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TEXAS WATER
CONSERVATION SCORECARD

SIERRA CLUB

NATIONAL WILDLIFE FEDERATION

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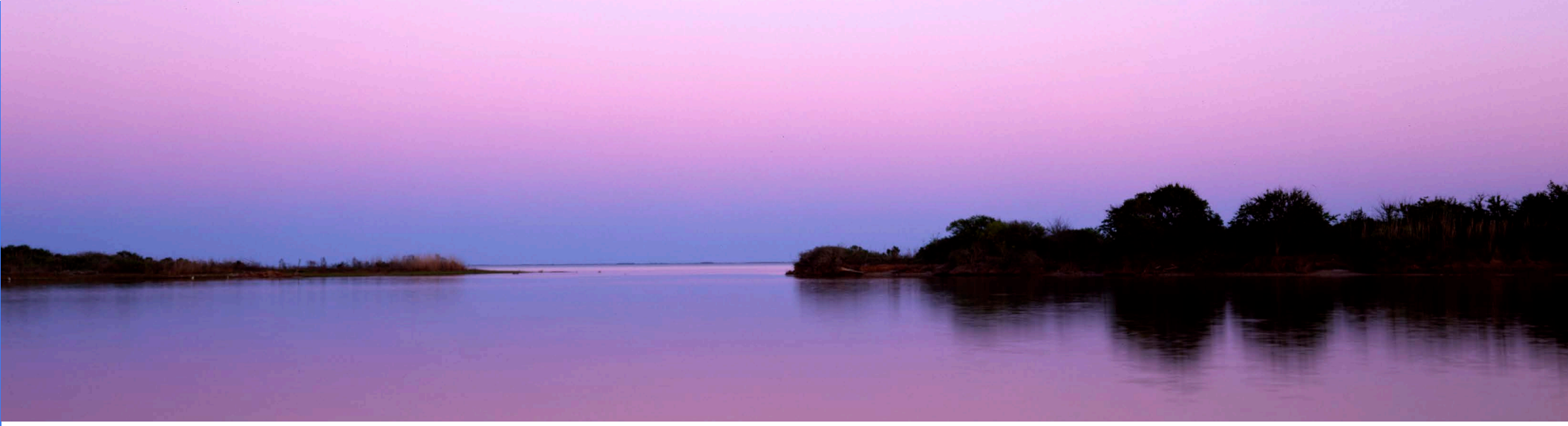
You can learn more about the Texas Living Water Project at www.texaslivingwaters.org.



Executive Summary

Texas has received high marks for our state's laws and policies on water conservation. That positive recognition is deserved even though there is more the Lone Star State could do to advance conservation. But the real question is what's happening "on the ground?" Are water utilities meeting the State's legal requirements on conservation? Are these "municipal" water suppliers making their best efforts to reduce per capita water use, and thus save water and money for Texans?

Those are the questions we at the **Texas Living Waters Project** – a partnership of the **Sierra Club-Lone Star Chapter, National Wildlife Federation,** and **Galveston Bay Foundation** – have attempted to answer with this **Texas Water Conservation Scorecard.** We have reviewed over 300 water utilities in Texas to assess how much they are doing to save our most precious resource – water.

In compiling this Scorecard, we have relied on publicly accessible information from water conservation plans and reports, water loss audits, utility websites, and other such sources. A significant portion of a utility's rating in the Scorecard depended upon information provided by that utility. If a utility failed to submit data to State water officials or if the information was incomplete, a utility may not have received points on one or more of our evaluation measures.

Our Scorecard is primarily an evaluation of utilities on their level of effort to advance conservation, not necessarily their performance in achieving conservation (with the exception of two scoring criteria). Each utility's special circumstances may affect its rating. We have tried to provide additional context for the state's 35 largest water utilities (serving 100,000 people or more) with "Snapshots" (narratives) that give more information. No evaluation system is perfect, but this Scorecard should at least highlight to Texans where their water utilities are doing well and where more conservation effort is needed.

What have we learned from our Scorecard? Here are some of the key findings:

Most of the water utilities evaluated need to substantially increase their water conservation efforts – even those utilities scoring highest could do more to help Texans save water

Most utilities are submitting required water conservation plans to the State of Texas but those plans vary widely in quality, detail, and public accessibility – and about one-fifth of the utilities are not submitting progress reports on carrying out those plans and/or submitting required audits assessing how much water is being "lost" in their operations

Approximately 40% of utilities report a loss of more than 11% of the water pumped in their system – in fact about 20% in that group report a loss of more than 15%

During 2009-2013 over half of the utilities serving 25,000 people or more beat their targets for water use reduction – although drought restrictions may have been a key factor – but only about 13% of utilities of this size have reached or gone below the per capita water use target recommended by the State

