times per week as part of its Water Conservation Plan.\)](#)
- *Time of Day Watering.* No outdoor watering with automatic irrigation systems or hose-end sprinklers from 10:00 am to 6:00 pm each day beginning June 1 and ending September 30 of each year. Watering with hand-held hoses, soaker hoses, or drip irrigation systems is allowed anytime.

Each Customer will be responsible for implementing, communicating and enforcing these landscape water management strategies within its respective jurisdictions. [Upper Trinity also encourages its Customers to adopt ordinances or similar measures to ensure the proper design, installation and maintenance of landscape irrigation systems, according to the Texas Administrative Code, Title 30, Chapter 344, Subchapter F. This can be accomplished by requiring permits and inspections for new irrigation systems. Properly designed and installed irrigation systems will maximize water efficiency during operation.](#)

Recognizing that the goal of these strategies is to help instill good habits for conservation of water - - not to be punitive - - each Customer shall have maximum flexibility in administering same. Unless a drought contingency stage is in effect, Customers will be encouraged to allow each retail customer to select the two most convenient days of each week for outdoor watering.

These strategies are intended to be actively promoted by the Customers through public information programs for voluntary or mandatory compliance by their respective retail customers. Upper Trinity will include these strategies as part of its regional public information program and within its model water conservation plan for use by Customers.

During any period that a drought contingency stage is in effect, these strategies would become mandatory and are required to be enforced by all Customers.

[In 2015, Upper Trinity partnered with Texas A&M AgriLife to implement the ‘Water My Yard’ outdoor watering management program to Upper Trinity’s service area. The ‘Water My Yard’ website, \[WaterMyYard.org\]\(http://WaterMyYard.org\), allows residents to receive weekly lawn watering recommendations, which are given in minutes. Recommendations are based on data from three weather stations that Upper Trinity has installed in its service area, as well as the landscape’s needs, to prevent unnecessary overwatering. ‘Water My Yard’ is provided at no cost to Customers and residents, and Upper Trinity encourages Customers to promote ‘Water My Yard’ ~~in their utility bills and website~~to their respective retail customers. There are nearly 1,700 subscribers to ‘Water My Yard’ in Upper Trinity’s service area.](#)

5.5 Pressure Control to Maintain System Integrity

Upper Trinity installs all necessary pressure control stations to deliver water into each Customer's storage tank. Whenever feasible, Upper Trinity conserves energy by minimizing surplus pressure (head) available at the delivery point to the Customer. Upper Trinity encourages each Customer to determine a reasonable system pressure for each pressure zone in its retail distribution system, install internal pressure control stations where necessary, or install customer service pressure regulators where needed.

5.6 Watershed Protection

Protecting our watershed is a priority need for every citizen and every community. As a double benefit, strategies that promote water conservation also tend to protect the quality of water resources. Using earth-friendly techniques, such as native and adaptive plant materials and organic techniques for landscaped areas, requires less water and less use of fertilizers, pesticides and other chemicals. Overuse or improper use of fertilizer, pesticides and other chemicals from landscape activities is also a major source of pollutants that find their way into water resources. Upper Trinity has developed a coordinated program for watershed protection aimed at educating the public about protecting local watersheds and water quality. To help communicate the important role that watersheds have in the water supply for this region, Upper Trinity has created a watershed logo and sign. These signs are being placed along roadways in Upper Trinity's service area as a constant reminder that we need to keep the watersheds clean.

[In 2015, Upper Trinity partnered with Denton County and the Upper Trinity Conservation Trust to develop the Denton County Greenbelt Plan \("Plan"\). The Plan identifies greenbelt corridors \(the vegetated areas along creeks, rivers and lakes\) that are in need of preservation in order to protect water quality in the three major water supply reservoirs in Denton County. The Plan serves as a guide for municipalities, developers, landowners and others and outlines strategies that can be used to protect and preserve greenbelts in their respective areas. The Plan is voluntary in nature and can be implemented according to the needs of the stakeholders adopting the Plan. The Plan Sponsors continue to encourage the implementation of the Plan throughout the County by establishing and maintaining a Coordinating Committee, made up of a diverse group of stakeholders, to champion the Plan for years to come.](#)

5.7 Enhanced Contract Provisions

All basic contract provisions identified in Section 4.4 will be incorporated into future wholesale water supply contracts. Amendments to wholesale water supply contracts entered into after the adoption of this Plan, including any contract extension or renewal, will require Customers to include strategies included within this Plan into their own water conservation plans. These provisions, coupled with Upper Trinity's prohibition on the subsequent resale of water on a wholesale basis without prior written approval of Upper Trinity, will enable Upper Trinity to achieve the objectives of this Plan.

