Contents

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Chapter 6 – Water Conservation and Drought Management Plans

This chapter presents the minimum necessary requirements for conservation plans and drought contingency plans and provides (at the end of the chapter) model conservation plans and drought contingency plans for the various water user categories. The model conservation plans and drought contingency plans were developed specifically for Region H in accordance with and as described in Texas Water Code 11.1271 and 11.1272. Model drought contingency plans, which are periodically updated, can be downloaded from the Texas Commission on Environmental Quality (TCEQ) website (www.tceq.state.tx.us/). The drought contingency models presented in this chapter were downloaded from the TCEQ in August, 2009.

6.1 Water Conservation Plan

Water conservation plans are required by the Texas Commission on Environmental Quality (TCEQ)/Texas Water Development Board (TWDB) for the following water users:

- Applicants who apply for TWDB loan requests
- Applicants for new or amended water rights
- Any holder of an existing permit, certified filing, or certificate of adjudication if requested by TCEQ/TWDB for appropriation of a water right greater than 1000 acre-feet per year for municipal, industrial, and other uses excluding irrigation. For irrigation uses, the threshold is 10,000 acre-feet per year.

Conservation plans developed for submittal with water right applications for appropriation of State water should discuss the evaluation of water conservation with respect to their application. This would include discussions of water conservation as an alternative to the potentially appropriated State water as well as the evaluation of any other conservation Best Management Practices (BMP) as an alternative to the new water right.

Minimum conservation and drought management plan requirements for specific water use categories are discussed in the following subsections.

6.1.1 Municipal Uses by Public Water Suppliers[1]

Water conservation plans for municipal water use by public water suppliers (i.e., documented Region H municipal Water User Groups) must include specific information as listed below. If the plans do not provide information for each requirement, the public water supplier shall include in the plans an explanation of why the requirement is not applicable.

- A utility profile including, but not limited to, information regarding population and customer data, water use data, water supply system data, and wastewater system data.
- Until May 1, 2005, specification of conservation goals including, but not limited to, municipal per capita water use goals, the basis for the development of such goals, and a time frame for achieving the specified goals and,

[1] Information in this subsection was obtained from the Texas Administrative Code Title 30 Part 1 Chapter 288 Subchapter A Rule 288.2

- Beginning May 1, 2005, specific, quantified 5-year and 10-year targets for water savings to include goals for water loss programs and goals for municipal use in gallons per capita per day. The goals established by a public water supplier under this subparagraph are not enforceable.

- Metering device(s) within an accuracy of plus or minus 5.0 percent in order to measure and account for the amount of water diverted from the source of supply.

- A program for universal metering of both customer and public uses of water, for meter testing and repair, and for periodic meter replacement.

- Measures to determine and control unaccounted-for uses of water (for example: periodic visual inspections along distribution lines; annual or monthly audit of the water system to determine illegal connections, abandoned services, etc.).

- A program of continuing public education and information regarding water conservation.

- A water rate structure which is not "promotional," i.e., a rate structure which is cost-based and which does not encourage the excessive use of water.

- 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 in order to optimize available water supplies.

- A means of implementation and enforcement which should be shown by either of the following:

    1. A copy of the ordinance, resolution, or tariff indicating official adoption of the water conservation plan by the water supplier, or

    2. A description of the authority by which the water supplier will implement and enforce the conservation plan.

- Documentation of coordination with the Region H Regional Water Planning Group for the service area of the public water supplier to ensure consistency with the appropriate approved Region H Regional Water Plan.

Water conservation plans for municipal uses by public drinking water suppliers serving a current population of 5,000 or more and/or a projected population of 5,000 or more within the next 10 years subsequent to the effective date of the plan must also include the following information:

- A program of leak detection, repair, and water loss accounting for the water transmission, delivery, and distribution system to control unaccounted-for uses of water.

- A record management system to record water pumped, water deliveries, water sales, and water losses that allows for the separation of water sales and uses into residential, commercial, public and institutional, and industrial users.

- A requirement in every wholesale water supply contract entered into or renewed after official adoption of the plan (by either ordinance, resolution, or tariff), 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 in this chapter. If the customer intends to resell the water, 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 the provisions of this chapter.

If the conservation goals cannot be achieved through the minimum conservation plan requirements, the water supplier can implement water conservation strategies to help achieve their goals. The TCEQ can also require the water supplier to implement a conservation BMP strategy to achieve the goals set in the conservation plan. Some of the water conservation BMPs are listed below, and a more detailed list can be found in the *Water Conservation Best Management Practices Guide, Report 362. Texas Water Development Board, November 2004.*

- 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.
- Adoption of ordinances, plumbing codes, and/or rules requiring water-conserving plumbing fixtures to be installed in new structures and existing structures undergoing substantial modification or addition.
- A program encouraging the replacement or retrofit of existing structures built prior to 1991 with water conserving plumbing fixtures.
- Reuse and/or recycling of wastewater and/or graywater.
- A program for pressure control and/or reduction in the distribution system and/or for customer connections.
- A program and/or ordinance(s) for landscape water management.
- A method for monitoring the effectiveness and efficiency of the water conservation plan.
- Any other water conservation practice, method, or technique which the water supplier shows to be appropriate for achieving the stated goal or goals of the water conservation plan.

A water conservation plan prepared in accordance with *31 TAC §363.15* (relating to Required Water Conservation Plan) of the TWDB, and substantially meeting the requirements of this section and other applicable commission rules, may be submitted to meet application requirements in accordance with a memorandum of understanding between the TCEQ and the TWDB.

Beginning May 1, 2005, a public water supplier for municipal use shall review and update its water conservation plan, as appropriate, based on an assessment of previous 5-year and 10-year targets and any other new or updated information. The public water supplier for municipal use shall review and update the next revision of its water conservation plan no later than May 1, 2009, and every five years after that date to coincide with the Region H Water Planning Group's regional water plan update.

6.1.2 Industrial or Mining[2]

Water conservation plans for industrial or mining uses of water must provide the information as outlined below. If the plan does not provide information for each requirement, the industrial or mining water user shall include in the plan an explanation of why the requirement is not applicable.

[2] Information in this subsection was obtained from the Texas Administrative Code Title 30 Part 1 Chapter 288 Subchapter A Rule 288.3

- A description of the use of the water in the production process, including how the water is diverted and transported from the source(s) of supply, how the water is utilized in the production process, and the estimated quantity of water consumed in the production process and therefore unavailable for reuse, discharge, or other means of disposal.

- Until May 1, 2005, specification of conservation goals, the basis for the development of such goals, and a time frame for achieving the specified goals and,

- Beginning May 1, 2005, specific, quantified 5-year and 10-year targets for water savings and the basis for the development of such goals. The goals established by industrial or mining water users under this paragraph are not enforceable.

- A description of the device(s) and/or method(s) within an accuracy of plus or minus 5.0 percent to be used in order to measure and account for the amount of water diverted from the source of supply.

- Leak-detection, repair, and accounting for water loss in the water distribution system.

- Application of state-of-the-art equipment and/or process modifications to improve water use efficiency.

- Any other water conservation practice, method, or technique which the user shows to be appropriate for achieving the stated goal or goals of the water conservation plan.

Beginning May 1, 2005, an industrial or mining water user shall review and update its water conservation plan, as appropriate, based on an assessment of previous 5-year and 10-year targets and any other new or updated information. The industrial or mining water user shall review and update the next revision of its water conservation plan no later than May 1, 2009, and every 5 years after that date to coincide with the Region H Water Planning Group regional water plan update.

6.1.3 Agriculture[3]

A water conservation plan for agricultural use of water must provide information in response to the following subsections. If the plan does not provide information for each requirement, the agricultural water user must include in the plan an explanation of why the requirement is not applicable.

For an individual agricultural user other than for irrigation:

- A description of the use of the water in the production process, including how the water is diverted and transported from the source(s) of supply, how the water is utilized in the production process, and the estimated quantity of water consumed in the production process and therefore unavailable for reuse, discharge, or other means of disposal.

- Until May 1, 2005, specification of conservation goals, the basis for the development of such goals, and a time frame for achieving the specified goals.

- Beginning May 1, 2005, specific, quantified five-year and ten-year targets for water savings and the basis for the development of such goals. The goals established by agricultural water users under this subparagraph are not enforceable.

[3] Information in this subsection was obtained from the Texas Administrative Code Title 30 Part 1 Chapter 288 Subchapter A Rule 288.4

- A description of the device(s) and/or method(s) within an accuracy of plus or minus 5.0 percent to be used in order to measure and account for the amount of water diverted from the source of supply.

- Leak-detection, repair, and accounting for water loss in the water distribution system.

- Application of state-of-the-art equipment and/or process modifications to improve water use efficiency.

- Any other water conservation practice, method, or technique which the user shows to be appropriate for achieving the stated goal or goals of the water conservation plan.

For an individual agricultural irrigation user:

- A description of the irrigation production process which shall include, but is not limited to, the type of crops and acreage of each crop to be irrigated, monthly irrigation diversions, any seasonal or annual crop rotation, and soil types of the land to be irrigated.

- A description of the irrigation method or system and equipment including pumps, flow rates, plans, and/or sketches of the system layout.

- A description of the device(s) and/or methods within an accuracy of plus or minus 5.0 percent to be used in order to measure and account for the amount of water diverted from the source of supply.

- Until May 1, 2005, specification of conservation goals including, where appropriate, quantitative goals for irrigation water use efficiency and a pollution abatement and prevention plan.

- Beginning May 1, 2005, specific, quantified 5-year and 10-year targets for water savings including, where appropriate, quantitative goals for irrigation water use efficiency and a pollution abatement and prevention plan. The goals established by an individual irrigation water user under this subparagraph are not enforceable.

- Water-conserving irrigation equipment and application system or method including, but not limited to, surge irrigation, low pressure sprinkler, drip irrigation, and nonleaking pipe.

- Leak-detection, repair, and water-loss control.

- Scheduling the timing and/or measuring the amount of water applied (e.g., soil moisture monitoring).

- Land improvements for retaining or reducing runoff and increasing the infiltration of rain and irrigation water including, but not limited to, land leveling, furrow diking, terracing, and weed control.

- Tailwater recovery and reuse.

- Any other water conservation practice, method, or technique which the user shows to be appropriate for preventing waste and achieving conservation.

For a system providing agricultural water to more than one user:

- A system inventory for the supplier's:

  - Structural facilities including the supplier's water storage, conveyance, and delivery structures.

  - Management practices, including the supplier's operating rules and regulations, water pricing policy, and a description of practices and/or devices used to account for water deliveries.

  - A user profile including square miles of the service area, the number of customers taking delivery of water by the system, the types of crops, the types of irrigation systems, the types of drainage systems, and total acreage under irrigation, both historical and projected.

- Until May 1, 2005, specification of water conservation goals, including maximum allowable losses for the storage and distribution system.

- Beginning May 1, 2005, specific, quantified 5-year and 10-year targets for water savings including maximum allowable losses for the storage and distribution system. The goals established by a system providing agricultural water to more than one user under this subparagraph are not enforceable.

- A description of the practice(s) and/or device(s) which will be utilized to measure and account for the amount of water diverted from the source(s) of supply.

- A monitoring and record management program of water deliveries, sales, and losses.

- A leak-detection, repair, and water loss control program.

- A program to assist customers in the development of on-farm water conservation and pollution prevention plans and/or measures.

- A requirement in every wholesale water supply contract entered into or renewed after official adoption of the plan (by either ordinance, resolution, or tariff), 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 in this chapter. If the customer intends to resell the water, 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.

- Official adoption of the water conservation plan and goals, by ordinance, rule, resolution, or tariff, indicating that the plan reflects official policy of the supplier.

- Any other water conservation practice, method, or technique which the supplier shows to be appropriate for achieving conservation.

- Documentation of coordination with the regional water planning groups in order to ensure consistency with appropriate approved regional water plans.

A water conservation plan prepared in accordance with the rules of the United States Department of Agriculture Natural Resource Conservation Service, the Texas State Soil and Water Conservation Board, or other Federal or State agencies and substantially meeting the requirements of this section and other applicable TCEQ rules may be submitted to meet application requirements in accordance with a memorandum of understanding between the TCEQ and that agency.

Beginning May 1, 2005, an agricultural water user shall review and update its water conservation plan, as appropriate, based on an assessment of previous 5-year and 10-year targets and any other new or updated information. An agricultural water user shall review and update the next revision of its water conservation plan no later than May 1, 2009, and every 5 years after that date to coincide with the Region H Water Planning Group regional water plan update.

6.1.4 Wholesale Water Providers[4]

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.

- A description of the wholesaler's service area, including population and customer data, water use data, water supply system data, and wastewater data.

- Until May 1, 2005, specification of conservation goals including, where appropriate, target per capita water use goals for the wholesaler's service area, maximum acceptable unaccounted-for water, the basis for the development of these goals, and a time frame for achieving these goals and,

- Beginning May 1, 2005, specific, quantified 5-year and 10-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 unaccounted-for water, and the basis for the development of these goals. The goals established by wholesale water suppliers under this subparagraph are not enforceable.

- 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.

- A monitoring and record management program for determining water deliveries, sales, and losses.

- A program of metering and leak detection and repair for the wholesaler's water storage, delivery, and distribution system.

- 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, 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.

- 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.

- 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

[4] Information in this subsection was obtained from the Texas Administrative Code Title 30 Part 1 Chapter 288 Subchapter A Rule 288.5

by the water supplier; and a description of the authority by which the water supplier will implement and enforce the conservation plan.

- 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 Region H Regional Water Plan.

6.1.5 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 TCEQ may require by executive order that any of the following strategies be implemented by the water supplier if the TCEQ determines that the strategies are necessary in order for the conservation plan to be achieved:

- 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.

- A program to assist agricultural customers in the development of conservation pollution prevention and abatement plans.

- A program for reuse and/or recycling of wastewater and/or graywater.

- 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.

Beginning May 1, 2005, 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 no later than May 1, 2009, and every five years after that date to coincide with the Region H Water Planning Group regional water plan update.

6.1.6 Other Water Uses[5]

A water conservation plan for any other purpose or use not covered in this subchapter shall provide information where applicable about those practices, techniques, and technologies that will be used to reduce the consumption of water, prevent or reduce the loss or waste of water, maintain or improve the efficiency in the use of water, increase the recycling and reuse of water, or prevent the pollution of water.

6.1.7 Water Conservation Evaluation

A special study was included in the 2011 Water Plan update to analyze the impact water conservation strategies have had on observed water demands. To accomplish this goal, surveys were produced and distributed to approximately 254 water users and wholesale water providers within Region H. The surveys focused identifying the water conservation measures that have been implemented, the measures that are considered for future implementation, and measureable impacts of implemented measures. The results of the study were used to revise the conservation strategies to reflect the information collected from the survey responses.

[5] Information in this subsection was obtained from the Texas Administrative Code Title 30 Part 1 Chapter 288 Subchapter A Rule 288.6

6.1.7.1 Water Conservation Survey

Survey requesting information regarding water conservation was mailed to water utilities and Wholesale Water Providers (WWPs) in Region H. The survey asked each utility to provide information regarding recent per capita water use, current and future conservation strategies, efficacy of current strategies and the cost associated with each strategy. A copy of the Letter and Survey is provided in *Appendix 6A*. The results of the survey are included as *Appendix 6B*.

6.1.7.2 Survey Results

The results of the survey were compiled to evaluate which conservation measures were currently being performed and which measures will most likely be evaluated by the WUGs for future use.

The evaluation of the returned surveys yielded the most-likely conservation BMPs to be considered for conservation management strategy. The WUGs were classified into four groups consisting of:

- Specific Water Conservation Strategies
- (Type 1) Population of 3,300 persons or fewer
- (Type 2) Population greater than 3,300 persons but 10,000 or fewer persons
- (Type 3) Population greater than 10,000 persons

Approximately 35 surveys were returned out of the 254 conservation letters mailed. 34 surveys were returned by utilities detailing conservation practices for municipal, industrial and commercial customers. 1 survey was returned detailing agricultural conservation methods. The results described in the following paragraphs will focus on the utilities that have implemented water conservation measures for municipal, industrial, and commercial use. The utilities serving populations of 3,300 or fewer persons consisted of approximately 17 percent of the survey responses. Utilities serving populations greater than 3,300 persons but 10,000 or fewer persons consisted of approximately 43 percent of the survey responses. The remaining 40 percent was from wholesale water providers or utilities serving populations greater than 10,000 persons.