About two-thirds of the utilities serving 25,000 people or more have set a target for water use reduction over the current five-year period that does not even achieve the minimum rate of progress recommended by the State

Only about a third of the utilities serving 25,000 people or more place any limitations on outdoor landscape watering except during drought periods, even though outdoor watering accounts for substantial increases in water use in Texas during the summer, and that increase fuels the building of costly infrastructure to meet peak water demands

A significant number of water utilities in Texas have "conservation-oriented" water rate structures that send a relatively strong "pricing signal" to their customers that probably reduces the amount of water used – but that does not necessarily mean that water is priced at its true value

Some water utilities such as Dallas are working on new initiatives that may significantly advance water conservation, and new options for funding water efficiency are available to help utilities, businesses, and others reduce water use

Given these findings, we make several recommendations for advancing water conservation in Texas. Among our recommendations:

Water utilities should improve the quality of their water conservation plans and provide summaries of their plans, progress reports, and water loss audits to their customers directly as well as online

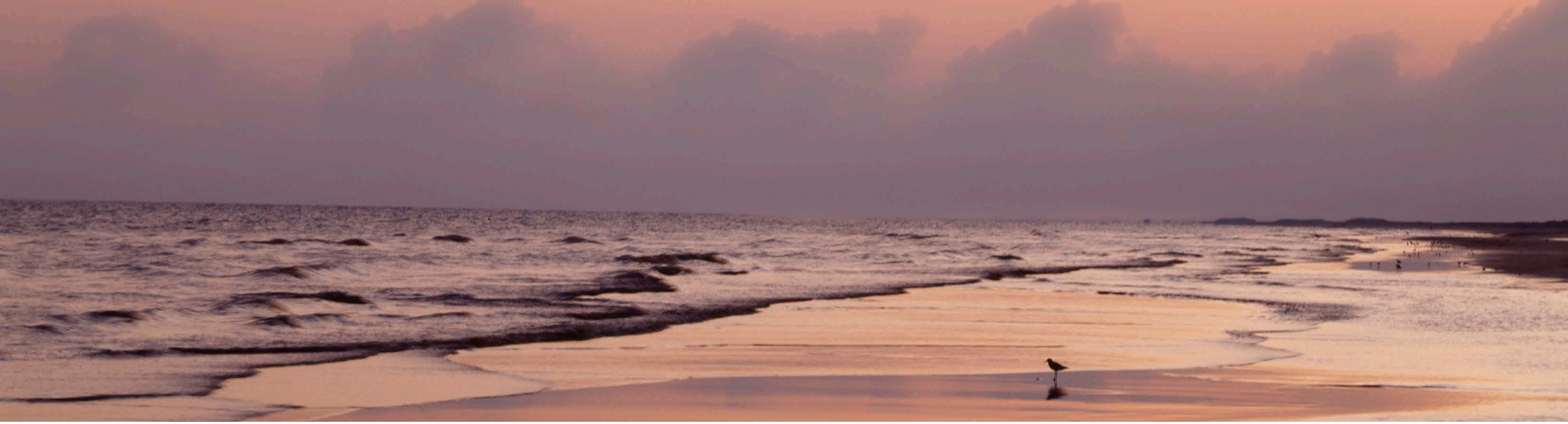
Water utilities should intensify their efforts to reduce water loss, increase their adoption of best management practices for water conservation, and set targets for per capita water use that actually reduce that use at an aggressive rate

More water utilities and municipalities should adopt outdoor watering limitations on an ongoing basis – not just during drought – and should promote and take advantage of new options for funding water efficiency

The Texas Water Development Board should require more standardized information in conservation plans and standardize the timing of their submittal, and the agency should provide an opportunity for utilities to enter all water data online – to enhance efficiency and expand public access to information about conservation efforts by their utilities

The State of Texas should provide more resources to assist small water utilities in educating their customers on water use and water conservation, base decisions on state financial assistance for water projects on a utility's record and targets for conservation, and re-evaluate whether current targets are promoting sufficient progress in achieving reductions in per capita water use

Successive State Water Plans over the past two decades have increasingly emphasized the importance of conservation in meeting the water demands of a growing population. Many experts believe that Texas has the potential to achieve even greater levels of conservation than recommended in the most recent State Plan. No matter what the ultimate potential may be, our Texas Water Conservation Scorecard shows that all water utilities in Texas can and should do more to achieve greater water efficiency – and save us water and money at the same time.



Introduction

Texas has received high marks and positive recognition for our state's laws and policies on water conservation. In a report released in 2012 by the national **Alliance for Water Efficiency** (AWE) and **Environmental Law Institute** (ELI) all 50 states were assessed and scored on their adopted statutes, regulations, and practices to promote the efficient use of water. California and Texas tied for the highest scores among the states and received a grade of "A-" based on their scores (no other state received a grade higher than a B+).