5.8 Irrigation System Evaluations / Technical Assistance

To improve water conservation and efficiency in landscape watering practices, Upper Trinity will, if requested, provide technical assistance and training to Customers and their retail customers (residential, industrial, commercial and institutional). The assistance provided to the Customers could include actual evaluation of the retail customers irrigation system; or, as an alternative, Upper Trinity could offer a training program to its Customers to enable them to perform said irrigation system evaluations.

[Beginning in 2017, Upper Trinity began a residential irrigation system evaluation program that is promoted mainly through Customer cities and utilities. Evaluations are provided at no-charge to residents. A typical evaluation would include identification of potential system leaks, diagnosis of](#)

equipment malfunctions, and recommendations for equipment upgrades [and controller settings](#) to enhance water efficiency. During the evaluation, education about good landscape watering practices and the use of earth-friendly materials ~~could be~~ shared with the retail customer. [Upper Trinity has conducted 150 evaluations in 2017 and again in 2018, and may plans to increase in future years depending on the demand from residents.](#)

[In 2019, Upper Trinity began hosting a Green Pros program, adapted from the Tarrant Regional Water District and Tarrant County AgriLife program, to provide education to irrigation and landscape professionals. The program is a 5-part series with topics such as water efficient landscaping, green stormwater infrastructure, and irrigation technology. Once completed, the participants are recognized as Green Professionals with their company information listed on the 'Save Tarrant Water' website as a resource for homeowners looking for companies to use for their irrigation systems and landscapes.](#)

5.9 Industrial, Commercial and Institutional (ICI) Audits

Upper Trinity, in coordination with its Customers, will offer an outreach program to assist large water users in finding ways to operate more efficiently, save water and energy, and lower their costs. Water savings are realized as the ICI customers implement audit recommendations. In addition to these audits, Upper Trinity would publicly recognize those ICI customers who have implemented said recommendations and have taken proactive steps in using water more wisely and efficiently.

[In 2018, the Denton County Commissioners Court entered into an agreement to make the Property Assessed Clean Energy \(PACE\) financing program available to non-residential property owners. The PACE program provides low cost, long-term financing for energy and water efficiency upgrades for commercial, industrial, institutional and multi-family properties. Upper Trinity will promote this in ICI outreach efforts that are conducted.](#)

5.10 Annual Reports

An important element of Upper Trinity's model water conservation plan is for Customers to provide a copy of its annual conservation report to Upper Trinity at the same time it submits the report to TCEQ. Upper Trinity will compile these reports and use the information to help generate its own annual water conservation report. Upper Trinity's report will be used to review the effectiveness of its water conservation program and will be shared with Upper Trinity's Board and the Water Conservation Committee.

5.11 Means for Measuring Success

Upper Trinity will make every effort to measure and quantify water savings achieved through its programs and will encourage Customers to measure and quantify savings from their respective programs. The water saving results from Upper Trinity and its Customers will be regularly reported to the Region C Water Planning Group to incorporate in the State Water Plan. [Upper Trinity, with assistance from an outside consultant, created a model to estimate water savings based on the Conservation Plan. Upper Trinity reduced water usage during years of no drought conditions, and even more so during Stage 1 drought restrictions. The model may be used annually to estimate water savings for the annual water conservation report to the Texas Water Development Board.](#)

5.12 Water Rate Surcharge

Upper Trinity has a conservation-oriented water rate surcharge as part of its rate structure for Customers. The rate structure for wholesale treated water service is two-part, based on demand and volume. The conservation-oriented surcharge takes effect when the actual volume of water sold during the months of June through September exceed the volume of water budgeted for the same time period by more than 5%. The surcharge rate is established annually by Upper Trinity's

Board of Directors.

5.13 Recycle Water from Water Treatment Plants

The wash water from filter washing and sludge from Upper Trinity's water treatment process are pumped into lagoons for recycling. After settling of solids, suitable water is decanted from the lagoons and recycled to the head of the water treatment plant for treatment. This saves water and contributes to Upper Trinity's control of ~~unaccounted~~–water loss in treatment and transmission.

5.14 In-House Water Conservation Efforts

Upper Trinity has implemented an in-house water conservation program, including the following elements:

- Upper Trinity uses native or adapted drought tolerant plants, trees, and shrubs in the majority of its landscapes;
- Irrigation at Upper Trinity facilities occurs during off-peak times at night and early morning to avoid evaporation losses;
- Irrigation will be limited to the amount needed to promote survival and health of plants and lawns, including limitation on frequency and time-of-day watering (see Section 5.4);
- Irrigation will be avoided on Saturday and Sunday if possible, since these are periods of high water use by the public;
- Irrigation will be accomplished with treated wastewater effluent wherever feasible and practicable.