6.1.7.3 Additional Water Conservation Plans

Water conservation plans submitted to the Region H WPG prior to August 2008 were used to develop additional WUG specific water conservation plans. To accurately reflect water conservation strategies obtained from individual WUGs, specific water conservation strategies were developed to reflect the individual WUG goals. Specific Water Conservation Strategies were developed for the WUGs described below. Additional water conservation plans obtained from the TWDB and TCEQ were used to identify additional water conservation practices utilized by public water suppliers in Region H.

6.1.7.4 Level of Impact

The 2006 Region H Water Plan identified water conservation as a strategy to address shortages for approximately 205 municipal MUGs. Based on the Survey Results and additional Water Conservation Plans received by the RWPG approximately 86% (6 out of 7 responses) of the WUGs that were assigned a water conservation strategy in 2010 have implemented a water conservation plan.

6.1.7.5 Conclusions

Results obtained from the Conservation Survey responses were sufficient enough to determine the types of water conservation measures that were anticipated by water utilities of different sizes.

- Specific conservation strategies could be created for WUGs that provided water conservation plans in response to the survey or to the Region H WPG.

- The level of water conservation considered by entities that responded to the survey supports the WUG classification levels developed in the 2006 Region H Plan.

- Many small municipal water utilities that serve populations smaller than 500 have implemented basic conservation plans that typically include public information mail outs and water conservation price structures to deter excessive use. These utilities are generally collectively represented in the plan by "County-Other" WUGs. Many "County-Other" WUGs with shortages in the 2006 Plan were assigned more aggressive conservation strategies based on their population. This is inconsistent with the fact that the utilities represented in these WUGs have smaller populations.

- Regional Water Authorities such as the Central Harris County Regional Water Authority (CHCRWA), North Fort Bend Water Authority (NFBWA), North Harris County Regional Water Authority (NHCRWA) and the West Harris County Regional Water Authority (WHCRWA) supply water to a collection of municipal utility districts with various populations. The 2006 Plan recommended aggressive conservation strategies for the NHCRWA and the WHCRWA based on their collective populations. This is inconsistent with the fact that many conservation strategies will have to be implemented by the individual municipal utility districts. Member cities associated with Regional Water Authorities such as Jersey Village (NHCRWA) and Katy (WHCRWA) will be able to implement more aggressive conservation measures.

- Little information was provided to recommend revising the costs associated with various water conservation measures. However, the costs that were provided could be utilized to develop WMS costs for specific WUG conservation strategies.

6.1.7.6 Application of Water Conservation Strategies

Water conservation was applied prior to expanding groundwater use and water supply contracts for those WUGs with existing contracts with wholesale water providers. Generally, this strategy was only applied to those WUGs with shortages as identified in *Chapter 4*. The WUGs were classified into four groups for purposes of applying this strategy. The first group of WUG conservation strategies was assigned to WUGs with specific conservation strategies. Three additional generic strategies were developed to classify WUGs by population size and assign conservation savings accordingly.

Specific Water Conservation Strategies

Specific water conservation strategies were tailored to WUG water conservation plans that had been submitted to the Regional Water Planning Group. Approximately 10 WUG specific conservation strategies were developed for the 2011 Region H Water Plan. Water conservation savings were assigned in every decade to municipalities with WUG specific strategies whether or not the WUG was experiencing a shortage. Water utilities that were included in County-Other WUGs or did not submit a water conservation plan to the RWPG were assigned a generic water conservation plan based on WUG population.

Generic Water Conservation Strategies

Three WUG size classifications were developed to recognize and account for the various degrees by which WUGs of different sizes will likely implement advanced conservation measures. The three WUG classifications are described in *Section 6.1.7.2*. Larger WUGs with greater resources are more likely to be able to implement a comprehensive conservation program than a smaller WUG with

lesser resources. Therefore, the expected water savings and costs for the region are also likely to differ depending on the relative size of the WUG.

6.2 Drought Contingency Plan[6]

Drought contingency plans can be required by the TCEQ/TWDB for certain applicants and water rights holders.

- The TCEQ shall by rule require wholesale and retail public water suppliers and irrigation districts to develop drought contingency plans consistent with the appropriate approved regional water plan to be implemented during periods of water shortages and drought.

- The wholesale and retail public water suppliers and irrigation districts shall provide an opportunity for public input during preparation of their drought contingency plans and before submission of the plans to the commission.

Beginning in May 2005, the following are additional requirements in the drought contingency plan:

- Specific, quantified targets for water use reductions to be achieved during periods of water shortages and drought. The entity preparing the plan shall establish the targets.

- The TCEQ and the TWDB by joint rule shall identify quantified target goals for drought contingency plans that wholesale and retail public water suppliers, irrigation districts, and other entities may use as guidelines in preparing drought contingency plans. Goals established under this subsection are not enforceable requirements.

The TCEQ and the TWDB shall jointly develop model drought contingency programs for different types of water suppliers that suggest best management practices for accomplishing the highest practicable levels of water use reductions achievable during periods of water shortages and drought for each specific type of water supplier.

6.2.1 Municipal Uses by Public Water Suppliers[7]

Drought contingency plans for retail public water suppliers, where applicable, and for public water suppliers, must include the following minimum elements.

- Preparation of the plan shall include provisions to actively inform the public and affirmatively provide opportunity for public input. Such acts may include, but are not limited to, having a public meeting at a time and location convenient to the public and providing written notice to the public concerning the proposed plan and meeting.

- Provisions shall be made for a program of continuing public education and information regarding the drought contingency plan.

- The drought contingency plan must document coordination with the regional water planning groups for the service area of the retail public water supplier to ensure consistency with the appropriate approved regional water plans.

[6] Model drought contingency plans specifically for Region H were developed for each water use category and are located at the end of this Chapter.
[7] Information in this subsection was obtained from the Texas Administrative Code Title 30 Part 1 Chapter 288 Subchapter A Rule 288.20

- The drought contingency plan must include a description of the information to be monitored by the water supplier and specific criteria for the initiation and termination of drought response stages, accompanied by an explanation of the rationale or basis for such triggering criteria.

- The drought contingency plan must include drought or emergency response stages providing for the implementation of measures in response to at least the following situations:

    - Reduction in available water supply up to a repeat of the drought of record.

    - Water production or distribution system limitations.

    - Supply source contamination.

    - System outage due to the failure or damage of major water system components (e.g., pumps).

- The drought contingency plan must include specific, quantified targets for water use reductions to be achieved during periods of water shortage and drought. The entity preparing the plan shall establish the targets. The goals established by the entity under this subparagraph are not enforceable.

- The drought contingency plan must include the specific water supply or water demand management measures to be implemented during each stage of the plan including, but not limited to, the following:

    - Curtailment of nonessential water uses.

    - Utilization of alternative water sources and/or alternative delivery mechanisms with the prior approval of the TCEQ executive director as appropriate (e.g., interconnection with another water system, temporary use of a nonmunicipal water supply, use of reclaimed water for nonpotable purposes, etc.).

- The drought contingency plan must include the procedures to be followed for the initiation or termination of each drought response stage, including procedures for notification of the public.

- The drought contingency plan must include procedures for granting variances to the plan.

- The drought contingency plan must include procedures for the enforcement of mandatory water use restrictions, including specification of penalties (e.g., fines, water rate surcharges, discontinuation of service) for violations of such restrictions.

Privately owned water utilities shall prepare a drought contingency plan in accordance with this section and incorporate such plan into their tariff.

Any water supplier that receives all or a portion of its water supply from another water supplier shall consult with that supplier and shall include in the drought contingency plan appropriate provisions for responding to reductions in that water supply. A wholesale or retail water supplier shall notify the executive director within 5 business days of the implementation of any mandatory provisions of the drought contingency plan.

The retail public water supplier shall review and update, as appropriate, the drought contingency plan, at least every 5 years, based on new or updated information, such as the adoption or revision of the Region H Regional Water Plan.

6.2.2 Irrigation Uses[8]

A drought contingency plan for an irrigation use, where applicable, must include the following minimum elements. Drought contingency plans for irrigation water suppliers must include policies and procedures for the equitable and efficient allocation of water on a pro rata basis during times of shortage in accordance with *Texas Water Code, §11.039*.

- Preparation of the plan shall include provisions to actively inform and to affirmatively provide opportunity for users of water from the irrigation system to provide input into the preparation of the plan and to remain informed of the plan. Such acts may include, but are not limited to, having a public meeting at a time and location convenient to the water users and providing written notice to the water users concerning the proposed plan and meeting.

- The drought contingency plan must document coordination with the regional water planning groups to ensure consistency with the appropriate approved regional water plans.

- The drought contingency plan must include water supply criteria and other considerations for determining when to initiate or terminate water allocation procedures, accompanied by an explanation of the rationale or basis for such triggering criteria.

- The drought contingency plan must include specific, quantified targets for water use reductions to be achieved during periods of water shortage and drought. The entity preparing the plan shall establish the targets. The goals established by the entity under this subparagraph are not enforceable.

- The drought contingency plan must include methods for determining the allocation of irrigation supplies to individual users.

- The drought contingency plan must include a description of the information to be monitored by the water supplier and the procedures to be followed for the initiation or termination of water allocation policies.

- The drought contingency plan must include procedures for use accounting during the implementation of water allocation policies.

- The drought contingency plan must include policies and procedures, if any, for the transfer of water allocations among individual users within the water supply system or to users outside the water supply system.

- The drought contingency plan must include procedures for the enforcement of water allocation policies, including specification of penalties for violations of such policies and for wasteful or excessive use of water.

- Wholesale water customers. Any irrigation water supplier that receives all or a portion of its water supply from another water supplier shall consult with that supplier, and shall include in the drought contingency plan appropriate provisions for responding to reductions in that water supply.

[8] Information in this subsection was obtained from the Texas Administrative Code Title 30 Part 1 Chapter 288 Subchapter A Rule 288.21

- Protection of public water supplies. Any irrigation water supplier that also provides or delivers water to a public water supplier(s) shall consult with that public water supplier(s) and shall include in the plan, mutually agreeable and appropriate provisions to ensure an uninterrupted supply of water necessary for essential uses relating to public health and safety. Nothing in this provision shall be construed as requiring the irrigation water supplier to transfer irrigation water supplies to non-irrigation use on a compulsory basis or without just compensation.

Irrigation water users shall review and update, as appropriate, the drought contingency plan at least every five years, based on new or updated information such as adoption or revision of the Region H Regional Water Plan.

6.2.3 Wholesale Water Providers[9]

A drought contingency plan for a wholesale water provider should include at a minimum the following information:

- Preparation of the plan shall include provisions to actively inform the public, to affirmatively provide opportunity for user input in the preparation of the plan, and for informing wholesale customers about the plan. Such acts may include, but are not limited to, having a public meeting at a time and location convenient to the public and providing written notice to the public concerning the proposed plan and meeting.

- The drought contingency plan must document coordination with the Region H Regional Water Planning Group for the service area of the wholesale water provider to ensure consistency with the Region H Regional Water Plan.

- The drought contingency plan must include a description of the information to be monitored by the water supplier and specific criteria for the initiation and termination of drought response stages, accompanied by an explanation of the rationale or basis for such triggering criteria.

- The drought contingency plan must include a minimum of three drought or emergency response stages providing for the implementation of measures in response to water supply conditions during a repeat of the drought-of-record.

- The drought contingency plan must include the procedures to be followed for the initiation or termination of drought response stages, including procedures for notification of wholesale customers regarding the initiation or termination of drought response stages.

- The drought contingency plan must include specific, quantified targets for water use reductions to be achieved during periods of water shortage and drought. The entity preparing the plan shall establish the targets. The goals established by the entity under this paragraph are not enforceable.

- The drought contingency plan must include the specific water supply or water demand management measures to be implemented during each stage of the plan including, but not limited to, the following:

    - Pro rata curtailment of water deliveries to or diversions by wholesale water customers as provided in *Texas Water Code, §11.039*; and

[9] Information in this subsection was obtained from the Texas Administrative Code Title 30 Part 1 Chapter 288 Subchapter A Rule 288.22

  - Utilization of alternative water sources with the prior approval of the TCEQ executive director as appropriate (e.g., interconnection with another water system, temporary use of a non-municipal water supply, use of reclaimed water for non-potable purposes, etc.).

- The drought contingency plan must include a provision in every wholesale water contract entered into or renewed after adoption of the plan, including contract extensions, that in case of a shortage of water resulting from drought, the water to be distributed shall be divided in accordance with *Texas Water Code, §11.039*.

- The drought contingency plan must include procedures for granting variances to the plan.

- The drought contingency plan must include procedures for the enforcement of any mandatory water use restrictions, including specification of penalties (e.g., liquidated damages, water rate surcharges and discontinuation of service) for violations of such restrictions.

The wholesale water provider shall notify the executive director within five business days of the implementation of any mandatory provisions of the drought contingency plan. The wholesale water provider shall review and update, as appropriate, the drought contingency plan at least every five years, based on new or updated information such as adoption or revision of the Region H Regional Water Plan.

6.2.4 Region H Drought Management Study

The Region H Water Planning Group (RHWPG) requested and received funding from the Texas Water Development Board (TWDB) to conduct three studies in advance of the 2011 update of the Region H Water Plan. One study focused on evaluating the efficacy and impact of drought contingency (a.k.a. drought response) measures as a potential water management strategy in Region H. The key question addressed by this study was:

Can implementation of drought contingency measures within Region H during critical drought periods be used in lieu of other water management strategies to meet projected water demands?

The scope of work for the Region H Drought Management Study was divided into two primary tasks. The first task focused on evaluating the efficacy or effectiveness of drought contingency plans adopted and implemented by municipal water suppliers within Region H, elsewhere in Texas, and nationally. The second task consisted of a quantitative evaluation of the potential impact of drought response measures on major water supply reservoirs in Region H, namely Lake Conroe, Lake Houston, Lake Livingston and the proposed Allens Creek Reservoir. Specifically, Texas Commission on Environmental Quality (TCEQ) water availability models were used to analyze reservoir conditions (i.e., levels and storage volumes) during critical drought periods both with and without implementation of drought response measures.

The study found that most drought contingency plans place a heavy emphasis on “demand management measures” that are designed to reduce water demands by means of curtailment of certain uses. It’s important to note that demand management in this context is distinctly different from water conservation, although the terms are often used interchangeably. The objective of water conservation is to achieve lasting, long-term reductions in water use through improved water use efficiency, reduced waste, and through reuse and recycling. By contrast, demand curtailment is focused on temporary reductions in water use in response to temporary and potentially recurring water supply shortages or other water supply emergencies (e.g., equipment failures caused by excessively high peak water demands). Common approaches to water demand curtailment, applied individually or in combination, include:

- Prescriptive restrictions or bans on non-essential water uses and waste. In a municipal setting, such restrictions commonly target landscape irrigation, car washing, ornamental fountains, etc.

- Use of water pricing strategies, such as excess use surcharges, to encourage compliance with water use restrictions or to penalize excessive water use.

- Water rationing, where water is allocated to users on some proportionate or pro rata basis.

A significant number of public water systems in Region were found on the TCEQ drought impact list and implemented drought measures during the years 1998 (62 systems), 2000 (35 systems) and 2005 (39 systems). The counties that recorded the most public water systems on the list are Harris and Montgomery counties. Together, Harris and Montgomery Counties accounted for approximately 55 percent of the systems on the drought impact list. Approximately 90 percent of the water systems on the drought impact list serve populations less than or equal to 10,000 people and have 5,000 connections or fewer. TCEQ records also indicate that the list is comprised mostly of public water systems that are supplied by groundwater.

Surveys of Major Public Water Systems indicated that none of the Region H public water systems that were on the TCEQ drought impact list over the period from 1996 to 2008 experienced actual water shortage conditions. Rather, it appears that these water systems were placed on the list because of high seasonal peak water demands and attendant problems or concerns with water production infrastructure. The majority of Region H public water systems on the TCEQ drought impact list are municipal utility districts (MUDs), water supply corporations (WSCs), subdivisions and rural municipalities that rely on groundwater from local wells. Sustained high peak water demands during the summer months often create a strain on groundwater supplies, not so much in terms of the availability of supply but rather in terms of groundwater production capacity, indicating a need perhaps for additional wells to increase delivery capacity or deeper wells to compensate for greater than normal draw down. Public water systems that rely on surface water often experience similar problems in terms of limited capacity to treat raw water and/or distribution system capacity limitations.