Texas deserved that recognition based on the state's water efficiency and conservation laws and policies, even though there is more that the Lone Star State could do at the state level to advance conservation. But the real question is: ***what's happening "on the ground?"***

For example, are the cities and water districts that provide water to our homes and businesses actually meeting the requirements set by the State of Texas for conservation planning and reporting and for water loss auditing? Are these "municipal" water suppliers employing the "best management practices" (BMPs) for water conservation identified in the State's BMP Guide? Are they following the guidelines for reducing water use recommended by the State? ***Bottom line: are our water suppliers making their best efforts to reduce per capita water use and to save water and money for today's Texans and future generations?***

These are the questions we have attempted to answer with the **Texas Water Conservation Scorecard.** Who are we? We are the **Texas Living Waters Project** – a joint water policy and education project of the **Lone Star Chapter of the Sierra Club,** the **National Wildlife Federation**, and regional partner **Galveston Bay Foundation**. Promoting and achieving water conservation in Texas has been a priority for the Project during the decade and a half since it was initiated. Saving water keeps money in the pockets of Texas homeowners and businesses since water costs money and will cost even more in the future. Saving water also means taking less water out of our rivers, streams, and groundwater aquifers, thus protecting our Texas natural heritage and the quality of life we Texans enjoy and hope for our children and grandchildren.

In this Scorecard we have reviewed over 300 retail public water utilities in Texas to assess their respective level of effort to save our water. Thus the focus here is on water conservation and efficiency in the "municipal" sector – water that public water utilities supply to residential, commercial, and institutional customers and to those industries who do not have their own supplies. We have not attempted to evaluate conservation by agricultural producers, private groundwater well owners, and industries who rely on their own water resources.

In doing this Scorecard we have – to the best of our knowledge – conducted a review that has not been done before in Texas. Indeed, apparently a review of the water conservation efforts of retail water utilities on this scale has not been accomplished in any other state either. This Scorecard reflects the challenges of doing something for the first time, but it provides information that should be helpful to Texans in judging how much progress we are making in conserving our state's most precious resource – water.

Background

The first step we took in preparing a Texas Water Conservation Scorecard was to clarify our understanding of the term **"water conservation."** The Texas Water Code, the primary state law governing water in Texas, historically defined "conservation" solely as "the development of water resources;" for example, "conserving" water by damming a stream and storing the water in the impounded reservoir. A significant amount of water in a surface reservoir evaporates during hot weather, however, and over time sediment will build up in a reservoir, decreasing its capacity to store water. That is not our definition of "conserving" water.

This Scorecard relies primarily on the modern definition of "conservation" added to the Texas Water Code in 1985. That definition reads: "those practices, techniques, and technologies that will 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 water supply is made available for future or alternative uses."

For purposes of the Scorecard, however, we are not evaluating public water utilities on their efforts in the "recycling and reuse of water." In general, wastewater reuse – also termed water reuse – is a positive practice. For instance, treating wastewater generated by homes and businesses and then making that treated wastewater available to irrigate golf courses or school athletic fields rather than discharging the wastewater into a stream or lake avoids having to take raw water out of a stream or lake for those purposes.

There are potential complications with water reuse, however. For example, reducing the volume of water returned to a stream as a result of reusing it may negatively impact flow levels in the stream necessary to maintain fish and wildlife habitat. In addition, some utilities practice what they term "indirect reuse," whereby they pump water from a stream, distribute it, treat the wastewater produced from it, put it back in the stream, but then withdraw it downstream. That might help instream flows for some stretches of a stream, but Is that really "conserving" water? We think not.

Bottom line is that each potential reuse of water at a utility level needs to be considered individually to determine the appropriate balance for meeting water demands while protecting rivers and streams. That goes beyond the scope of this Scorecard, so we have not attempted to rate utilities on water reuse.

Neither are we evaluating water utilities on their response to drought, including the implementation of the drought contingency plans they are required to prepare and submit periodically to a State agency. True, when an area of Texas is experiencing drought, those of us who live there are asked, or at some point required, to take actions to "conserve" water – in other words, reduce our water use. However, when the drought is over, mandatory water restrictions imposed in response to the drought are usually lifted. These drought contingency measures are temporary actions,not ongoing or permanent practices. **Our Scorecard seeks to evaluate ongoing efforts by utilities to conserve water, <u>not</u> temporary responses to drought.**

Over time some drought contingency actions may become ongoing conservation actions. An example would be limitations on the number of times a homeowner is allowed to water his or her outdoor landscape each week. Many water utilities limit outdoor watering to no more than once or twice a week when their service area is in serious drought, but once the drought is over, the limitation is lifted. Based on their experiences in successfully reducing water use during drought by limiting outdoor watering, some utilities – especially in North Texas – have made those restrictions ongoing, as part of their water conservation efforts, without negative impacts to outdoor landscapes.