5.15 Model Water Conservation Plan for Upper Trinity Customers

Upper Trinity has developed two key documents as part of its water conservation strategies: (1) a *Model Water Conservation Plan*; and, (2) a *Model Drought Contingency Plan*. These model plans are valuable aids to Customers in developing their own water conservation and drought contingency plans, providing for consistency and clarity throughout Upper Trinity's service area.

A. The *Model Water Conservation Plan* addresses TCEQ Ch. 288 requirements for water conservation for municipal use by Public Water Suppliers. Upper Trinity will work with its Customers in developing or updating their individual water conservation plans using the following requirements:

- *Utility Profile*: Information regarding population and customer data, water use data, water supply system data, and wastewater system data.
- *Goals*: Specific quantified five-year and ten-year targets for water savings to include goals for water loss programs and goals for municipal use, in gallons per capita per day (GPCD). The goals established by a Public Water Supplier are not enforceable under this subparagraph.
- *Accurate Metering Devices*: TCEQ requires that metering devices have an accuracy of plus or minus five percent (5%) for measuring water diverted from the source of supply.
- *Universal Metering, Testing, Repair and Replacement*: A program for universal metering of both customer and public uses of water, for meter testing and repair, and for periodic meter replacement.
- *Determination and Control of ~~Unaccounted-for~~–Water Loss*: Specific measures to determine and control ~~unaccounted-for~~ water loss. The measures may include periodic

visual inspections along distribution pipelines, periodic audits of the water system for illegal connections or abandoned services.

- *Public Education Program:* A public education and information program regarding water conservation is required as part of the water conservation plan.
- *Non-Promotional Water Rate Structure:* Chapter 288 requires a water rate structure that is not “promotional”; that is, rates that discourage waste and excessive use of water, such as increasing block rate instead of volume discounts.
- *Landscape Water Management Strategy:* A strategy for implementing and enforcing the efficient use and stewardship of water in landscape irrigation, including watering a maximum of two times per week; and, including a time-of-day watering provision.
- *Reservoir Systems Operational Plan:* If applicable, this requirement is to provide a coordinated operational structure for operation of reservoirs owned by the water supply entity within a common watershed or river basin in order to optimize available water supplies.
- *Coordination with Regional Water Planning Group:* To document that the water conservation plan has been coordinated with the Regional Water Planning Group to insure consistency with the appropriate approved regional water plan.
- *Means of Implementation and Enforcement:* A strategy for implementing and enforcing the provisions of a water conservation plan, as evidenced by an ordinance, resolution, or tariff, and a description of the authority by which the plan is enforced.

B. The *Model Water Conservation Plan* covering municipal uses by Public Water Suppliers that: (1) currently serve a population of 5,000 or more; or (2) a projected population of 5,000 or more within ten (10) years from the effective date of the plan; or (3) provide potable water service to 3,300 or more connections, are required to include the following additional strategies.

- *Program for Leak Detection & Repair, and Water Loss Accounting:* A program of leak detection and repair, and water loss accounting for the water transmission, delivery, and distribution system.
- *Record Management System:* A system to record water pumped, water deliveries, water sales and water losses which allows for the desegregation of water sales and uses into user classes (residential, commercial, public and institutional, and industrial).
- *Wholesale Customer Requirements:* If applicable, include a requirement in every water supply contract entered into or renewed after official adoption of the water conservation plan, and including any contract extension, that each successive wholesale customer develop and implement water conservation strategies similar to this Plan, including applicable elements of Title 30 TAC Chapter 288.

C. Upper Trinity will work with each Customer to evaluate and incorporate, as appropriate, enhanced conservation strategies identified throughout Section 5 herein to achieve Upper Trinity’s conservation goals.

5.16 Conservation ~~Support~~ Work Group / Technical Assistance for Customers

Upper Trinity has an appointed conservation coordinator to lead its regional water conservation program and to assist Customers with implementation of their respective conservation plans and strategies. Upper Trinity ~~will create~~ maintains a work group within the Customer Advisory Council for the Regional Treated Water System to coordinate and communicate consistent conservation strategies to Customers, to better focus on water conservation matters and to encourage Customers to designate staff with responsibility for implementing and reporting on their water conservation programs. The work group meets at least annually to review current and planned education and outreach activities, discuss conservation strategies and to coordinate updates to conservation and drought contingency plans.