The study found that there is little empirical research to quantity the effectiveness of drought response measures. Most water suppliers that have implemented DCPs have not thoroughly evaluated the effects. “Post-event” analyses was found to typically only report “gross” changes in water demand, most commonly expressed as a percentage reduction. It was also found that most DCPs in Texas are focused on seasonal peaking problems rather than actual water shortage and are always addressed at peak shaving.

The Drought Management Study concluded that, while drought contingency planning is a critical component of water supply management and may provide short-term benefits during severe drought conditions; drought management alone will not replace any recommended long-term water management strategies. This conclusion was based on the following:

1. According to the current Region H Plan, there are no unmet water supply needs associated with existing reservoirs.
2. The current Region H Plan, therefore, does not include water management strategies that could be replaced by demand curtailment during drought. However the magnitude and timing of the TRA to SJRA inter-basin transfer strategy would be affected by the conjunctive use of existing supplies in Montgomery County. Conjunctive use of existing supplies would be recommended prior to inter-basin transfers.
3. Implementation of DCPs would not “free up” water supply for use by others because the demand reduction would only occur during critical drought – demand curtailment is not the same as water conservation.

4. During “normal” conditions, water supply would be needed to meet full unconstrained demand.
5. Current TWDB policy for regional water supply planning requires that all identified water supply needs, based on drought-of-record conditions, be satisfied except in cases where there are no feasible strategies.
6. Drought contingency measures were shown to be effective in “stretching” water supplies during drought conditions. However, this “stretching” of supplies during drought were measured in terms of months and therefore, while this may be critical for an individual supply in crisis, is insignificant in the context of long-term water planning. Long term water planning assumes that only the firm yield from reservoirs is available for allocation. Water saved by implementing drought contingency measures would only be available on an interruptible basis during drought conditions. As a result, the saved water could only be allocated to meet demands that are present on an interruptible basis; that is, the increase in demands above normal hydrologic conditions in response to drought conditions. Under this scenario, implementation of drought contingency measures could be used to reduce dry year demands down to average year demand levels. Traditional supply sources and long-term water management strategies would still be required to supply average year demands.
7. Drought contingency planning and the various measures implemented to curtail demand during severe drought conditions are very critical components of any water supply management plan. These plans should be evaluated often and the actions enforced when needed to curtail demand and potentially extend water supplies during drought conditions. However, these measures alone will not replace the need to implement recommended long-term water management strategies.

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Model Water Conservation Plan Template

Municipal Uses

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Model Water Conservation Plan Template – Municipal Uses
Introduction and Background

Brief introduction describing WUG, its provided services, and general information.

1. Purpose

Purpose is to identify and establish principles, practices, and standards to effectively conserve and efficiently use available water supplies and water distribution system capacity. Possibly provide historical annual average residential water demands and the goals for reductions in municipal demand included in the plan.

2. Location

General location of WUG and its service area

3. Customer Data

Population and Service Area Data

- Provide CCN certificate (if applicable) from TCEQ and service area map.
- Provide service area size in square miles.
- Provide current population of service area.
- Provide current population served by utility (water, wastewater, etc.).
- Provide population served by utility for previous five years.
- Provide projected population for service area for 2010, 2020, 2030, 2040, 2050.
- Provide source/method of calculating current and projected populations.

Active Connections

- Provide current number of active connections by user type and whether they are metered or not-metered (Metered Residential, Not-metered Residential, Metered Commercial, Not-metered Commercial, Metered Industrial, Not-metered Industrial, Metered Public, Not-metered Public, Metered Other, Not-metered Other).
- Provide net number of new connections/year for most recent three years by user type.

High Volume Customers

- Provide annual water use for five highest volume retail and wholesale customers indicating if treated or raw water delivery.

4. Water Use Data

Water Accounting Data

- Provide amount of water use monthly for previous five years in 1,000 gallons and indicate whether the water is raw water diverted or treated water distributed.
- Provide source/method of obtaining monthly water use for previous five years.

- Provide amount of water in 1,000 gallons delivered as recorded by user type (residential, commercial, industrial, wholesale, other).
- Provide previous five year records for unaccounted for water use.
- Provide previous five year records for annual peak-to-average daily use ratio.
- Provide municipal per capita water use for previous five years.
- Provide seasonal water use for previous five years (gpd).

Projected Water Demands

- Provide total water demand estimates for utility's planning horizon indicating data sources/methods for determining water demand.
- Discuss conservation measures already implemented, if any, including impacts of measures and methods of determination of impacts.

5. Water Supply System

Water Supply Sources

- Provide current water supply sources and amounts available for surface water, groundwater, contracts, and other.

Treatment and Distribution System

- Provide design daily system capacity.
- Provide storage capacity (elevated and ground).
- Provide description of water system including number of treatment plants, wells, storage tanks along with sketch of system.
- Provide estimates of time before additional facilities for supply, storage, and pumping will be needed without conservation measures.

6. Wastewater Utility System

Wastewater System Data

- Provide design capacity of wastewater treatment plant.
- Provide description of wastewater system in service area including TCEQ name, number of treatment plants, operator, owner, receiving stream of discharge if applicable.
- Provide sketch of plant and discharge point locations

Wastewater Data for Service Area

- Provide percent of water service area served by wastewater system.
- Provide monthly volume treated for previous three years.
- Provide quality information on treatment plant effluent for reuse applications.
- Determine ratio between treated water pumped and wastewater flow.

7. Utility Operating Data

Water and wastewater rates/ rate structure for all classes – provide list of rates

(Rates should be cost-based so that they do not promote the excessive use of water)

Other relevant data

8. Water Conservation Goals

Goals for municipal utilities established to maintain/reduce consumption measured in:

- Gallons per capita per day used
- Unaccounted for water uses
- Peak day to average day ratio
- Increase in reuse or recycling of water

TCEQ/TWDB will assess conservation goals based on whether the following is addressed:

- Identification of a water/wastewater problem
- Completion of utility profile
- Selection of goals based on technical potential to save water as in utility profile
- Performance of cost-benefit analysis of strategies

Complete following (in gpcd) to quantify conservation goals for utility's service area:

Estimation for reducing per capita water use:

- Reduction in unaccounted-for uses
- Reduction in indoor water use due to water-conserving plumbing fixtures
- Reduction in seasonal use
- Reduction in water use due to public education program

Planning goal (Specific quantified five and ten year targets for water savings to include goals for water loss programs and goals for municipal use, in gallons per capita day)

A schedule for implementing the plan to achieve the applicant's targets and goals

Needed reduction in per capita to meet planning goal

9. Water Conservation Plan Elements – Other Programs/BMPs That Should be Part of the Conservation Plan

Supplier:

A method for tracking the implementation and effectiveness of the plan

Metering Program

- A master meter(s) to measure and account for the amount of water diverted from the source of supply

- A program for universal metering of both customer and public uses of water, for meter testing and repair, and for periodic meter replacement)

Measures to Determine and Control Unaccounted for Water

- Measures to determine and control unaccounted-for uses of water (e.g., periodic visual inspections along distribution lines; annual or monthly audit of the water system to determine illegal connections, abandoned services, etc.)

Leak Detection and Repair (a program for leak detection, repair, and water loss accounting for the water transmission, delivery, and distribution system in order to control unaccounted-for uses of water)

Reservoir System Operating Plan

Customer:

Education Programs

- Media Campaign School Programs
- Public Exhibitions

Water Rate Structure

Examples of programs/BMPs that could be considered in achieving the conservation goals:

Supplier:

- Plumbing and Landscape Ordinances
- Toilet Replacement/Rebates
- Clothes Washer Replacement/Rebates
- Hot-on-demand Rebate – circulating pumps installed to reduce water waste while waiting for the water to get warm
- Refrigerated Air Conditioning Cash Rebate
- Rain Barrel Rebate
- Rainwater Harvesting Program
- Efficient Irrigation Rebate

Customer:

- Reuse and Recycling of Wastewater and Graywater

10. Regional Water Planning and Coordination

11. Authority and Adoption

- Means of implementation and enforcement

Model Water Conservation Plan Template

Industrial and Mining Uses

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Model Water Conservation Plan Template – Industrial and Mining Uses
Introduction and Background

Brief introduction describing WUG, its provided services, and general information.

1. Purpose

Purpose is to identify and establish principles, practices, and standards to effectively conserve and efficiently use available water supplies and water distribution system capacity.

Possibly provide historical annual average Industrial or Mining water demands and the goals for industrial or mining water demand reduction included in the plan. (The water conservation plan 5- and 10-year targets should be discussed in *Section 1.4 – Water Conservation Plan Goals*).

2. Location

General location of WUG and its service area

3. Water Use Data

Water Accounting Data

- Description of the use of the water in the production process, including how the water is diverted and transported from the source(s) of supply, how the water is utilized in the production process, and estimated quantity of water consumed in the production process and therefore unavailable for reuse, discharge, or other means of disposal.

Projected Water Demands

- Provide total water demand estimates for utility's planning horizon indicating data sources/methods for determining water demand.

- Discuss conservation measures already implemented, if any, including impacts of measures and methods of determination of impacts.

4. Water Conservation Goals

Planning goal (Specific quantified five and ten year targets for water savings to include goals for water loss programs and goals for industrial and mining uses).

A schedule for implementing the plan to achieve the applicant's targets and goals.

Needed reduction in gallons per day (gpd) to meet planning goal.

5. Water Conservation Plan Elements –Other Programs/BMPs that should be part of the conservation plan

A method for tracking the implementation and effectiveness of the plan

Metering Program

- A master meter(s) (accurate to within plus or minus 5 percent) to measure and account for the amount of water diverted from the supply source

Measures to Determine and Control Unaccounted for Water

- Measures to determine and control unaccounted-for uses of water (e.g., periodic visual inspections along distribution lines; annual or monthly audit of the water system to determine illegal connections, abandoned services, etc.)

Leak Detection and Repair (a program for leak detection, repair, and water loss accounting for the water transmission, delivery, and distribution system in order to control unaccounted-for uses of water)

List any application of state-of-the-art equipment and/or process modifications to improve water use efficiency

Examples of programs/BMPs that could be considered in achieving the conservation goals:

- Industrial Water Audit
- Industrial Water Waste Reduction
- Industrial Submetering
- Cooling Towers
- Cooling Systems (other than cooling towers)
- Industrial Alternative Sources and Reuse of Process Water
- Rinsing/Cleaning
- Water Treatment
- Boiler and Steam Systems
- Refrigeration (including chilled water)
- Once through Cooling
- Management and Employee Programs
- Industrial Landscape
- Industrial Site Specific Conservation

6. Regional Water Planning and Coordination

Beginning May 1, 2005, an industrial or mining water user 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. The industrial or mining water user shall review and update the plan with the next revision of this water conservation plan coinciding with the Lavaca regional water planning process

Model Water Conservation Plan Template

Agricultural Uses

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Model Water Conservation Plan Template – Agricultural Uses
Introduction and Background

Brief introduction describing WUG, its provided services, and general information

1. Purpose

Purpose is to identify and establish principles, practices, and standards to effectively conserve and efficiently use available water supplies and water distribution system capacity.

Possibly provide historical annual average agricultural water demands and the goals for reduction in agricultural water demand included in the plan.

2. Location and General Information

General location of WUG and its service area

System Providing Agricultural Water to More Than One User

- System Inventory for the Suppliers facilities including water storage, conveyance, and delivery structures. Also discuss the operating practices and rules as well as water pricing policy. Accounting practices for the water should be briefly discussed.

- User profile including square miles of the service area, the number of customers taking delivery of water by the system, the types of crops, the types of irrigation systems, the types of drainage systems, and total acreage under irrigation, both historical and projected.

3. Water Use Data

Water Accounting Data

Agricultural Use Other than Irrigation

- Description of the use of the water in the production process, including how the water diverted and transported from the source(s) of supply, how the water is utilized in the production process, and estimated quantity of water consumed in the production process and therefore unavailable for reuse, discharge, or other means of disposal.

Individual Irrigation User

- Description of the irrigation production process, including type of crops to be irrigated, monthly irrigation diversions, any seasonal or annual crop rotation, and soil types of the land to be irrigated.

- A description of the irrigation method or delivery system and equipment including pumps, flow rates, plans, and/or schematics of the system layout.

All Agricultural Users

Projected Water Demands

- Provide total water demand estimates for utility's planning horizon indicating data sources/methods for determining water demand

- Discuss conservation measures already implemented, if any, including impacts of measures and methods for determination of impacts.

4. Water Conservation Goals

All Agricultural Users

- Planning goal (Specific, quantified five-year and ten-year targets for water savings including, where appropriate, quantitative goals for irrigation/agricultural water use efficiency and a pollution abatement and prevention plan. The targets established by a water user under this section are not enforceable.

5. Water Conservation Plan Elements –Other Programs/BMPs That Should be Part of the Conservation Plan

All Agricultural Users

- A method for tracking the implementation and effectiveness of the plan
- Metering Program
    - A master meter(s) or other **device/method** (accurate to within +/- 5 percent) to measure and account for the amount of water diverted from the source of supply.
- Measures to Determine and Control Unaccounted for Water
    - Measures to determine and control unaccounted-for uses of water (e.g., periodic visual inspections along distribution lines and canals; annual or monthly audit of the water system to determine illegal connections, abandoned services, etc.)
- Leak Detection and Repair (a program for leak detection, repair, and water loss accounting for the water transmission, delivery, and distribution system in order to control unaccounted-for uses of water)

Agricultural Use Other than Irrigation

- List any application of state-of-the-art equipment and/or process modifications to improve water use efficiency
- Any other water conservation practice, method, or technique which the user shows to be appropriate for achieving the stated goal or goals of the water conservation plan.

Individual Irrigation User

- Water-conserving irrigation equipment and application system or method including surge irrigation, low-pressure sprinkler, lining of on-farm irrigation ditches, and non-leaking pipe are a few examples of equipment to aid in conservation. List all conservation measures utilized to conserve water.
- Scheduling the timing and/or measuring the amount of water applied (e.g., soil moisture monitoring, etc.)

- Land improvements for retaining or reducing runoff, and increasing the infiltration of rain and irrigation water including, but not limited to, land leveling, furrow diking, terracing, and weed control

- Tailwater recovery and reuse

- Any other water conservation practice, method, or technique which the user shows to be appropriate for achieving the stated goal or goals of the water conservation plan.

System Providing Agricultural Water to More Than One User

- Monitoring and record management program of water deliveries, sales, and loses.

- A program to assist customers in the development of on-farm water conservation and pollution prevention plans and/or measures.

- Any other water conservation practice, method, or technique which the user shows to be appropriate for achieving the stated goal or goals of the water conservation plan. Lining of district irrigation canals and replacement of canals with pipelines are a few examples of measures to aid in conservation.

- The customers of the agricultural water provider should also develop a water conservation plan or implement water conservation measures.

6. Regional Water Planning and Coordination

System Providing Agricultural Water to more than one User

- Beginning May 1, 2005, an agricultural water user 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. The industrial or mining water user shall review and update the plan with the next revision of this water conservation plan coinciding with the regional water planning process.

7. Adoption of Plan

Official adoption of the water conservation plan and goals, by ordinance, rule, resolution, or tariff, indicating that the plan reflects official policy.

A review and update of this plan should occur in conjunction with the regional water planning groups update of the Lavaca Regional Water Plan as well as modify the five and ten-year targets modified as necessary.

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Model Water Conservation Plan Template

Wholesale Water Providers

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Model Water Conservation Plan Template – Wholesale Water Providers
Introduction and Background

Brief introduction describing WWP, its provided services, and general information.

1. Purpose

Purpose is to identify and establish principles, practices, and standards to effectively conserve and efficiently use available water supplies and water distribution system capacity.

Possibly provide historical annual average residential water demands and the goals for reduction in water demands included in the plan.