We are not evaluating water utilities on their efforts in recycling or reuse of water

The difference between water conservation and drought response is highlighted by the fact that the Texas Legislature over the course of the past two decades established requirements for many water utilities and others to prepare both conservation plans and drought contingency plans. Indeed, the State of Texas – as noted earlier – has been in the forefront among the 50 states in enacting laws and policies fostering conservation. For our purposes here are the key ones (not a complete list):

Each retail public water utility with 3300 connections or more is required every five years to prepare and submit to the Texas Water Development Board (TWDB) a water conservation plan;

That plan must include quantified five-year and ten-year targets and goals set by the utility for reducing water use and water loss on a per capita basis, a method for tracking progress, and a utility profile with the information and data used to prepare the plan;

Each of these utilities must submit an annual implementation report to TWDB (by May 1 of each year) describing its progress in achieving its targets and goals;

Each retail public water utility providing potable water to more than 3300

connections is required to submit a water loss audit (also known as a water audit report) to TWDB annually (by May 1).

The 3300 connections (note the slight difference between the threshold for submitting a water conservation plan and the threshold for submitting a water loss audit) is a rough indicator of a water service area with a population of 10,000 or more (based on a ballpark figure of three people per connection). Setting the threshold at this level eliminates smaller retail water utilities from having to prepare and submit these plans and reports to TWDB unless they come under the coverage of some other legal requirements for those actions (all retail public water utilities have to submit a water loss audit every five years, utilities applying for financial assistance from TWDB for more than $500,000 must submit conservation plans, and entities seeking surface water rights from the **Texas Commission on Environmental Quality (TCEQ)** must submit conservation plans.

In this Scorecard **we are evaluating only those retail public water utilities with 3300 connections or more, a total of 306 utilities at the time of our data collection and analysis.** These utilities serve the vast majority of the population of Texas and supply the largest volume of municipal water provided by public entities to Texas residents.

Retail public water utilities are not directed to meet a specific target or goal for reducing water use or controlling water loss – they set their own. Nor are utilities required by the State of Texas to implement a specific array of water conservation practices. However, there is guidance from the State to assist the utilities in setting targets and implementing conservation practices. In 2003-2004 a **Water Conservation Implementation Task Force** created by the Texas Legislature and composed of stakeholders representing diverse interests chosen by TWDB met and developed a report on advancing water conservation and a Best Management Practices (BMP) Guide with a detailed description of actions that could be taken by municipal water suppliers, agricultural producers, and industries to achieve conservation.

The Task Force in its 2004 report recommended that an entity required to prepare and submit a municipal water conservation plan should consider in setting its targets and goals "[a] minimum annual reduction of one percent in total [gallons of water per capita per day, or GPCD], based on a five-year rolling average, until such time as the entity achieves a total [GPCD] of 140 or less." The 140 GPCD was actually a compromise among the stakeholder members who at one point had been poised to recommend a target GPCD of 125 or less, as noted in a minority report included with the Task Force report.

In November 2004 TWDB published the Task Force's "Water Conservation Best Management Practices Guide" (State BMP Guide). That BMP Guide was eventually put online and continues to be updated by a **Water Conservation Advisory Council** created by the Texas Legislature in 2007 as a permanent successor to the Water Conservation Implementation Task Force. The BMP Guide now resides online on the Council's website – www.savetexaswater.org.

Our Scorecard evaluates ongoing efforts by utilities to conserve water, not temporary responses to drought

In response to the Texas Legislature's passage of SB 181 in the 2011 legislative session, TWDB and TCEQ – with the assistance of the Council – in December 2012 produced a "Guidance and Methodology for Reporting on Water Conservation and Water Use" document to assist water utilities and other entities in calculating per capita water use and other water use metrics and in developing their water conservation plans and various water use reports to the State. TWDB has also produced and made available online a "Water Loss Audit Manual for Texas Utilities" to help water utilities conduct and submit required water loss audit reports to the State agency.

The various State requirements for preparing and submitting water conservation plans, annual reports, and water loss audits; the information contained in those plans, reports, and audits; and the recommendations of the Task Force and its members on targets and goals form the basis for the majority of the criteria that we have used to evaluate retail public water utilities in our Water Conservation Scorecard. In compiling our Scorecard, we have relied on ***publicly accessible*** data, primarily submittals to TWDB but also utility or city government websites and water rate information gathered annually by the **Texas Municipal League (TML)**.