Upper Trinity provides resources to its Customers to benefit their respective conservation programs. These resources include digital advertisements and infographics, videos, and publications. Upper Trinity staff are available upon request, and for presentations at community events, such as the Highland Village Balloon Festival and the Corinth Pumpkin Palooza. Upper Trinity also provides conservation classes at no cost to the Customers. Class topics include water efficient landscape plants, native plant selection and maintenance, and irrigation system maintenance and efficient watering methods.

SECTION 6

Implementation and Enforcement of the Plan

Appendix D contains a copy of the resolution of Upper Trinity's Board of Directors adopting this updated Plan (and Upper Trinity's drought contingency plan). The Executive Director of Upper Trinity is authorized to implement and enforce the Plan and the drought contingency plan. Upper Trinity will prepare a water conservation report every year, incorporating the reports required from Customers as appropriate. This report will be used to review the effectiveness of Upper Trinity's water conservation program, and results will be reported to the Water Conservation Committee and to the Board of Directors.

The Plan is also referenced in Upper Trinity's wholesale water supply contracts, as noted in Sections 4.4 and 5.7 herein, and there is a prohibition on the resale of water on a wholesale basis without prior written approval by Upper Trinity. As such, Upper Trinity's contractual relationships with its Customers provide for a reasonable means for enforcing the Plan.

APPENDIX A

Texas Administrative Code

Title 30: Environmental Quality

Part 1: Texas Commission on Environmental Quality

Chapter 288: Water Conservation Plans, Drought Contingency Plan, Guidelines and Requirements

Subchapter A: Water Conservation Plans

Rule §288.5: Water Conservation Plans for Wholesale Water Suppliers – Effective December 6, 2012

A water conservation plan for a wholesale water supplier must provide information in response to each of the following paragraphs. If the plan does not provide information for each requirement, the wholesale water supplier shall include in the plan an explanation of why the requirement is not applicable.

(1) Minimum requirements. All water conservation plans for wholesale water suppliers must include the following elements:

(A) a description of the wholesaler's service area, including population and customer data, water use data, water supply system data, and wastewater data;

(B) specific, quantified five-year and ten-year targets for water savings including, where appropriate, target goals for municipal use in gallons per capita per day for the wholesaler's service area, maximum acceptable water loss, and the basis for the development of these goals. The goals established by wholesale water suppliers under this subparagraph are not enforceable;

(C) a description as to which practice(s) and/or device(s) will be utilized to measure and account for the amount of water diverted from the source(s) of supply;

(D) a monitoring and record management program for determining water deliveries, sales, and losses;

(E) a program of metering and leak detection and repair for the wholesaler's water storage, delivery, and distribution system;

(F) a requirement in every water supply contract entered into or renewed after official adoption of the water conservation plan, and including any contract extension, that each

successive wholesale customer develop and implement a water conservation plan or water conservation measures using the applicable elements of this chapter. If the customer intends to resell the water, then the contract between the initial supplier and customer must provide that the contract for the resale of the water must have water conservation requirements so that each successive customer in the resale of the water will be required to implement water conservation measures in accordance with applicable provisions of this chapter;

(G) a reservoir systems operations plan, if applicable, providing for the coordinated operation of reservoirs owned by the applicant within a common watershed or river basin. The reservoir systems operations plans shall include optimization of water supplies as one of the significant goals of the plan;

(H) a means for implementation and enforcement, which shall be evidenced by a copy of the ordinance, rule, resolution, or tariff, indicating official adoption of the water conservation plan by the water supplier; and a description of the authority by which the water supplier will implement and enforce the conservation plan; and

(I) documentation of coordination with the regional water planning groups for the service area of the wholesale water supplier in order to ensure consistency with the appropriate approved regional water plans.

(2) Additional conservation strategies. Any combination of the following strategies shall be selected by the water wholesaler, in addition to the minimum requirements of paragraph (1) of this section, if they are necessary in order to achieve the stated water conservation goals of the plan. The commission may require by commission order that any of the following strategies be implemented by the water supplier if the commission determines that the strategies are necessary in order for the conservation plan to be achieved:

(A) conservation-oriented water rates and water rate structures such as uniform or increasing block rate schedules, and/or seasonal rates, but not flat rate or decreasing block rates;

(B) a program to assist agricultural customers in the development of conservation pollution prevention and abatement plans;

(C) a program for reuse and/or recycling of wastewater and/or graywater; and

(D) any other water conservation practice, method, or technique which the wholesaler shows to be appropriate for achieving the stated goal or goals of the water conservation plan.

(3) Review and update requirements. The wholesale water supplier shall review and update its water conservation plan, as appropriate, based on an assessment of previous five-year and ten-year targets and any other new or updated information. A wholesale water supplier shall review and update the next revision of its water conservation plan every five years to coincide with the regional water planning group.