2. Location

General location of WWP and its service area

3. Customer Data

Population and Service Area Data

- Provide CCN certificate from TCEQ and service area map
- Provide service area size in square miles
- Provide current population of service area
- Provide current population served by utility (water, wastewater, etc.)
- Provide population served by utility for previous five years
- Provide projected population for service area for 2010, 2020, 2030, 2040, 2050
- Provide source/method of calculating current and projected populations

Active Connections

- Provide current number of active connections by user type and whether they are metered or not-metered (Metered Residential, Not-metered Residential, Metered Commercial, Not-metered Commercial, Metered Industrial, Not-metered Industrial, Metered Public, Not-metered Public, Metered Other, Not-metered Other)

- Provide net number of new connections/year for most recent three years by user type

High Volume Customers

- Provide annual water use for five highest volume retail and wholesale customers indicating if treated or raw water delivery

4. Water Use Data

Water Accounting Data

- Provide amount of water use monthly for previous five years in 1,000 gallons and indicate whether the water is raw water diverted or treated water distributed

- Provide source/method of obtaining monthly water use for previous five years
- Provide amount of water in 1,000 gallons delivered as recorded by user type (residential, commercial, industrial, wholesale, other)
- Provide previous five year records for unaccounted for water use
- Provide previous five year records for annual peak-to-average daily use ratio
- Provide municipal per capita water use for previous five years
- Provide seasonal water use for previous five years (gpd)

Projected Water Demands

- Provide total water demand estimates for utility's planning horizon indicating data sources/methods for determining water demand
- Discuss conservation measures already implemented, if any, including impacts of measures and methods of determination of impacts.

5. Water Supply System

Water Supply Sources

- Provide current water supply sources and amounts available for surface water, groundwater, contracts, and other

Treatment and Distribution System

- Provide design daily system capacity
- Provide storage capacity (elevated and ground)
- Provide description of water system including number of treatment plants, wells, storage tanks along with sketch of system
- Provide estimates of time before additional facilities for supply, storage, and pumping will be needed without conservation measures.

6. Wastewater Utility System

Wastewater System Data

- Provide design capacity of wastewater treatment plant
- Provide description of wastewater system in service area including TCEQ name, number of treatment plants, operator, owner, receiving stream of discharge if applicable.
- Provide sketch of plant and discharge point locations

Wastewater Data for Service Area

- Provide percent of water service area served by wastewater system
- Provide monthly volume treated for previous three years
- Provide quality information on treatment plant effluent for reuse applications
- Determine ratio between treated water pumped and wastewater flow

7. Utility Operating Data

Water and wastewater rates/ rate structure for all classes – provide list of rates

(Rates should be cost-based so that they do not promote the excessive use of water)

Other relevant data

8. Water Conservation Goals

Goals for WWPs established to maintain/reduce consumption measured in

- Gallons per capita per day used
- Unaccounted for water uses
- Peak day to average day ratio
- Increase in reuse or recycling of water

TCEQ/TWDB will assess conservation goals based on whether the following is addressed:

- Identification of a water/wastewater problem
- Completion of utility profile
- Selection of goals based on technical potential to save water as in utility profile
- Performance of cost-benefit analysis of strategies

Complete following (in gpcd) to quantify conservation goals for WWP's service area:

- Estimation for reducing per capita water use:
    - Reduction in unaccounted-for uses
    - Reduction in indoor water use due to water-conserving plumbing fixtures
    - Reduction in seasonal use
    - Reduction in water use due to public education program
- Planning goal (Specific quantified five and ten year targets for water savings to include goals for water loss programs and goals for municipal use, in gallons per capita day)
- A schedule for implementing the plan to achieve the applicant's targets and goals
- Needed reduction in per capita to meet planning goal

9. Water Conservation Plan Elements – Other Programs/BMPs That Should be Part of the Conservation Plan

Supplier:

- A method for tracking the implementation and effectiveness of the plan
- Metering Program
    - A master meter(s) to measure and account for the amount of water diverted from the source of supply
- Measures to Determine and Control Unaccounted for Water
    - Measures to determine and control unaccounted-for uses of water (e.g., periodic visual inspections along distribution lines; annual or monthly audit of the water system to determine illegal connections, abandoned services, etc.)
- Leak Detection and Repair (a program for leak detection, repair, and water loss accounting for the water storage, delivery, and distribution system in order to control unaccounted-for uses of water)
- Reservoir System Operating Plan
    - Water Rate Structure (should be conservation oriented)
- Program to assist agricultural customers in the development of conservation pollution prevention and abatement plans.
- Program for Reuse and Recycling of Wastewater and Greywater (if not feasible explain why)
- Any other conservation measure which the WWP shows to be appropriate for achieving the stated goal or goals of the water conservation plan.

10. Regional Water Planning and Coordination

11. Authority and Adoption

Means of implementation and enforcement

Model Drought Contingency Plan Template

Utility/Water Supplier

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Model Drought Contingency Plan Template (Utility / Water Supplier)
Brief Introduction and Background

Include information such as

- Name of Utility
- Address, City, Zip Code
- CCN#
- PWS #s

Section I: Declaration of Policy, Purpose, and Intent

In order to conserve the available water supply and protect the integrity of water supply facilities, with particular regard for domestic water use, sanitation, and fire protection, and to protect and preserve public health, welfare, and safety and minimize the adverse impacts of water supply shortage or other water supply emergency conditions, the _____ (name of your water supplier) hereby adopts the following regulations and restrictions on the delivery and consumption of water through an ordinance/or resolution (see Appendix C for an example).

Water uses regulated or prohibited under this Drought Contingency Plan (the Plan) are considered to be non-essential and continuation of such uses during times of water shortage or other emergency water supply condition are deemed to constitute a waste of water which subjects the offender(s) to penalties as defined in Section XI of this Plan.

Section II: Public Involvement

Opportunity for the public to provide input into the preparation of the Plan was provided by the

_____ (name of your water supplier) by means of _____ (describe methods

used to inform the public about the preparation of the plan and provide opportunities for input; for

example, scheduling and providing public notice of a public meeting to accept input on the Plan).

Section III: Public Education

The _____ (name of your water supplier) will periodically provide the public with information about the Plan, including information about the conditions under which each stage of the Plan is to be initiated or terminated and the drought response measures to be implemented in each stage. This information will be provided by means of _____ (describe methods to be used to provide information to the public about the Plan; for example, public events, press releases or utility bill inserts).

Section IV: Coordination with Regional Water Planning Groups

The service area of the _____ (name of your water supplier) is located within the _____ (name of regional water planning area or areas) and _____ (name of your water supplier) has provided a copy of this Plan to the _____ (name of your regional water planning group or groups).

Section V: Authorization

The _____ (designated official; for example, the mayor, city manager, utility director, general manager, etc.), or his/her designee is hereby authorized and directed to implement the applicable provisions of this Plan upon determination that such implementation is necessary to protect public health, safety, and welfare. The _____, (designated official) or his/her designee shall have the authority to initiate or terminate drought or other water supply emergency response measures as described in this Plan.

Section VI: Application

The provisions of this Plan shall apply to all persons, customers, and property utilizing water provided by the _____ (name of your water supplier). The terms Aperson@ and Acustomer@ as used in the Plan include individuals, corporations, partnerships, associations, and all other legal entities.

Section VII: Definitions

For the purposes of this Plan**,** the following definitions shall apply:

Aesthetic water use: water use for ornamental or decorative purposes such as fountains, reflecting pools, and water gardens.

Commercial and institutional water use: water use which is integral to the operations of commercial and non-profit establishments and governmental entities such as retail establishments, hotels and motels, restaurants, and office buildings.

Conservation: those practices, techniques, and technologies that reduce the consumption of water, reduce the loss or waste of water, improve the efficiency in the use of water or increase the recycling and reuse of water so that a supply is conserved and made available for future or alternative uses.

Customer: any person, company, or organization using water supplied by _____ (name of your water supplier).

Domestic water use: water use for personal needs or for household or sanitary purposes such as drinking, bathing, heating, cooking, sanitation, or for cleaning a residence, business, industry, or institution.

Even number address: street addresses, box numbers, or rural postal route numbers ending in 0, 2, 4, 6, or 8 and locations without addresses.

Industrial water use: the use of water in processes designed to convert materials of lower value into forms having greater usability and value.

Landscape irrigation use: water used for the irrigation and maintenance of landscaped areas, whether publicly or privately owned, including residential and commercial lawns, gardens, golf courses, parks, and rights-of-way and medians.

Non-essential water use: water uses that are not essential nor required for the protection of public, health, safety, and welfare, including:

(a) irrigation of landscape areas, including parks, athletic fields, and golf courses, except otherwise provided under this Plan;

(b) use of water to wash any motor vehicle, motorbike, boat, trailer, airplane or other vehicle;
(c) use of water to wash down any sidewalks, walkways, driveways, parking lots, tennis courts, or other hard-surfaced areas;
(d) use of water to wash down buildings or structures for purposes other than immediate fire protection;
(e) flushing gutters or permitting water to run or accumulate in any gutter or street;
(f) use of water to fill, refill, or add to any indoor or outdoor swimming pools or Jacuzzi-type pools;
(g) use of water in a fountain or pond for aesthetic or scenic purposes except where necessary to support aquatic life;
(h) failure to repair a controllable leak(s) within a reasonable period after having been given notice directing the repair of such leak(s); and
(i) use of water from hydrants for construction purposes or any other purposes other than fire fighting.

Odd numbered address: street addresses, box numbers, or rural postal route numbers ending in 1, 3, 5, 7, or 9.

Section VIII: Criteria for Initiation and Termination of Drought Response Stages

The _____ (designated official) or his/her designee shall monitor water supply and/or demand conditions on a _____ (example: daily, weekly, monthly) basis and shall determine when conditions warrant initiation or termination of each stage of the Plan, that is, when the specified Atriggers@ are reached.

The triggering criteria described below are based on _____
_____
(*provide a brief description of the rationale for the triggering criteria; for example, triggering criteria / trigger levels based on a statistical analysis of the vulnerability of the water source under drought of record conditions, or based on known system capacity limits*).

Stage 1 Triggers -- MILD Water Shortage Conditions

Requirements for initiation
Customers shall be requested to voluntarily conserve water and adhere to the prescribed restrictions on certain water uses, defined in Section VIIBDefinitions, when

_____
(*Describe triggering criteria / trigger levels; see examples below*).

Following are examples of the types of triggering criteria that might be used in one or more successive stages of a drought contingency plan. One or a combination of such criteria must be defined for each drought response stage, but usually not all will apply. Select those appropriate to your system:

Example 1: Annually, beginning on May 1 through September 30.

Example 2: When the water supply available to the _____ (name of your water supplier) is equal to or less than _____ (acre-feet, percentage of storage, etc.).

*Example 3: When, pursuant to requirements specified in the _____(name of **your** water supplier) wholesale water purchase contract with _____ (name of your wholesale water supplier), notification is received requesting initiation of Stage 1 of the Drought Contingency Plan.*

Example 4: *When flows in the _____ (name of stream or river) are equal to or less than ____cubic feet per second.*

Example 5: *When the static water level in the _____ (name of your water supplier) well(s) is equal to or less than _____ feet above/below mean sea level.*

Example 6: *When the specific capacity of the _____ (name of your water supplier) well(s) is equal to or less than _____ percent of the well=s original specific capacity.*

Example 7: *When total daily water demand equals or exceeds _____ million gallons for ___consecutive days of ____ million gallons on a single day (example: based on the Asafe@ operating capacity of water supply facilities).*

Example 8: *Continually falling treated water reservoir levels which do not refill above __ percent overnight (example: based on an evaluation of minimum treated water storage required to avoid system outage).*

The public water supplier may devise other triggering criteria which are tailored to its system.

Requirements for termination
Stage 1 of the Plan may be rescinded when all of the conditions listed as triggering events have ceased to exist for a period of ___ (e.g. 3) consecutive days.

Stage 2 Triggers -- MODERATE Water Shortage Conditions

Requirements for initiation
Customers shall be required to comply with the requirements and restrictions on certain non-essential water uses provided in Section IX of this Plan when _____ (*describe triggering criteria; see examples in Stage 1*).

Requirements for termination
Stage 2 of the Plan may be rescinded when all of the conditions listed as triggering events have ceased to exist for a period of ___ (example: 3) consecutive days. Upon termination of Stage 2, Stage 1 becomes operative.

Stage 3 Triggers -- SEVERE Water Shortage Conditions

Requirements for initiation
Customers shall be required to comply with the requirements and restrictions on certain non-essential water uses for Stage 3 of this Plan when _____ (*describe triggering criteria; see examples in Stage 1*).
Requirements for termination
Stage 3 of the Plan may be rescinded when all of the conditions listed as triggering events have ceased to exist for a period of ___ (example: 3) consecutive days. Upon termination of Stage 3, Stage 2 becomes operative.

Stage 4 Triggers -- CRITICAL Water Shortage Conditions

Requirements for initiation
Customers shall be required to comply with the requirements and restrictions on certain non-essential water uses for Stage 4 of this Plan when _____ (*describe triggering criteria; see examples in Stage 1*).

Requirements for termination
Stage 4 of the Plan may be rescinded when all of the conditions listed as triggering events have ceased to exist for a period of ___ (example: 3) consecutive days. Upon termination of Stage 4, Stage 3 becomes operative.

Stage 5 Triggers -- EMERGENCY Water Shortage Conditions

Requirements for initiation
Customers shall be required to comply with the requirements and restrictions for Stage 5 of this Plan when _____ (designated official), or his/her designee, determines that a water supply emergency exists based on:

1. Major water line breaks, or pump or system failures occur, which cause unprecedented loss of capability to provide water service; **or**

2. Natural or man-made contamination of the water supply source(s).

Requirements for termination
Stage 5 of the Plan may be rescinded when all of the conditions listed as triggering events have ceased to exist for a period of ___ (example: 3) consecutive days.

Stage 6 Triggers -- WATER ALLOCATION

Requirements for initiation
Customers shall be required to comply with the water allocation plan prescribed in Section IX of this Plan and comply with the requirements and restrictions for Stage 5 of this Plan when _____ (describe triggering criteria, see examples in Stage 1).

Requirements for termination - Water allocation may be rescinded when all of the conditions listed as triggering events have ceased to exist for a period of ___ (example: 3) consecutive days.

Note: The inclusion of WATER ALLOCATION as part of a drought contingency plan may not be required in all cases. For example, for a given water supplier, an analysis of water supply availability under drought of record conditions may indicate that there is essentially no risk of water supply shortage. Hence, a drought contingency plan for such a water supplier might only address facility capacity limitations and emergency conditions (example: supply source contamination and system capacity limitations).

Section IX: Drought Response Stages

The _____ (designated official), or his/her designee, shall monitor water supply and/or demand conditions on a daily basis and, in accordance with the triggering criteria set forth in Section VIII of this Plan, shall determine that a mild, moderate, severe, critical, emergency or water shortage condition exists and shall implement the following notification procedures:

Notification
Notification of the Public:
The _____ (designated official) or his/ her designee shall notify the public by means of:

Examples:
publication in a newspaper of general circulation,
direct mail to each customer,
public service announcements,
signs posted in public places

take-home fliers at schools.

Additional Notification:
The _____ (designated official) or his/ her designee shall notify directly, or cause to be notified directly, the following individuals and entities:

Examples:
Mayor / Chairman and members of the City Council / Utility Board
Fire Chief(s)
City and/or County Emergency Management Coordinator(s)
County Judge & Commissioner(s)
State Disaster District / Department of Public Safety
TCEQ *(required when* mandatory *restrictions are imposed)*
Major water users
Critical water users, i.e. hospitals
Parks / street superintendents & public facilities managers

Note: The plan should specify direct notice only as appropriate to respective drought stages.

Stage 1 Response -- MILD Water Shortage Conditions

Target: Achieve a voluntary ___ percent reduction in _____(example: total water use, daily water demand, etc.).

Best Management Practices for Supply Management:

D*escribe additional measures, if any, to be implemented directly by (name of your water supplier) to manage limited water supplies and/or reduce water demand. Examples include: reduced or discontinued flushing of water mains, activation and use of an alternative supply source(s); use of reclaimed water for non-potable purposes.*

Voluntary Water Use Restrictions for Reducing Demand :

(a) Water customers are requested to voluntarily limit the irrigation of landscaped areas to Sundays and Thursdays for customers with a street address ending in an even number (0, 2, 4, 6 or 8), and Saturdays and Wednesdays for water customers with a street address ending in an odd number (1, 3, 5, 7 or 9), and to irrigate landscapes only between the hours of midnight and 10:00 a.m. and 8:00 p.m. to midnight on designated watering days.