Only in the case of the water rate information was there follow-up contact to entities to obtain missing data that had not been submitted, since there is no legal requirement for utilities to provide that data to TML. With regard to the plans, reports, and audits required to be submitted to TWDB – all of which are mandated by statute for retail public water utilities with essentially 3300 connections or more – a significant portion of a utility's rating in the Scorecard depended upon the information provided in those documents. If those items were not submitted to TWDB or, in a few cases, TCEQ, then we could not award points to a utility on the criteria dependent upon data in those documents.

Moreover, a utility's score on some criteria may have been impacted by the quality of its plans, reports, and audits – or its website. If certain information was buried or obscure, we may not have been able to locate it and include it in the scoring. However, a fair effort was made to try to find information in conservation plans and on utility websites as time and resources allowed.

We note that this Scorecard is based on plans, reports, and other information available for as many of these utilities as possible at the time of our research, the first quarter of 2016. Some of these items may have been updated or in the process of being revised by the time that the Scorecard was released publicly. **Thus, the scores given for each water utility based on our analysis should be considered as a rating that will change over time – and may already have.**

A detailed explanation of the evaluation design – the scoring system – is presented in the next section of this report. Suffice it to say at this point that the Water Conservation Scorecard that we have developed for retail public water utilities is primarily an evaluation of the level of ***effort*** being made by water utilities to embrace and advance water conservation, ***not necessarily their performance*** in achieving water conservation.

There are two criteria that we employed in developing the Scorecard that might be considered an evaluation of a utility's performance. One of those criteria, a utility's rate of water loss, was applied to all utilities with 3300 connections or more. The second one – whether a utility met, failed to meet, or beat its previous target for reduction in per capita water use – was applied only to large and medium-size utilities. **With those exceptions, we are scoring water utilities on their efforts to achieve water conservation, not necessarily whether they have achieved their potential for water conservation.** Some critics will no doubt say that it is not appropriate to score and compare water utilities on the basis of their water conservation efforts because each utility is unique. They will say that a utility's specific mix of customers, its geographic location and climate in a state as big as Texas, the socio-economic characteristics of the population they serve, the utility's access to water, the resources available to implement conservation measures, and a multitude of other factors affect the extent to which a utility is able to have a robust water conservation program.

It is certainly true that each utility is unique to some extent and that the factors noted may affect its conservation efforts. **We have tried to provide more context for the ratings of the 35 largest retail water utilities – those serving a population of 100,000 or more – by providing a "Snapshot" (a narrative) for each of those utilities that goes into a little more depth about their water supplies, specific conditions, and water conservation actions.** Admittedly the Snapshots are somewhat more subjective than the scoring on each of those utilities, but they allow us to highlight some positive actions by utilities with relatively low scores as well as point out some potential actions that even fairly highly rated utilities could take to advance water conservation in their service areas.

We were not able to provide that additional context for the 271 medium-size and small utilities (defined respectively as utilities serving a population of 25,000 but less than 100,000 and those serving a population of less than 25,000 but having at least 3300 connections). For those utilities the scoring system will have to suffice for the time being to give at least a sense of how much effort these utilities are putting into water conservation.

Scores given to water utilities are a rating that will change over time.

Regardless of the shortcomings of any rating system for water conservation and any constraints upon a utility to achieve its conservation potential, there are certain actions that each utility, regardless of size, can and should take to advance water conservation – including some actions that cost relatively little money. Indeed, conservation is often the most cost-effective way to meet water demands, and the use of conservation may postpone or avoid even costlier actions such as the development of new water infrastructure.

Taxpayers and ratepayers in Texas have a right to know what their water utilities are doing to save them money through conservation. They especially have the right to know whether their own water utility is doing as much as other utilities of a similar size to achieve the potential for conservation and reap the benefits. To throw up your hands and say you cannot compare water utilities on their conservation efforts is to deny the public the information they deserve. We have prepared this Scorecard to give the public that information. No scorecard or ranking is perfect, but this initiative should at least highlight to Texans where their water utilities are doing well and where more effort is needed for water conservation. At the very least the Scorecard should help give greater visibility to water conservation planning and water loss control, and it should help start a wider conversation between the public and their respective water utility about how best to use water efficiently in their community.

Scoring

Criteria for Scoring Water Conservation Efforts by Retail Public Water Utilities

To rate the water conservation efforts of retail public water utilities we selected several criteria based on publicly accessible data, feedback and suggestions from water utility professionals and water conservation experts, and the experiences of Texas Living Waters Project team members who have worked on water conservation issues for at least a decade and a half, and in some instances much longer. After considerable deliberation the Project team members settled on ten basic criteria for scoring the large and medium-size retail public water utilities in Texas. Large utilities are defined here as those serving a population of 100,000 or more. Medium-size utilities are defined here as those serving a population of at least 25,000 but below 100,000. Six of ten criteria were chosen to evaluate small utilities – those serving at least 3300 water connections but less than 25,000 people.

The population figures for the utilities are numbers generated by the State of Texas and used by the Texas Water Development Board (TWDB) in characterizing the size of water utilities. These numbers are publicly available information and were provided to the Living Waters Project by TWDB at our request. Note that the "Snapshots" (narratives) of the 36 large utilities may include a population number for a specific utility that is different from the population figure provided to us by TWDB if that number came from a different source such as the utility's water conservation plan or was from a different point in time.

Below are the ten criteria used to evaluate the 126 large and medium-size utilities – presented in the form of the long and short versions of the question asked to determine a utility's score on that criterion, the system used to award points to a utility for that criterion, and a brief statement about the importance of that criterion. **The six of the ten criteria that were used to score the 180 small utilities are presented here in *blue*.** There was a possible total of 100 points for a large or medium-size utility and a possible total of 55 points for a small utility in fashioning their respective scores for water conservation effort.

Note that if a utility did not submit one of the three statutorily required items (water conservation plan, annual report, or water audit report) that constitute the first three criteria in our scoring system, that utility also did not receive points on some of the other criteria that were based on information available in those documents. For example, if a utility did not submit its required Water Audit Report to TWDB then it received zero points on the criterion of water loss rate, no matter what its rate might be.

Here are the criteria used to score the retail water utilities:

1. Did the utility submit its most-recent required Water Conservation Plan (WCP) to the State? ***WCP Submitted?***

- **Yes** **5 points**
- **No** **0 points**

The purpose of a Water Conservation Plan is to ensure water use efficiency within a water utility's operation. Submitting this plan is essential to a utility reducing the consumption of water, reducing the loss or waste of water, and improving or maintaining the efficiency in the use of water. This information is also helpful to TWDB in water resources planning.

2. Did the utility submit its most recent Annual Report (on implementation of its Water Conservation Plan) to the State? ***Annual Report (AR) Submitted?***

- **Yes** **5 points**
- **No** **0 points**

The purpose of an Annual Report is to evaluate an entity's progress in implementing programs to achieve targets and goals in the water conservation plan. Submitting this report is essential to a utility reviewing conservation programs annually and evaluating program successes and needs. This information is also helpful to TWDB in water resources planning.

Water Conservation Plan (WCP): The purpose of a Water Conservation Plan is to ensure water use efficiency within a water utility's operation. The Water Conservation Plan is a strategy or combination of strategies for reducing the consumption of water, reducing the loss or waste of water, improving or maintaining the efficiency in the use of water, or increasing recycling and reuse of water.

3. **Did the Utility submit its most-recent annual Water Audit Report to the State?** *Water Audit Report (WAR) Submitted?*

- Yes 5 points
- No 0 points

The purpose of a Water Audit Report (also known as a Water Loss Audit) is to provide utilities with a standardized approach to auditing water loss. Preparing a Water Audit Report is essential to help a utility understand where and how much water is being lost from the distribution system. Submitting a Water Audit Report to TWDB is helpful to the agency in water resources planning and decisions about State financial assistance.

4. **What was the Utility's most recent reported total percent water loss as stated in its Water Audit Report?** *Total Percent (%) Water Loss*

- % Water Loss of less than or equal to 6.5% 15 points
- % Water Loss of greater than 6.5% to 11% 10 points
- % Water Loss of greater than 11% to 15.4% 5 points
- % Water Loss greater than 15.4% 0 points

The percentage of water lost from the distribution system provides the utility with a baseline from which to monitor and improve water loss control. A higher percentage means that a utility is losing water that could be used or conserved to delay or avoid potential expensive water infrastructure projects in the future. Each Water Audit Report has a number of metrics that might be used to describe a utility's water loss. We chose to use "unadjusted total water loss," which is presented as a percentage of the utility's total water pumped, as the metric for this evaluation. This metric is the one that the public most likely will see from time to time in the news media in reports about their utility's "water loss."

"Unadjusted" water loss refers to the total water loss of a utility that is both a retail and wholesale water supplier and refers to that utility's water loss in both its retail and wholesale operations. (Another metric, "adjusted" water loss, takes out the water loss in the wholesale operation.) That means, of course, that using "unadjusted" water loss as our metric for evaluation of utilities might be criticized on the basis that most of the utilities scored here are retail providers only. However, we are concerned about the ***total*** water loss of a utility, whether that loss comes from their retail or wholesale operations, because it informs us about how well a utility is doing in solving this problem. A utility that provides retail and wholesale service must keep water loss at a minimum on both sides of its operation. Hence our choice of "unadjusted" water loss as our metric.