(b) All operations of the _____ (name of your water supplier) shall adhere to water use restrictions prescribed for Stage 2 of the Plan.

(c) Water customers are requested to practice water conservation and to minimize or discontinue water use for non-essential purposes.

Stage 2 Response -- MODERATE Water Shortage Conditions

Target: Achieve a ___ percent reduction in _____ (example: total water use, daily water demand, etc.).
Best Management Practices for Supply Management:

Describe additional measures, if any, to be implemented directly by _____ (name of your water supplier) to manage limited water supplies and/or reduce water demand. Examples include: reduced or discontinued flushing of water mains, reduced

or discontinued irrigation of public landscaped areas; use of an alternative supply source(s); use of reclaimed water for non-potable purposes.

Water Use Restrictions for Demand Reduction:

Under threat of penalty for violation, the following water use restrictions shall apply to all persons:

(a) Irrigation of landscaped areas with hose-end sprinklers or automatic irrigation systems shall be limited to Sundays and Thursdays for customers with a street address ending in an even number (0, 2, 4, 6 or 8), and Saturdays and Wednesdays for water customers with a street address ending in an odd number (1, 3, 5, 7 or 9), and irrigation of landscaped areas is further limited to the hours of 12:00 midnight until 10:00 a.m. and between 8:00 p.m. and 12:00 midnight on designated watering days. However, irrigation of landscaped areas is permitted at anytime if it is by means of a hand-held hose, a faucet filled bucket or watering can of five (5) gallons or less, or drip irrigation system.

(b) Use of water to wash any motor vehicle, motorbike, boat, trailer, airplane or other vehicle is prohibited except on designated watering days between the hours of 12:00 midnight and 10:00 a.m. and between 8:00 p.m. and 12:00 midnight. Such washing, when allowed, shall be done with a hand-held bucket or a hand-held hose equipped with a positive shutoff nozzle for quick rises. Vehicle washing may be done at any time on the immediate premises of a commercial car wash or commercial service station. Further, such washing may be exempted from these regulations if the health, safety, and welfare of the public is contingent upon frequent vehicle cleansing, such as garbage trucks and vehicles used to transport food and perishables.

(c) Use of water to fill, refill, or add to any indoor or outdoor swimming pools, wading pools, or Jacuzzi-type pools is prohibited except on designated watering days between the hours of 12:00 midnight and 10:00 a.m. and between 8 p.m. and 12:00 midnight.

(d) Operation of any ornamental fountain or pond for aesthetic or scenic purposes is prohibited except where necessary to support aquatic life or where such fountains or ponds are equipped with a recirculation system.

(e) Use of water from hydrants shall be limited to fire fighting, related activities, or other activities necessary to maintain public health, safety, and welfare, except that use of water from designated fire hydrants for construction purposes may be allowed under special permit from the _____ (name of your water supplier).

(f) Use of water for the irrigation of golf course greens, tees, and fairways is prohibited except on designated watering days between the hours 12:00 midnight and 10:00 a.m. and between 8 p.m. and 12:00 midnight. However, if the golf course utilizes a water source other than that provided by the _____ (name of your water supplier), the facility shall not be subject to these regulations.

(g) All restaurants are prohibited from serving water to patrons except upon request of the patron.

(h) The following uses of water are defined as non-essential and are prohibited:

1. wash down of any sidewalks, walkways, driveways, parking lots, tennis courts, or other hard-surfaced areas;
2. use of water to wash down buildings or structures for purposes other than immediate fire protection;

3. use of water for dust control;
4. flushing gutters or permitting water to run or accumulate in any gutter or street; and
5. failure to repair a controllable leak(s) within a reasonable period after having been given notice directing the repair of such leak(s).

Stage 3 Response -- SEVERE Water Shortage Conditions

Target: Achieve a ___ percent reduction in _____ (example: total water use, daily water demand, etc.).

Best Management Practices for Supply Management:

Describe additional measures, if any, to be implemented directly by _____ (name of your water supplier) to manage limited water supplies and/or reduce water demand. Examples include: reduced or discontinued flushing of water mains, reduced or discontinued irrigation of public landscaped areas; use of an alternative supply source(s); use of reclaimed water for non-potable purposes.

Water Use Restrictions for Demand Reduction:
All requirements of Stage 2 shall remain in effect during Stage 3 except:

(a) Irrigation of landscaped areas shall be limited to designated watering days between the hours of 12:00 midnight and 10:00 a.m. and between 8 p.m. and 12:00 midnight and shall be by means of hand-held hoses, hand-held buckets, drip irrigation, or permanently installed automatic sprinkler system only. The use of hose-end sprinklers is prohibited at all times.

(b) The watering of golf course tees is prohibited unless the golf course utilizes a water source other than that provided by the _____ (name of your water supplier).

(c) The use of water for construction purposes from designated fire hydrants under special permit is to be discontinued.

Stage 4 Response -- CRITICAL Water Shortage Conditions

Target: Achieve a ___ percent reduction in _____ (example: total water use, daily water demand, etc.).

Best Management Practices for Supply Management:

Describe additional measures, if any, to be implemented directly by _____ (name of your water supplier) to manage limited water supplies and/or reduce water demand. Examples include: reduced or discontinued flushing of water mains, reduced or discontinued irrigation of public landscaped areas; use of an alternative supply source(s); use of reclaimed water for non-potable purposes.

Water Use Restrictions for Reducing Demand:. All requirements of Stage 2 and 3 shall remain in effect during Stage 4 except:

(a) Irrigation of landscaped areas shall be limited to designated watering days between the hours of 6:00 a.m. and 10:00 a.m. and between 8:00 p.m. and 12:00 midnight

and shall be by means of hand-held hoses, hand-held buckets, or drip irrigation only. The use of hose-end sprinklers or permanently installed automatic sprinkler systems are prohibited at all times.

(b) Use of water to wash any motor vehicle, motorbike, boat, trailer, airplane or other vehicle not occurring on the premises of a commercial car wash and commercial service stations and not in the immediate interest of public health, safety, and welfare is prohibited. Further, such vehicle washing at commercial car washes and commercial service stations shall occur only between the hours of 6:00 a.m. and 10:00 a.m. and between 6:00 p.m. and 10 p.m.

(c) The filling, refilling, or adding of water to swimming pools, wading pools, and Jacuzzi-type pools is prohibited.

(d) Operation of any ornamental fountain or pond for aesthetic or scenic purposes is prohibited except where necessary to support aquatic life or where such fountains or ponds are equipped with a recirculation system.

(e) No application for new, additional, expanded, or increased-in-size water service connections, meters, service lines, pipeline extensions, mains, or water service facilities of any kind shall be approved, and time limits for approval of such applications are hereby suspended for such time as this drought response stage or a higher-numbered stage shall be in effect.

Stage 5 Response -- EMERGENCY Water Shortage Conditions

Target: Achieve a ___ percent reduction in _____ (example: total water use, daily water demand, etc.).

Best Management Practices for Supply Management:

Describe additional measures, if any, to be implemented directly by _____ (name of your water supplier) to manage limited water supplies and/or reduce water demand. Examples include: reduced or discontinued flushing of water mains, reduced or discontinued irrigation of public landscaped areas; use of an alternative supply source(s); use of reclaimed water for non-potable purposes.

Water Use Restrictions for Reducing Demand. All requirements of Stage 2, 3, and 4 shall remain in effect during Stage 5 except:

(a) Irrigation of landscaped areas is absolutely prohibited.

(b) Use of water to wash any motor vehicle, motorbike, boat, trailer, airplane or other vehicle is absolutely prohibited.

Stage 6 Response -- WATER ALLOCATION

In the event that water shortage conditions threaten public health, safety, and welfare, the _____ (designated official) is hereby authorized to allocate water according to the following water allocation plan:

Single-Family Residential Customers

The allocation to residential water customers residing in a single-family dwelling shall be as follows:

Persons per Household	Gallons per Month
1 or 2	6,000
3 or 4	7,000
5 or 6	8,000
7 or 8	9,000
9 or 10	10,000
11 or more	12,000

"Household" means the residential premises served by the customer's meter. "Persons per household" include only those persons currently physically residing at the premises and expected to reside there for the entire billing period. It shall be assumed that a particular customer's household is comprised of two (2) persons unless the customer notifies the _____ (name of your water supplier) of a greater number of persons per household on a form prescribed by the _____ designated official). The _____ (designated official) shall give his/her best effort to see that such forms are mailed, otherwise provided, or made available to every residential customer. If, however, a customer does not receive such a form, it shall be the customer's responsibility to go to the _____ (name of your water supplier) offices to complete and sign the form claiming more than two (2) persons per household. New customers may claim more persons per household at the time of applying for water service on the form prescribed by the _____ (designated official). When the number of persons per household increases so as to place the customer in a different allocation category, the customer may notify the _____ (name of water supplier) on such form and the change will be implemented in the next practicable billing period. If the number of persons in a household is reduced, the customer shall notify the _____(name of your water supplier) in writing within two (2) days. In prescribing the method for claiming more than two (2) persons per household, the _____ (designated official) shall adopt methods to insure the accuracy of the claim. Any person who knowingly, recklessly, or with criminal negligence falsely reports the number of persons in a household or fails to timely notify the _____ (name of your water supplier) of a reduction in the number of person in a household shall be fined not less than $_____.

Residential water customers shall pay the following surcharges:

$____ for the first 1,000 gallons over allocation.
$____ for the second 1,000 gallons over allocation.
$____ for the third 1,000 gallons over allocation.
$____ for each additional 1,000 gallons over allocation.

Surcharges shall be cumulative.

Master-Metered Multi-Family Residential Customers

The allocation to a customer billed from a master meter which jointly measures water to multiple permanent residential dwelling units (example: apartments, mobile homes) shall be allocated 6,000 gallons per month for each dwelling unit. It shall be assumed that such a customer's meter serves two dwelling units unless the customer notifies the _____ (name of your water supplier) of a greater number on a form prescribed by the _____ (designated official). The _____ (designated official) shall give his/her best effort to see that such forms are mailed, otherwise provided, or made available to every such customer. If, however, a customer does not receive such a form, it shall be the customer's responsibility to go to the _____ (name of your water supplier) offices to complete and sign the form claiming more than two (2) dwellings. A dwelling unit may be claimed under this

provision whether it is occupied or not. New customers may claim more dwelling units at the time of applying for water service on the form prescribed by the _____ (designated official). If the number of dwelling units served by a master meter is reduced, the customer shall notify the _____(name of your water supplier) in writing within two (2) days. In prescribing the method for claiming more than two (2) dwelling units, the _____ (designated official) shall adopt methods to insure the accuracy of the claim. Any person who knowingly, recklessly, or with criminal negligence falsely reports the number of dwelling units served by a master meter or fails to timely notify the _____ (name of your water supplier) of a reduction in the number of person in a household shall be fined not less than $_____. Customers billed from a master meter under this provision shall pay the following monthly surcharges:

$____ for 1,000 gallons over allocation up through 1,000 gallons for each dwelling unit.
$____, thereafter, for each additional 1,000 gallons over allocation up through a second 1,000 gallons for each dwelling unit.
$____, thereafter, for each additional 1,000 gallons over allocation up through a third 1,000 gallons for each dwelling unit.
$ ____, thereafter for each additional 1,000 gallons over allocation.

Surcharges shall be cumulative.

Commercial Customers

A monthly water allocation shall be established by the _____ (designated official), or his/her designee, for each nonresidential commercial customer other than an industrial customer who uses water for processing purposes. The non-residential customer's allocation shall be approximately __ (e.g. 75%) percent of the customer's usage for corresponding month's billing period for the previous 12 months. If the customer's billing history is shorter than 12 months, the monthly average for the period for which there is a record shall be used for any monthly period for which no history exists. Provided, however, a customer, __ percent of whose monthly usage is less than ____ gallons, shall be allocated ____ gallons. The _____ (designated official) shall give his/her best effort to see that notice of each non-residential customer's allocation is mailed to such customer. If, however, a customer does not receive such notice, it shall be the customer's responsibility to contact the _____ (name of your water supplier) to determine the allocation. Upon request of the customer or at the initiative of the _____ (designated official), the allocation may be reduced or increased if, (1) the designated period does not accurately reflect the customer's normal water usage, (2) one nonresidential customer agrees to transfer part of its allocation to another nonresidential customer, or (3) other objective evidence demonstrates that the designated allocation is inaccurate under present conditions. A customer may appeal an allocation established hereunder to the _____ (designated official or alternatively, a special water allocation review committee). Nonresidential commercial customers shall pay the following surcharges:

Customers whose allocation is _____ gallons through _____ gallons per month:

$____ per thousand gallons for the first 1,000 gallons over allocation.
$____ per thousand gallons for the second 1,000 gallons over allocation.
$____ per thousand gallons for the third 1,000 gallons over allocation.
$____ per thousand gallons for each additional 1,000 gallons over allocation.

Customers whose allocation is _____ gallons per month or more:

___ times the block rate for each 1,000 gallons in excess of the

allocation up through 5 percent above allocation.
___ times the block rate for each 1,000 gallons from 5 percent through 10 percent above allocation.
___ times the block rate for each 1,000 gallons from 10 percent through 15 percent above allocation.
___ times the block rate for each 1,000 gallons more than 15 percent above allocation.

The surcharges shall be cumulative. As used herein, "block rate" means the charge to the customer per 1,000 gallons at the regular water rate schedule at the level of the customer's allocation.

Industrial Customers

A monthly water allocation shall be established by the _____ (designated official), or his/her designee, for each industrial customer, which uses water for processing purposes. The industrial customer=s allocation shall be approximately __ (example: 90%) percent of the customer=s water usage baseline. Ninety (90) days after the initial imposition of the allocation for industrial customers, the industrial customer=s allocation shall be further reduced to __ (example: 85%) percent of the customer=s water usage baseline. The industrial customer=s water use baseline will be computed on the average water use for the _____ month period ending prior to the date of implementation of Stage 2 of the Plan. If the industrial water customer=s billing history is shorter than ___ months, the monthly average for the period for which there is a record shall be used for any monthly period for which no billing history exists. The _____ (designated official) shall give his/her best effort to see that notice of each industrial customer=s allocation is mailed to such customer. If, however, a customer does not receive such notice, it shall be the customer=s responsibility to contact the _____ (name of your water supplier) to determine the allocation, and the allocation shall be fully effective notwithstanding the lack of receipt of written notice. Upon request of the customer or at the initiative of the _____ (designated official), the allocation may be reduced or increased, (1) if the designated period does not accurately reflect the customer=s normal water use because the customer had shutdown a major processing unit for repair or overhaul during the period, (2) the customer has added or is in the process of adding significant additional processing capacity, (3) the customer has shutdown or significantly reduced the production of a major processing unit, (4) the customer has previously implemented significant permanent water conservation measures such that the ability to further reduce water use is limited, (5) the customer agrees to transfer part of its allocation to another industrial customer, or (6) if other objective evidence demonstrates that the designated allocation is inaccurate under present conditions. A customer may appeal an allocation established hereunder to the _____ (designated official or alternatively, a special water allocation review committee). Industrial customers shall pay the following surcharges:

Customers whose allocation is _____ gallons through _____ gallons per month:

$____ per thousand gallons for the first 1,000 gallons over allocation.
$____ per thousand gallons for the second 1,000 gallons over allocation.
$____ per thousand gallons for the third 1,000 gallons over allocation.
$____ per thousand gallons for each additional 1,000 gallons over allocation.

Customers whose allocation is _____ gallons per month or more:

___ times the block rate for each 1,000 gallons in excess of the allocation up through 5 percent above allocation.

___ times the block rate for each 1,000 gallons from 5 percent through 10 percent above allocation.
___ times the block rate for each 1,000 gallons from 10 percent through 15 percent above allocation.
___ times the block rate for each 1,000 gallons more than 15 percent above allocation.

The surcharges shall be cumulative. As used herein, Ablock rate@ means the charge to the customer per 1,000 gallons at the regular water rate schedule at the level of the customer=s allocation.

Section X: Enforcement

(a) No person shall knowingly or intentionally allow the use of water from the _____ (name of your water supplier) for residential, commercial, industrial, agricultural, governmental, or any other purpose in a manner contrary to any provision of this Plan, or in an amount in excess of that permitted by the drought response stage in effect at the time pursuant to action taken by _____(designated official), or his/her designee, in accordance with provisions of this Plan.