5. **Does the Utility (or municipality in which it is housed) have a publicly accessible website on which the public may quickly find the utility's Water Conservation Plan (WCP) and/or other conservation information?** *WCP and/or Conservation Info Accessible Online?*

- Yes, Water Conservation Plan (WCP) 5 points
- Yes, Water Conservation Information Only 3 points
- No 0 points

The WCP is a strategy or combination of strategies for reducing the consumption of water. Communication of the WCP and/or water conservation information on a utility or city website educates the public on current programs and how residents can become more engaged in conservation practices.

6. **Did the utility achieve the 5-year goal for water use reduction stated in its "2009" or its most recent previous Water Conservation Plan (WCP)?** *Achieved 5-Yr Conservation Goal Set in 2009 WCP?*

- 5-year water use reduction goal exceeded 10 points
- 5-year water use reduction goal reached 5 points
- 5-year water use reduction goal not achieved 0 points

Comparing a utility's 5-year water use goal set in its "2009" WCP to its actual water use in 2014 provides feedback as to the utility's ability to meet a 5-year goal to reduce water use. The term "2009" refers to the fact that the statute mandating that all retail public water utilities with 3300 connections or more file a WCP with TWDB required that the plan be submitted by May 1, 2009. Some utilities may have been required to file a WCP before 2009 if they fell under the auspices of another statute, and some utilities who were first required to file a WCP in 2009 missed that deadline and filed in a later year. The "2009" WCP as used here refers to the plan submitted to the State in the year closest to 2009.

Water Conservation Plan Annual Report (Annual Report or AR): The purpose of an Annual Report is to evaluate a utility's progress of program implementation for the water conservation plan. The effectiveness of the water conservation plan is in the implementation of the water conservation program. Reviewing the program annually helps to evaluate program successes and needs.

7. **The utility already achieved a relatively low GPCD (gallons per capita per day of water use)? If not, what is the 5-year goal for water use reduction in its "2014" or most recent Water Conservation Plan?** *Set a Strong Conservation Goal in Its 2014 WCP?*

- Either achieved a GPCD of 125 or less OR set an average annual reduction of more than 1.25% as its 5-year goal — 15 points
- Either achieved a GPCD of less than 140 but more than 125 OR set an average annual reduction of 0.85% to 1.25% as a 5-yr goal — 10 points
- Set an average annual reduction of 0.1% to less than 0.85% — 5 points
- Set an average annual reduction of less than 0.1% — 0 points

Determining whether a utility has set a strong 5-year water use reduction goal in 2014 provides feedback as to the utility's willingness to implement conservation strategies and its commitment to a significant rate of progress in saving water. Utilities that have reduced water use substantially in past years may find it difficult to continue to decrease that use at a high rate from this point. Therefore, on this criterion we have given the maximum number of points both to utilities that have set a high percent water use reduction as their 5-year goals ***and*** to utilities that have already received a relatively moderate or low GPCD even if their next 5-year goals are not high as some others.

8. **How many of the municipal water conservation Best Management Practices (BMPs) presented in the state's BMP Guide did the utility report in its most recent Annual Report that it was using?** *Number of Best Management Practices (BMPs) implemented?*

- Incorporated 15+ BMPs into its WCP — 10 points
- Incorporated 12-14 BMPs into WCP — 8 points
- Incorporated 9-11 BMPs into WCP — 6 points
- Incorporated 6-8 BMPs into WCP — 4 points
- Incorporated 1-5 BMPs into WCP — 2 points
- Incorporated no BMPs into WCP — 0 points

BMPs are voluntary efficiency measures that are intended to save a quantifiable amount of water and can be implemented within a specified timeframe. Detailed information on over 20 municipal water conservation BMPs is available in the State's BMP Guide, which is accessible online at www.savetexaswater.org. The greater number of these BMPs a utility implements, the more extensive the reach of its water conservation measures, not only within the utility but throughout the area in which it is located.

9. **Has the utility (or the municipality under which it operates) implemented any mandatory outdoor watering schedules on an ongoing basis (*not just as part of the implementation of a drought contingency plan*)?** *Outdoor Watering Schedule?*

- Outdoor watering is limited to no more than 1x per week — 15 points
- Outdoor watering is limited to no more than 2x per week — 10 points
- Time of day outdoor watering schedule only — 5 points
- No outdoor watering schedule on ongoing basis — 0 points

Water Audit Report (WAR): The purpose of a Water Audit Report, also termed a Water Loss Audit, is to provide utilities with a standardized approach to auditing water loss with a reliable means to analyze their water loss performance. Completing the Water Loss Audit will help a utility understand where and how much water is being lost from the distribution system and will provide a baseline to track and improve water loss control.