(b) Any person who violates this Plan is guilty of a misdemeanor and, upon conviction shall be punished by a fine of not less than _____ dollars ($__) and not more than _____ dollars ($__). Each day that one or more of the provisions in this Plan is violated shall constitute a separate offense. If a person is convicted of three or more distinct violations of this Plan, the _____ (designated official) shall, upon due notice to the customer, be authorized to discontinue water service to the premises where such violations occur. Services discontinued under such circumstances shall be restored only upon payment of a re-connection charge, hereby established at $_____, and any other costs incurred by the _____ (name of your water supplier) in discontinuing service. In addition, suitable assurance must be given to the _____ (designated official) that the same action shall not be repeated while the Plan is in effect. Compliance with this plan may also be sought through injunctive relief in the district court.

(c) Any person, including a person classified as a water customer of the _____ (name of your water supplier), in apparent control of the property where a violation occurs or originates shall be presumed to be the violator, and proof that the violation occurred on the person=s property shall constitute a rebuttable presumption that the person in apparent control of the property committed the violation, but any such person shall have the right to show that he/she did not commit the violation. Parents shall be presumed to be responsible for violations of their minor children and proof that a violation, committed by a child, occurred on property within the parents= control shall constitute a rebuttable presumption that the parent committed the violation, but any such parent may be excused if he/she proves that he/she had previously directed the child not to use the water as it was used in violation of this Plan and that the parent could not have reasonably known of the violation.

d) Any employee of the _____ (name of your water supplier), police officer, or other _____ employee designated by the _____ (designated official), may issue a citation to a person he/she reasonably believes to be in violation of this Ordinance. The citation shall be prepared in duplicate and shall contain the name and address of the alleged violator, if known, the offense charged, and shall direct him/her to appear in the _____ (example: municipal court) on the date shown on the citation for which the date shall not be less than 3 days nor more than 5 days from the date the citation was issued. The alleged violator shall be served a copy of the citation. Service of the citation shall be complete upon delivery of the citation to the alleged violator, to an

agent or employee of a violator, or to a person over 14 years of age who is a member of the violator=s immediate family or is a resident of the violator=s residence. The alleged violator shall appear in _____ (example: municipal court) to enter a plea of guilty or not guilty for the violation of this Plan. If the alleged violator fails to appear in _____ (example: municipal court), a warrant for his/her arrest may be issued. A summons to appear may be issued in lieu of an arrest warrant. These cases shall be expedited and given preferential setting in _____ (example: municipal court) before all other cases.

Section XI: Variances

The _____ (designated official), or his/her designee, may, in writing, grant temporary variance for existing water uses otherwise prohibited under this Plan if it is determined that failure to grant such variance would cause an emergency condition adversely affecting the health, sanitation, or fire protection for the public or the person requesting such variance and if one or more of the following conditions are met:

(a) Compliance with this Plan cannot be technically accomplished during the duration of the water supply shortage or other condition for which the Plan is in effect.
(b) Alternative methods can be implemented which will achieve the same level of reduction in water use.

Persons requesting an exemption from the provisions of this Ordinance shall file a petition for variance with the _____ (name of your water supplier) within 5 days after the Plan or a particular drought response stage has been invoked. All petitions for variances shall be reviewed by the _____ (designated official), or his/her designee, and shall include the following:

(a) Name and address of the petitioner(s).
(b) Purpose of water use.
(c) Specific provision(s) of the Plan from which the petitioner is requesting relief.
(d) Detailed statement as to how the specific provision of the Plan adversely affects the petitioner or what damage or harm will occur to the petitioner or others if petitioner complies with this Ordinance.
(e) Description of the relief requested.
(f) Period of time for which the variance is sought.
(g) Alternative water use restrictions or other measures the petitioner is taking or proposes to take to meet the intent of this Plan and the compliance date.
(h) Other pertinent information.

EXAMPLE RESOLUTION FOR ADOPTION OF A

DROUGHT CONTINGENCY PLAN

RESOLUTION NO. _____

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE _____ (name of water supplier) ADOPTING A DROUGHT CONTINGENCY PLAN.

WHEREAS, the Board recognizes that the amount of water available to the _____ (name of water supplier) and its water utility customers are limited and subject to depletion during periods of extended drought;

WHEREAS, the Board recognizes that natural limitations due to drought conditions and other acts of God cannot guarantee an uninterrupted water supply for all purposes;

WHEREAS, Section 11.1272 of the *Texas Water Code* and applicable rules of the Texas Commission on Environmental Quality require all public water supply systems in Texas to prepare a drought contingency plan; and

WHEREAS, as authorized under law, and in the best interests of the customers of the _____ (name of water supply system), the Board deems it expedient and necessary to establish certain rules and policies for the orderly and efficient management of limited water supplies during drought and other water supply emergencies;

NOW THEREFORE, BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE _____ (name of water supplier):

SECTION 1. That the Drought Contingency Plan attached hereto as Exhibit "A" and made part hereof for all purposes be, and the same is hereby, adopted as the official policy of the _____ (name of water supplier).

SECTION 2. That the _____ (e.g., general manager) is hereby directed to implement, administer, and enforce the Drought Contingency Plan.

SECTION 3. That this resolution shall take effect immediately upon its passage.

DULY PASSED BY THE BOARD OF DIRECTORS OF THE _____, ON THIS __ day of _____, 20__.

_____

President, Board of Directors
ATTESTED TO:

_____
Secretary, Board of Directors

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Model Drought Contingency Plan Template
Irrigation Uses

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Model Drought Contingency Plan Template (Irrigation Uses)

DROUGHT CONTINGENCY PLAN
FOR
(Name of irrigation district)
(Address)
(Date)

Section I: Declaration of Policy, Purpose, and Intent

The Board of Directors of the _____ (name of irrigation district) deems it to be in the interest of the District to adopt Rules and Regulations governing the equitable and efficient allocation of limited water supplies during times of shortage. These Rules and Regulations constitute the District's drought contingency plan required under Section 11.1272, Texas Water Code, *Vernon's Texas Codes Annotated*, and associated administrative rules of the Texas Commission on Environmental Quality (Title 30, Texas Administrative Code, Chapter 288).

Section II: User Involvement

Opportunity for users of water from the _____ (name of irrigation district) was provided by means of _____ (describe methods used to inform water users about the preparation of the plan and opportunities for input; for example, scheduling and providing notice of a public meeting to accept user input on the plan).

Section III: User Education

The _____ (name of irrigation district) will periodically provide water users with information about the Plan, including information about the conditions under which water allocation is to be initiated or terminated and the district's policies and procedures for water allocation. This information will be provided by means of _____ (e.g. describe methods to be used to provide water users with information about the Plan; for example, by providing copies of the Plan and by posting water allocation rules and regulations on the district's public bulletin board).

Section IV: Authorization

The _____ (e.g., general manager) is hereby authorized and directed to implement the applicable provision of the Plan upon determination by the Board that such implementation is necessary to ensure the equitable and efficient allocation of limited water supplies during times of shortage.

Section V: Application

The provisions of the Plan shall apply to all persons utilizing water provided by the _____ (name of irrigation district). The term "person" as used in the Plan includes individuals, corporations, partnerships, associations, and all other legal entities.

Section VI: Initiation of Water Allocation

The _____ (designated official) shall monitor water supply conditions on a _____ (e.g. weekly, monthly) basis and shall make recommendations to the Board regarding irrigation of water allocation. Upon approval of the Board, water allocation will become effective when _____ (describe the criteria and the basis for the criteria):

Below are examples of the types of triggering criteria that might be used; singly or in combination, in an irrigation district's drought contingency plan:

Example 1: **Water in storage in the _____ (name of reservoir) is equal to or less than _____ (acre-feet and/or percentage of storage capacity).**

Example 2: **Combined storage in the _____ (name or reservoirs) reservoir system is equal to or less than _____ (acre-feet and/or percentage of storage capacity).**

Example 3: **Flows as measured by the U.S. Geological Survey gage on the _____ (name of reservoir) near _____ _____, Texas reaches ____ cubic feet per second (cfs).**

Example 4: **The storage balance in the district's irrigation water rights account reaches _____ acre-feet.**

Example 5: **The storage balance in the district's irrigation water rights account reaches an amount equivalent to _____ (number) irrigations for each flat rate acre in which all flat rate assessments are paid and current.**

Example 6: **The _____ (name of entity supplying water to the irrigation district) notifies the district that water deliveries will be limited to _____ acre-feet per year (i.e. a level below that required for unrestricted irrigation).**

Section VII: Termination of Water Allocation

The district's water allocation policies will remain in effect until the conditions defined in Section IV of the Plan no longer exist and the Board deems that the need to allocate water no longer exists.

Section VIII: Notice

Notice of the initiation of water allocation will be given by notice posted on the District's public bulletin board and by mail to each _____ (e.g. landowner, holders of active irrigation accounts, etc.).

Section IX: Water Allocation

(a) In identifying **specific, quantified targets** for water allocation to be achieved during periods of water shortages and drought, each irrigation user shall be allocated _____ irrigations or _____ acre-feet of water each flat rate acre on which all taxes, fees, and charges have been paid. The water allotment in each irrigation account will be expressed in acre-feet of water.

Include explanation of water allocation procedure. For example, in the Lower Rio Grande Valley, an "irrigation" is typically considered to be equivalent to eight (8) inches of water per irrigation acre; consisting of six (6) inches of water per acre applied plus two (2) inches of water lost in transporting the water from the river to the land. Thus, three irrigations would be equal to 24 inches of water per acre or an allocation of 2.0 acre-feet of water measured at the diversion from the river.

(b) As additional water supplies become available to the District in an amount reasonably sufficient for allocation to the District's irrigation users, the additional water made available to the District will be equally distributed, on a pro rata basis, to those irrigation users having _____.

Example 1: An account balance of less than _____ irrigations for each flat

rate acre (i.e. ____ acre-feet).

Example 2: **An account balance of less than _____ acre-feet of water for each flat rate acre.**

Example 3: **An account balance of less than _ ___ acre-feet of water.** (c) The amount of water charged against a user's water allocation will be ____ (e.g. eight inches) per irrigation, or one allocation unit, unless water deliveries to the land are metered. Metered water deliveries will be charges based on actual measured use. In order to maintain parity in charging use against a water allocation between non-metered and metered deliveries, a loss factor of ____ percent of the water delivered in a metered situation will be added to the measured use and will be charged against the user's water allocation. Any metered use, with the loss factor applied, that is less than eight (8) inches per acre shall be credited back to the allocation unit and will be available to the user. It shall be a violation of the Rules and Regulations for a water user to use water in excess of the amount of water contained in the users irrigation account.

(d) Acreage in an irrigation account that has not been irrigated for any reason within the last two (2) consecutive years will be considered inactive and will not be allocated water. Any landowner whose land has not been irrigated within the last two (2) consecutive years, may, upon application to the District expressing intent to irrigate the land, receive future allocations. However, irrigation water allocated shall be applied only upon the acreage to which it was allocated and such water allotment cannot be transferred until there have been two consecutive years of use.

Section X: Transfers of Allotments

(a) A water allocation in an active irrigation account may be transferred within the boundaries of the District from one irrigation account to another. The transfer of water can only be made by the landowner's agent who is authorized in writing to act on behalf of the landowner in the transfer of all or part of the water allocation from the described land of the landowner covered by the irrigation account.

(b) A water allocation may not be transferred to land owned by a landowner outside the District boundaries.

or

A water allocation may be transferred to land outside the District's boundaries by paying the current water charge as if the water was actually delivered by the District to the land covered by an irrigation account. The amount of water allowed to be transferred shall be stated in terms of acre-feet and deducted from the landowner's current allocation balance in the irrigation account. Transfers of water outside the District shall not affect the allocation of water under Section VII of these Rules and Regulations.

(c) Water from outside the District may not be transferred by a landowner for use within the District.

or

Water from outside the District may be transferred by a landowner for use within the

District. The District will divert and deliver the water on the same basis as District water is delivered, except that a ___ percent conveyance loss will be charged against the amount of water transferred for use in the District as the water is delivered.

Section XI: Penalties

Any person who willfully opens, closes, changes or interferes with any headgate or uses water in violation of these Rules and Regulations, shall be considered in violation of Section 11.0083, Texas Water Code, *Vernon's Texas Codes Annotated*, which provides for punishment by fine of not less than $10.00 nor more than $200.00 or by confinement in the county jail for not more than thirty (30) days, or both, for each violation, and these penalties provided by the laws of the State and may by enforced by complaints filed in the appropriate court jurisdiction in _____ County, all in accordance with Section 11.083; and in addition, the District may pursue a civil remedy in the way of damages and/or injunction against the violation of any of the foregoing Rules and Regulations.

Section XII: Severability

It is hereby declared to be the intention of the Board of Directors of the _____ (name of irrigation district) that the sections, paragraphs, sentences, clauses, and phrases of this Plan shall be declared unconstitutional by the valid judgment or decree of any court of competent jurisdiction, such unconstitutionality shall not affect any of the remaining phrases, clauses, sentences, paragraphs, and sections of this Plan, since the same would not have been enacted by the Board without the incorporation into this Plan of any such unconstitutional phrase, clause, sentence, paragraph, or section.

Section XIII: Authority

The foregoing rules and regulations are adopted pursuant to and in accordance with Sections 11.039, 11.083, 11.1272; Section 49.004; and Section 58.127-130 of the Texas Water Code, *Vernon's Texas Codes Annotated.*

Section XIV: Effective Date of Plan

The effective date of this Rule shall be five (5) days following the date of Publication hereof and ignorance of the Rules and Regulations is not a defense for a prosecution for enforcement of the violation of the Rules and Regulations.

EXAMPLE RESOLUTION FOR ADOPTION OF A DROUGHT CONTINGENCY PLAN

RESOLUTION NO. _____

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE _____ (name of water supplier) ADOPTING A DROUGHT CONTINGENCY PLAN.

WHEREAS, the Board recognizes that the amount of water available to the _____ (name of water supplier) and its water utility customers is limited and subject to depletion during periods of extended drought;

WHEREAS, the Board recognizes that natural limitations due to drought conditions and other acts of God cannot guarantee an uninterrupted water supply for all purposes;

WHEREAS, Section 11.1272 of the Texas Water Code and applicable rules of the Texas Commission on Environmental Quality require all public water supply systems in Texas to prepare a drought contingency plan; and

WHEREAS, as authorized under law, and in the best interests of the customers of the _____(name of water supply system), the Board deems it expedient and necessary to establish certain rules and policies for the orderly and efficient management of limited water supplies during drought and other water supply emergencies;

NOW THEREFORE, BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE _____ (name of water supplier):

SECTION 1. That the Drought Contingency Plan attached hereto as Exhibit AA@ and made part hereof for all purposes be, and the same is hereby, adopted as the official policy of the _____ (name of water supplier).

SECTION 2. That the _____ (e.g., general manager) is hereby directed to implement, administer, and enforce the Drought Contingency Plan.

SECTION 3. That this resolution shall take effect immediately upon its passage.

DULY PASSED BY THE BOARD OF DIRECTORS OF THE _____, ON THIS __ day of _____, 20__.

_____
President, Board of Directors

ATTESTED TO:

_____
Secretary, Board of Director

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Model Drought Contingency Plan Template

Wholesale Water Providers

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Model Drought Contingency Plan Template (**Wholesale Public Water Suppliers**)

DROUGHT CONTINGENCY PLAN
FOR THE
(Name of wholesale water supplier)
(address)
(CCN)
(PWS)
(Date)

Section I: Declaration of Policy, Purpose, and Intent

In order to conserve the available water supply and/or to protect the integrity of water supply facilities, with particular regard for domestic water use, sanitation, and fire protection, and to protect and preserve public health, welfare, and safety and minimize the adverse impacts of water supply shortage or other water supply emergency conditions, the _____ (name of your water supplier) adopts the following Drought Contingency Plan (the Plan).

Section II: Public Involvement

Opportunity for the public and wholesale water customers to provide input into the preparation of the Plan was provided by _____ (name of your water supplier) by means of _____ (describe methods used to inform the public and wholesale customers about the preparation of the plan and opportunities for input; for example, scheduling and proving public notice of a public meeting to accept input on the Plan).

Section III: Wholesale Water Customer Education

The _____ (name of your water supplier) will periodically provide wholesale water customers with information about the Plan, including information about the conditions under which each stage of the Plan is to be initiated or terminated and the drought response measures to be implemented in each stage. This information will be provided by means of _____ (e.g., describe methods to be used to provide customers with information about the Plan; for example, providing a copy of the Plan or periodically including information about the Plan with invoices for water sales).

Section IV: Coordination with Regional Water Planning Groups

The water service area of the _____ (name of your water supplier) is located within the _____ (name of regional water planning area or areas) and the _____ (name of your water supplier) has provided a copy of the Plan to the _____ (name of your regional water planning group or groups).

Section V: Authorization

The _____ (designated official; for example, the general manager or executive director), or his/her designee, is hereby authorized and directed to implement the applicable provisions of this Plan upon determination that such implementation is necessary to protect public

health, safety, and welfare. The _____, or his/her designee, shall have the authority to initiate or terminate drought or other water supply emergency response measures as described in this Plan.

Section VI: Application

The provisions of this Plan shall apply to all customers utilizing water provided by the _____ (name of your water supplier). The terms Aperson@ and Acustomer@ as used in the Plan include individuals, corporations, partnerships, associations, and all other legal entities.

Section VII: Criteria for Initiation and Termination of Drought Response Stages

The _____ (designated official), or his/her designee, shall monitor water supply and/or demand conditions on a (e.g., weekly, monthly) basis and shall determine when conditions warrant initiation or termination of each stage of the Plan. Customer notification of the initiation or termination of drought response stages will be made by mail or telephone. The news media will also be informed.

The triggering criteria described below are based on:

_____
_____ (provide a brief description of the rationale for the triggering criteria; for example, triggering criteria are based on a statistical analysis of the vulnerability *of the water source under drought of record conditions).*

Stage 1 Triggers -- MILD Water Shortage Conditions

Requirements for initiation -- The _____ (name of your water supplier) will recognize that a mild water shortage condition exists when_____(*describe triggering criteria, see examples below).*

Below are examples of the types of triggering criteria that might be used in a wholesale water supplier=s drought contingency plan. One or a combination of such criteria may be defined for each drought response stage:

Example 1: ***Water in storage in the _____ (name of reservoir) is equal to or less than _____ (acre-feet and/or percentage of storage capacity).***

Example 2: ***When the combined storage in the _____ (name of reservoirs) is equal to or less than _____ (acre-feet and/or percentage of storage capacity).***

Example 3: ***Flows as measured by the U.S. Geological Survey gage on the _____ (name of river) near _____, Texas reaches ___ cubic feet per second (cfs).***

Example 4: ***When total daily water demand equals or exceeds _____ million gallons for ___consecutive days or ____ million gallons on a single day.***

Example 5: ***When total daily water demand equals or exceeds ___ percent of the safe operating capacity of _____ million gallons per day for ___consecutive days or ___ percent on a single day.***

Requirements for termination **-** Stage 1 of the Plan may be rescinded when all of the conditions listed as triggering events have ceased to exist for a period of ___ (e.g., 30) consecutive days. The _____ (name of water supplier) will notify its wholesale customers and the media of the termination of Stage 1 in the same manner as the notification of initiation of Stage 1 of the Plan.

Stage 2 Triggers -- MODERATE Water Shortage Conditions

Requirements for initiation B The _____ (name of your water supplier) will recognize that a moderate water shortage condition exists when_____(describe triggering criteria).

Requirements for termination **-** Stage 2 of the Plan may be rescinded when all of the conditions listed as triggering events have ceased to exist for a period of ___ (e.g., 30) consecutive days. Upon termination of Stage 2, Stage 1 becomes operative. The _____ (name of your water supplier) will notify its wholesale customers and the media of the termination of Stage 2 in the same manner as the notification of initiation of Stage 1 of the Plan.

Stage 3 Triggers -- SEVERE Water Shortage Conditions

Requirements for initiation B The _____ (name of your water supplier) will recognize that a severe water shortage condition exists when_____(*describe triggering criteria; see examples in Stage 1*).

Requirements for termination **-** Stage 3 of the Plan may be rescinded when all of the conditions listed as triggering events have ceased to exist for a period of ___ (e.g., 30) consecutive days. Upon termination of Stage 3, Stage 2 becomes operative. The _____ (name of your water supplier) will notify its wholesale customers and the media of the termination of Stage 2 in the same manner as the notification of initiation of Stage 3 of the Plan.

Stage 4 Triggers -- CRITICAL Water Shortage Conditions

Requirements for initiation - The _____ (name of your water supplier) will recognize that an emergency water shortage condition exists when_____(*describe triggering criteria*; *see examples below*).

Example 1. ***Major water line breaks, or pump or system failures occur, which cause unprecedented loss of capability to provide water service; or***

Example 2. ***Natural or man-made contamination of the water supply source(s).***

Requirements for termination **-** Stage 4 of the Plan may be rescinded when all of the conditions listed as triggering events have ceased to exist for a period of ___ (e.g., 30) consecutive days. The

_____ (name of your water supplier) will notify its wholesale customers and the media of the termination of Stage 4.

Section VIII: Drought Response Stages

The _____ (designated official), or his/her designee, shall monitor water supply and/or demand conditions and, in accordance with the triggering criteria set forth in Section VI, shall determine that mild, moderate, or severe water shortage conditions exist or that an emergency condition exists and shall implement the following actions:

Stage 1 Response -- MILD Water Shortage Conditions

Target: Achieve a voluntary __ percent reduction in _____ (e.g., total water use, daily water demand, etc.).

Best Management Practices for Supply Management:

Describe additional measures, if any, to be implemented directly by _____ (designated official), or his/her designee(s), to manage limited water supplies and/or reduce water demand. Examples include modifying reservoir operations procedures, interconnection with another water system, and use of reclaimed water for non-potable purposes.

Water Use Restrictions for Reducing Demand:

(a) The _____ (designated official), or his/her designee(s), will contact wholesale water customers to discuss water supply and/or demand conditions and will request that wholesale water customers initiate voluntary measures to reduce water use (e.g., implement Stage 1 of the customer=s drought contingency plan).

(b) The _____ (designated official), or his/her designee(s), will provide a weekly report to news media with information regarding current water supply and/or demand conditions, projected water supply and demand conditions if drought conditions persist, and consumer information on water conservation measures and practices.

Stage 2 Response -- MODERATE Water Shortage Conditions

Target: Achieve a ___ percent reduction in _____ (e.g., total water use, daily water demand, etc.).

Best Management Practices for Supply Management:

Describe additional measures, if any, to be implemented directly by _____ (designated official), or his/her designee(s), to manage limited water supplies and/or reduce water demand. Examples include modifying reservoir operations procedures, interconnection with another water system, and use of reclaimed water for non-potable purposes.

Water Use Restrictions for Reducing Demand:

(a) The _____ (designated official), or his/her designee(s), will initiate weekly contact with wholesale water customers to discuss water supply and/or demand conditions and the possibility of pro rata curtailment of water diversions and/or deliveries.

(b) The _____ (designated official), or his/her designee(s), will request wholesale water customers to initiate mandatory measures to reduce non-essential water use (e.g., implement Stage 2 of the customer=s drought contingency plan).

(c) The _____ (designated official), or his/her designee(s), will initiate preparations for the implementation of pro rata curtailment of water diversions and/or deliveries by preparing a monthly water usage allocation baseline for each wholesale customer according to the procedures specified in Section VI of the Plan.

(d) The _____ (designated official), or his/her designee(s), will provide a weekly report to news media with information regarding current water supply and/or demand conditions, projected water supply and demand conditions if drought conditions persist, and consumer information on water conservation measures and practices.

Stage 3 Response -- SEVERE Water Shortage Conditions

Target: Achieve a ___ percent reduction in _____ (e.g., total water use, daily water demand, etc.).

Best Management Practices for Supply Management:

Describe additional measures, if any, to be implemented directly by _____ (designated official), or his/her designee(s), to manage limited water supplies and/or reduce water demand. Examples include modifying reservoir operations procedures, interconnection with another water system, and use of reclaimed water for non-potable purposes.

Water Use Restrictions for Reducing Demand:

(a) The _____ (designated official), or his/her designee(s), will contact wholesale water customers to discuss water supply and/or demand conditions and will request that wholesale water customers initiate additional mandatory measures to reduce non-essential water use (e.g., implement Stage 2 of the customer=s drought contingency plan).

(b) The _____ (designated official), or his/her designee(s), will initiate pro rata curtailment of water diversions and/or deliveries for each wholesale customer according to the procedures specified in Section VI of the Plan.

(c) The _____ (designated official), or his/her designee(s), will provide a weekly report to news media with information regarding current water supply and/or demand conditions, projected water supply and demand conditions if drought conditions persist, and consumer information on water conservation measures and practices.

Stage 4 Response -- EMERGENCY Water Shortage Conditions

Whenever emergency water shortage conditions exist as defined in Section VII of the Plan, the _____ (designated official) shall:

1. Assess the severity of the problem and identify the actions needed and time required to solve the problem.

2. Inform the utility director or other responsible official of each wholesale water customer by telephone or in person and suggest actions, as appropriate, to alleviate problems (e.g., notification of the public to reduce water use until service is restored).

3. If appropriate, notify city, county, and/or state emergency response officials for assistance.

4. Undertake necessary actions, including repairs and/or clean-up as needed.

5. Prepare a post-event assessment report on the incident and critique of emergency response procedures and actions.

Section IX: Pro Rata Water Allocation

In the event that the triggering criteria specified in Section VII of the Plan for Stage 3 B Severe Water Shortage Conditions have been met, the _____ (designated official) is hereby authorized initiate allocation of water supplies on a pro rata basis in accordance with Texas Water Code Section 11.039.

Section X: Enforcement

During any period when pro rata allocation of available water supplies is in effect, wholesale customers shall pay the following surcharges on excess water diversions and/or deliveries:

____ times the normal water charge per acre-foot for water diversions and/or deliveries in excess of the monthly allocation up through 5 percent above the monthly allocation.

____ times the normal water charge per acre-foot for water diversions and/or deliveries in excess of the monthly allocation from 5 percent through 10 percent above the monthly allocation.

____ times the normal water charge per acre-foot for water diversions and/or deliveries in excess of the monthly allocation from 10 percent through 15 percent above the monthly allocation.

____ times the normal water charge per acre-foot for water diversions and/or deliveries more than 15 percent above the monthly allocation.

The above surcharges shall be cumulative.

Section XI: Variances

The _____ (designated official), or his/her designee, may, in writing, grant a temporary variance to the pro rata water allocation policies provided by this Plan if it is determined that failure to grant such variance would cause an emergency condition adversely affecting the public health, welfare, or safety and if one or more of the following conditions are met:

(a) Compliance with this Plan cannot be technically accomplished during the duration of the water supply shortage or other condition for which the Plan is in effect.

(b) Alternative methods can be implemented which will achieve the same level of reduction in water use.

Persons requesting an exemption from the provisions of this Plan shall file a petition for variance with the _____ (designated official) within 5 days after pro rata allocation has been invoked. All petitions for variances shall be reviewed by the _____ (governing body), and shall include the following:

(a) Name and address of the petitioner(s).
(b) Detailed statement with supporting data and information as to how the pro rata allocation of water under the policies and procedures established in the Plan adversely affects the petitioner or what damage or harm will occur to the petitioner or others if petitioner complies with this Ordinance.
(c) Description of the relief requested.
(d) Period of time for which the variance is sought.
(e) Alternative measures the petitioner is taking or proposes to take to meet the intent of this Plan and the compliance date.
(f) Other pertinent information.

Variances granted by the _____ (governing body) shall be subject to the following conditions, unless waived or modified by the _____ (governing body) or its designee:

(a) Variances granted shall include a timetable for compliance.
(b) Variances granted shall expire when the Plan is no longer in effect, unless the petitioner has failed to meet specified requirements.

No variance shall be retroactive or otherwise justify any violation of this Plan occurring prior to the issuance of the variance.

Section XII: Severability

It is hereby declared to be the intention of the _____ (governing body of your water supplier) that the sections, paragraphs, sentences, clauses, and phrases of this Plan are severable and, if any phrase, clause, sentence, paragraph, or section of this Plan shall be declared unconstitutional by the valid judgment or decree of any court of competent jurisdiction, such

unconstitutionality shall not affect any of the remaining phrases, clauses, sentences, paragraphs, and sections of this Plan, since the same would not have been enacted by the _____ (governing body of your water supplier) without the incorporation into this Plan of any such unconstitutional phrase, clause, sentence, paragraph, or section.

If you have any questions on how to fill out this form or about the _____ program, please contact us at 512/239-_____.

Individuals are entitled to request and review their personal information that the agency gathers on its forms. They may also have any errors in their information corrected. To review such information, contact us at 512-239-3282.
CITY ATTORNEY

EXAMPLE RESOLUTION FOR ADOPTION OF A

DROUGHT CONTINGENCY PLAN

RESOLUTION NO. _____

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE _____ (name of water supplier) ADOPTING A DROUGHT CONTINGENCY PLAN.

WHEREAS, the Board recognizes that the amount of water available to the _____ (name of water supplier) and its water utility customers is limited and subject to depletion during periods of extended drought;

WHEREAS, the Board recognizes that natural limitations due to drought conditions and other acts of God cannot guarantee an uninterrupted water supply for all purposes;

WHEREAS, Section 11.1272 of the *Texas Water Code* and applicable rules of the Texas Commission on Environmental Quality require all public water supply systems in Texas to prepare a drought contingency plan; and

WHEREAS, as authorized under law, and in the best interests of the customers of the _____(name of water supply system), the Board deems it expedient and necessary to establish certain rules and policies for the orderly and efficient management of limited water supplies during drought and other water supply emergencies;

NOW THEREFORE, BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE _____ (name of water supplier):

SECTION 1. That the Drought Contingency Plan attached hereto as “Exhibit A” and made

part hereof for all purposes be, and the same is hereby, adopted as the official policy of the _____ (name of water supplier).

SECTION 2. That the _____ (e.g., general manager) is hereby directed to implement, administer, and enforce the Drought Contingency Plan.

SECTION 3. That this resolution shall take effect immediately upon its passage.

DULY PASSED BY THE BOARD OF DIRECTORS OF THE _____, ON THIS __ day of _____, 20__.

_____

President, Board of Directors

ATTESTED TO:

_____

Secretary, Board of Directors

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Appendix 6A

Water Conservation Survey Letter

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TO POLITICAL SUBDIVISIONS WITH WATER NEEDS IN REGION H

The Region H Water Planning Group (RHWPG) is currently updating the Regional Water Plan. The RHWPG is recommending a combination of water conservation, expanded use of groundwater and new or existing surface water supplies to meet the projected water demands.

As part of the Region H Consulting Team, KBR is conducting a survey of water conservation best management practices. The goal is to determine the efficacy and cost of water conservation best management practices implemented and identify planned water conservation measures that have not yet been implemented.

Please return the completed survey by May 15, 2009 to:

Region H Water Planning Group
c/o Karim El Kheiashy, PhD, P.E.
KBR .
4100 Clinton Drive
Houston, Texas 77020
713-753-3803 facsimile
E-mail address: Karim.ElKheiashy@kbr.com

If you have any questions regarding this survey, please contact: Karim El Kheiashy at 713-753-3631.

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Region H Water Planning Group
Water Conservation & Drought Management Methods Survey
Please Return by: April 15, 2009

Water User Group (WUG)/City Name **Contact Person:** **Telephone Number:** **Fax:** **Email Address:** **Mailing Address:**
1. What is the WUG's average water demand per capita?
2. What programs are currently in place for water conservation measures for the WUG?
3. Which conservation measures have been used in the past? **(Please Indicate on the attached Water Conservation Survey form)**
4. What are the measurable impacts of these conservation methods? **(Please Indicate on the attached Water Conservation Survey form)**
5. What is the expected efficacy from these current water conservation methods that are being implemented? **(Please Indicate on the attached Water Conservation Survey form)**
6. What additional conservation measures are planned and what is the expected efficacy? **(Please Indicate on the attached Water Conservation Survey form)**

9. Approximately what is the current annual budget for water conservation measures? **(Please Indicate on the attached Water Conservation Survey form)**
8. Have you coordinated your public outreach programs with any other water providers? If so, please list which providers that you have partnered with.
9. Have you revised your Water Conservation and/or Drought Contingency Plan since 2006? If so, please provide a copy of this plan with your responses to this survey.
10. Do you have any additional comments relating to water conservation?

Region H 2011 RWP
Water Conservation Survey

Conservation Best Management Practices	Has this strategy been Implemented? (Circle One)		Effectiveness (Circle One)					Annual Water Savings		Date Implemented?	Water Conservation Measure Costs		If this strategy has not been implemented, would you consider implementing this strategy? (Circle One)	
			Not Effective	…	Somewhat Effective	…	Very Effective	Amount	Units		Startup Cost	Annual Cost		
Municipal Uses														
Water System Audits, Leak Detection	Y	N	1	2	3	4	5						Y	N
Water Conservation Pricing	Y	N	1	2	3	4	5						Y	N
Prohibition on Wasting Water	Y	N	1	2	3	4	5						Y	N
Low Flow Plumbing Rules	Y	N	1	2	3	4	5						Y	N
Residential Clothes Washer Incentive Program	Y	N	1	2	3	4	5						Y	N
School Education	Y	N	1	2	3	4	5						Y	N
Athletic Field & Golf Course Conservation	Y	N	1	2	3	4	5						Y	N
Industrial Uses														
Industrial Water Audit	Y	N	1	2	3	4	5						Y	N
Industrial Water Waste Reduction	Y	N	1	2	3	4	5						Y	N
Alternative Sources and Reuse of Process Water	Y	N	1	2	3	4	5						Y	N
Industrial Landscape	Y	N	1	2	3	4	5						Y	N
Industrial Site Specific Conservation	Y	N	1	2	3	4	5						Y	N
Agricultural Uses														
Irrigation Scheduling	Y	N	1	2	3	4	5						Y	N
On-Farm Irrigation Audit	Y	N	1	2	3	4	5						Y	N
Land Leveling	Y	N	1	2	3	4	5						Y	N
Linning of Irrigation District Canals	Y	N	1	2	3	4	5						Y	N
Linning of On-Farm Irrigation Ditches	Y	N	1	2	3	4	5						Y	N
Replacement of Irrigation District Canals with Pipelines	Y	N	1	2	3	4	5						Y	N
Replacement of On-Farm Irrigation Ditches with Pipelines	Y	N	1	2	3	4	5						Y	N
Drip/Micro Irrigation System	Y	N	1	2	3	4	5						Y	N
Tailwater Recovery and Reuse	Y	N	1	2	3	4	5						Y	N
Others (indicate: Municipal, Industrial or Agricultural)														
	Y	N	1	2	3	4	5						Y	N
	Y	N	1	2	3	4	5						Y	N
	Y	N	1	2	3	4	5						Y	N
	Y	N	1	2	3	4	5						Y	N
	Y	N	1	2	3	4	5						Y	N
	Y	N	1	2	3	4	5						Y	N

Appendix 6B

Water Conservation Survey Results

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Region H
Table 6B-1: Current and Future Considered Water Conservation Strategies

No.	WUG	Population	Type	Conservation WMS in 2006 Plan?	MUNICIPAL USES	Water System Audits, Leak Detection	Water Conservation Pricing	Prohibition on Wasting Water	Low Flow Plumbing Rules	Residential Clothes Washer Incentive Program	School Education	Athletic Field & Golf Course Conservation	INDUSTRIAL USES	Industrial Water Audit	Industrial Water Waste Reduction	Alternative Sources and Reuse of Process Water	Industrial Landscape	Industrial Site Specific Conservation	AGRICULTURAL USES	Irrigation Scheduling	On-Farm Irrigation Audit	Land Leveling	Linning of Irrigation District Canals	Linning of On-Farm Irrigation Ditches	Replacement of Irrigation District Canals and Lateral Canals with Pipelines	Replacement of On-Farm Irrigation Ditches with Pipelines	Drip/Micro Irrigation System	Tailwater Recovery and Reuse	5 - Year Goal	10 - Year Goal
	Percent Use					0.43	0.43	0.20	0.14	0.00	0.31	0.06		0.06	0.00	0.09	0.00	0.03		0.06	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00		
	Percent Future Use					0.14	0.06	0.20	0.17	0.14	0.17	0.17		0.11	0.11	0.06	0.09	0.06		0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	Average Rating					3.92	3.55	2.75	3.50	0.00	3.50	0.00		3.00	0.00	3.50	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1	Brookshire Municipal Water District	4,616	Type 2	2050			X	X																						
2	Clear Lake City Water Authority	-	Type 2	-		X			X			X																		
3	City of Sugarland	83,819	Type 3	No		X	X	X	X	F	X	F		F	F	X	F	F												
4	City of Sweeny	3,895	Type 2	No		F					F																			
5	City of Anahuac	2,405	Type 2	No																										
6	City of Pasadena	161,678	Type 3	No		X			X		X																			
7	Plantation MUD	4,333	Type 2	2000		X	X																							
8	City of Cut and Shoot	1,515	Type 1	2010		X	F	F	F		F			F																
9	Harris County FWSD #47	4,290	Type 2	2000		X	X				X																			
10	City of Rosenburg	37,420	Type 3	2000		F	X	X	X		X	F		F	F	F	F	F												
11	Grean Trails Municipal Utility District	2,694	Type 1	2010			X																							
12	Spring Creek Utility District	5,326	Type 2	2010		X	X	F	F	F	F	F																		
13	Bacliff Mud	7,816	Type 2	No		X		F	F		F					X														
14	City of Wallis	1,335	Type 1	No																										
15	Montgomer County WCID #1	4,157	Type 2	2010			X		F																					
16	City of Buffalo Water Works	2,074	Type 1	No																										
17	SMC MUD	11,087	Type 3	No		F	X	F	F	F	F									F										
18	HD MUD 54	-	Type 2	No			X	X																						
19	Riverside	6,489	Type 2	No			X	F						X																
20	WHC MUD 6	3,500	Type 2	2010			X																							
21	Village of Jones Creek	2,130	Type 1	No																										
22	HCMUD 345	5,285	Type 2	2010																										
23	City of Sealy	7,902	Type 2	No		X	X	X	X	F	F			X	F	F	F	X		X										
24	Harris County WCID 36	10,451	Type 3	2000		X	X	X			X			F	F															
25	Lake Livingston WSC	22,120	Type 3	No		X																								
26	San Jacinto Water Supply	3,697	Type 2	No		X																								
27	City of Beasley	701	Type 1	2030																										
28	City of Cleveland	7,930	Type 2	No		F		X			X	F																		
29	HMW SUD	11,464	Type 3	No																										
30	City of Houston	-	-	2010		X					X	X																		
31	WHCRWA	-	-	-		X	F	F	F	F	X	F																		
32	NHCRWA	-	-	-							X					X														
33	NFBWA	-	-	-		F	X	F			X	F																		
34	CLCND	-	-	-																X		X								
35	BRA	-	-	-		X					X																			

NOTE
X = Current Water Conservation Method
F = Considered for Future Implementation

Region H
Table 6B-2: Estimated water Savings from Water Conservation Measures

No.	WUG	Population	Type	Conservation WMS in 2006 Plan?	MUNICIPAL USES	Water System Audits, Leak Detection	Water Conservation Pricing	Prohibition on Wasting Water	Low Flow Plumbing Rules	Residential Clothes Washer Incentive Program	School Education	Athletic Field & Golf Course Conservation	INDUSTRIAL USES	Industrial Water Audit	Industrial Water Waste Reduction	Alternative Sources and Reuse of Process Water	Industrial Landscape	Industrial Site Specific Conservation	AGRICULTURAL USES	Irrigation Scheduling	On-Farm Irrigation Audit	Land Leveling	Linning of Irrigation District Canals	Linning of On-Farm Irrigation Ditches	Replacement of Irrigation District Canals and Lateral Canals with Pipelines	Replacement of On-Farm Irrigation Ditches with Pipelines	Drip/Micro Irrigation System	Tailwater Recovery and Reuse	5 - Year Goal	10 - Year Goal
Type 1																														
1	City of Cut and Shoot	1,515	Type 1	2010		unknown																								
2	Grean Trails Municipal Utility District	2,694	Type 1	2010			5%																							
3	City of Wallis	1,335	Type 1	No																										
4	City of Buffalo Water Works	2,074	Type 1	No																										
5	Village of Jones Creek	2,130	Type 1	No																										
6	City of Beasley	701	Type 1	2030																										
Type 2																														
7	Brookshire Municipal Water District	4,616	Type 2	2050			1	1																						
8	Clear Lake City Water Authority	-	Type 2			1			1			1																		
9	City of Anahuac	2,405	Type 2	No																										
10	Plantation MUD	4,333	Type 2	2000																										
11	Harris County FWSD #47	4,290	Type 2	2000		8.3 afy										20 afy														
12	Spring Creek Utility District	5,326	Type 2	2010		1	1																						4%	18%
13	Bacliff Mud	7,816	Type 2	No		1										1														
14	Montgomer County WCID #1	4,157	Type 2	2010			1																							
15	HD MUD 54	-	Type 2	No			1	1																						
16	Riverside	6,489	Type 2	No										1%																
17	WHC MUD 6	3,500	Type 2	2010		N/A																								
18	HCMUD 345	5,285	Type 2	2010																										
19	City of Sealy	7,902	Type 2	No		1	1	1	1					1				1		1										
20	San Jacinto Water Supply	3,697	Type 2	No																										
21	City of Cleveland	7,930	Type 2	No				1			1																			
Type 3																														
22	City of Sugarland	83,819	Type 3	No		153 afy					230 afy					306 afy														
23	City of Sweeny	3,895	Type 2	No																										
24	City of Pasadena	161,678	Type 3	No		1534 afy																								
25	City of Rosenburg	37,420	Type 3	2000												37 afy														
26	SMC MUD	11,087	Type 3	No			1																						3%	12%
27	Harris County WCID 36	10,451	Type 3	2000		20%																								
28	Lake Livingston WSC	22,120	Type 3	No		?																								
29	HMW SUD	11,464	Type 3	No																										
30	City of Houston	-	-																											
31	WHCRWA	-	-			1					1																		1%	2%
32	NHCRWA	-	-				1				1																			
33	NFBWA	-	-																											
34	CLCND	-	-																											
35	BRA	-	-																											

Region H
Table 6B-3: Water Conservation Capital Costs

No.	WUG	Population	Type	Conservation WMS in 2006 Plan?		Water System Audits, Leak Detection	Water Conservation Pricing	Prohibition on Wasting Water	Low Flow Plumbing Rules	Residential Clothes Washer Incentive Program	School Education	Athletic Field & Golf Course Conservation		Industrial Water Audit	Industrial Water Waste Reduction	Alternative Sources and Reuse of Process Water	Industrial Landscape	Industrial Site Specific Conservation		Irrigation Scheduling	On-Farm Irrigation Audit	Land Leveling	Linning of Irrigation District Canals	Linning of On-Farm Irrigation Ditches	Replacement of Irrigation District Canals and Lateral Canals with Pipelines	Replacement of On-Farm Irrigation Ditches with Pipelines	Drip/Micro Irrigation System	Tailwater Recovery and Reuse	5 - Year Goal	10 - Year Goal
Type 1																														
1	City of Cut and Shoot	1,515	Type 1	2010		1																								
2	Grean Trails Municipal Utility District	2,694	Type 1	2010			500																							
3	City of Wallis	1,335	Type 1	No																										
4	City of Buffalo Water Works	2,074	Type 1	No																										
5	Village of Jones Creek	2,130	Type 1	No																										
6	City of Beasley	701	Type 1	2030																										
Type 2																														
7	Brookshire Municipal Water District	4,616	Type 2	2050			1	1																						
8	Clear Lake City Water Authority	-	Type 2			1			1			1																		
9	City of Anahuac	2,405	Type 2	No																										
10	Plantation MUD	4,333	Type 2	2000		1	1																							
11	Harris County FWSD #47	4,290	Type 2	2000		N/A	1000									5000														
12	Spring Creek Utility District	5,326	Type 2	2010																										
13	Bacliff Mud	7,816	Type 2	No		1										1														
14	Montgomer County WCID #1	4,157	Type 2	2010			1																							
15	HD MUD 54	-	Type 2	No			1	1																						
16	Riverside	6,489	Type 2	No										1300																
17	WHC MUD 6	3,500	Type 2	2010																										
18	HCMUD 345	5,285	Type 2	2010																										
19	City of Sealy	7,902	Type 2	No		1	1	1	1					1				1												
20	San Jacinto Water Supply	3,697	Type 2	No		1	1																							
21	City of Cleveland	7,930	Type 2	No				1			1																			
Type 3																														
22	City of Sugarland	83,819	Type 3	No		?	?	?	?		35000					?														
23	City of Sweeny	3,895	Type 2	No																										
24	City of Pasadena	161,678	Type 3	No		225000																								
25	City of Rosenburg	37,420	Type 3	2000												250000														
26	SMC MUD	11,087	Type 3	No			1																							
27	Harris County WCID 36	10,451	Type 3	2000		1	1				1																			
28	Lake Livingston WSC	22,120	Type 3	No		2000																								
29	HMW SUD	11,464	Type 3	No																										
30	City of Houston	-	-																											
31	WHCRWA	-	-																											
32	NHCRWA	-	-																											
33	NFBWA	-	-																											
34	CLCND	-	-																											
35	BRA	-	-																											

Region H
Table 6B-4: Conservtion Measure Annual Costs

No.	WUG	Population	Type	Conservation WMS in 2006 Plan?		Water System Audits, Leak Detection	Water Conservation Pricing	Prohibition on Wasting Water	Low Flow Plumbing Rules	Residential Clothes Washer Incentive Program	School Education	Athletic Field & Golf Course Conservation		Industrial Water Audit	Industrial Water Waste Reduction	Alternative Sources and Reuse of Process Water	Industrial Landscape	Industrial Site Specific Conservation		Irrigation Scheduling	On-Farm Irrigation Audit	Land Leveling	Linning of Irrigation District Canals	Linning of On-Farm Irrigation Ditches	Replacement of Irrigation District Canals and Lateral Canals with Pipelines	Replacement of On-Farm Irrigation Ditches with Pipelines	Drip/Micro Irrigation System	Tailwater Recovery and Reuse	Total	
Type 1																														
1	City of Cut and Shoot	1,515	Type 1	2010																									300	
2	Grean Trails Municipal Utility District	2,694	Type 1	2010																										
3	City of Wallis	1,335	Type 1	No																										
4	City of Buffalo Water Works	2,074	Type 1	No																										
5	Village of Jones Creek	2,130	Type 1	No																										
6	City of Beasley	701	Type 1	2030																										
Type 2																														
7	Brookshire Municipal Water District	4,616	Type 2	2050			1	1																						
8	Clear Lake City Water Authority	-	Type 2			1			1			1																		
9	City of Anahuac	2,405	Type 2	No																										
10	Plantation MUD	4,333	Type 2	2000		1	1																							
11	Harris County FWSD #47	4,290	Type 2	2000		30000	500									1000														
12	Spring Creek Utility District	5,326	Type 2	2010		500																								
13	Bacliff Mud	7,816	Type 2	No		1										1														
14	Montgomer County WCID #1	4,157	Type 2	2010			1																							
15	HD MUD 54	-	Type 2	No			1	1																						
16	Riverside	6,489	Type 2	No																										
17	WHC MUD 6	3,500	Type 2	2010																										
18	HCMUD 345	5,285	Type 2	2010																										
19	City of Sealy	7,902	Type 2	No		1	1	1	1					1				1		1										
20	San Jacinto Water Supply	3,697	Type 2	No																									6000	
21	City of Cleveland	7,930	Type 2	No				1			1																			
Type 3																														
22	City of Sugarland	83,819	Type 3	No		?	?	?	?		50000 - 75000					50000 - 100000														
23	City of Sweeny	3,895	Type 2	No																										
24	City of Pasadena	161,678	Type 3	No																										
25	City of Rosenburg	37,420	Type 3	2000												?														
26	SMC MUD	11,087	Type 3	No			1																							
27	Harris County WCID 36	10,451	Type 3	2000		1	1	1			1																			
28	Lake Livingston WSC	22,120	Type 3	No		2000																								
29	HMW SUD	11,464	Type 3	No																										
30	City of Houston	-	-								295000																		295000	
31	WHCRWA	-	-			10000					250000																			
32	NHCRWA	-	-								250000																			
33	NFBWA	-	-																											
34	CLCND	-	-																											
35	BRA	-	-																											