Best Management Practices (BMPs): BMPs are a menu of options for which entities within a water use sector can choose to implement in order to achieve benchmarks and goals through water conservation. Best management practices are voluntary efficiency measures that are intended to save a quantifiable amount of water, either directly or indirectly, and can be implemented within a specified timeframe. Definition from the Texas Water Development Board *http://www.twdb.texas.gov/conservation/BMPs/index.asp*

TWDB has reported that outdoor water use accounts for approximately 31% of annual water use in Texas single-family homes. A significant reduction in annual and peak water use can be realized if a city or a utility implements a mandatory year-round outdoor watering schedule or permanently places a limitation on outdoor watering during certain months (for example, during summer months to reduce peak use) each year even if the area is not experiencing a drought.

10. Does the utility's water rate structure send a strong "water conservation pricing signal" to the utility's single-family residential customers? *Conservation Pricing Signal?*

- Strong - Greater than or equal to a 40% increase in the water rate per 1000 gallons charged when a customer's monthly use is 10,000 gallons rather than 5,000 gallons 15 points
- Moderate - Greater than or equal to 25% and less than 40% increase 10 points
- Slight - Greater than zero and less than 25% increase 5 points
- No signal - zero increas 0 points

A water conservation pricing signal is based on a water rate structure designed and priced so that it significantly increases a consumer's water bill when he or she uses more water. The above percentages reflect the rate increase when a customer uses 10,000 gallons versus when a customer uses 5,000 gallons. This metric was suggested by the Environmental Finance Center (EFC) at the University of North Carolina, which has done extensive research and analysis of utility water rates.

The Texas Living Waters Project contracted with researchers at EFC to perform the conservation pricing signal analysis for the Texas Water Conservation Scorecard, using the data on water rates available from the 2014 and 2015 Texas Municipal League Water and Waste Water Surveys, information which is publicly available online. According to EFC, the two water consumption points chosen to determine a conservation pricing signal represent a household that regularly irrigates its lawn (10,000 gallons a month) and one that does not (5,000 gallons a month). Research shows that the higher the marginal price from 5,000 to 10,000 gallons, the less water the average customer is likely to use. For every dollar saved, the average customer will use 41.5 fewer gallons, and for every percent saved the average use goes down by 20.8 gallons.

The water utilities in this Scorecard have been grouped according to how high their marginal price is in relation to other utilities, using these two consumption points for comparison. There are obviously other consumption points that could be used for comparison, but these are logical to use in Texas because of the impact of outdoor irrigation on water use by single families and other water customers in the state.

We note that this evaluation of a water conservation pricing signal does <u>not</u> necessarily mean that water is valued at its true cost in any water rate structure in Texas. This metric is based on comparison of *<u>current</u>* rate structures. Water in many Texas utilities may need to be priced at a higher rate to reflect its value, although we also note that close attention needs to be given in any water structure to make sure that low-income households are provided adequate water at an affordable price.

In summary, our evaluation of the water conservation efforts of retail public water utilities in Texas is based on the points assigned to each of them using the criteria explained above.

Gallons per Capita per Day (GPCD): GPCD is the Net Use, divided by a Population Estimate, divided by 365 days. Net Use is defined as the volume of water taken into the system or systems of a city, minus water sales to other water systems and large industrial facilities. Definition from the Texas Water Development Board *http://www.twdb.texas.gov/index.asp*

Conservation Pricing Signal: A rate structure designed and priced in a way that would significantly increase a customer's water bill when he or she uses more (discretionary) water and conversely offers a significant decrease in the bill when the customer conserves. Definition from The University of North Carolina Environmental Finance Center http://www.efc.sog.unc.edu/

Total Scores

Total Scores for Water Conservation Effort - Large and Medium-Size Retail Water Utilities

Based on the scoring system described in the previous section of this report, each of the 126 large and medium-size retail public water utilities in Texas – all of the utilities serving a population of 25,000 or more – received a numerical score based on a possible 100 points.

The top scoring utilities were five utilities with total scores of 80 to 90. Those five were the Cities of Austin (90), San Marcos (85), Frisco (82), San Angelo (81), and Lewisville (80).

The next highest group in terms of total scores were 18 utilities with scores of 70 to 79:

- Mesquite - 79
- Fort Worth – 78
- Hurst – 77
- Irving – 76
- Rosenberg - 75
- League City, Burleson, Carrollton – 74
- San Antonio Water System (SAWS), Corpus Christi, Allen – 73
- Greenville – 72
- El Paso Water Utilities, Grand Prairie - 71
- Lancaster, Arlington, North Richland Hills, Keller – 70

The third highest group in terms of total scores were 35 utilities with scores of 60 to 69:

- Garland – 69
- Grapevine – 68
- Richardson, Bryan, Edinburgh, Galveston County WCID 1, Watuaga, Harker Heights, Duncanville – 67
- Laredo – 66
- Dallas Water Utility, New Braunfels Utilities, Friendswood, Big Spring – 65
- Lubbock, Round Rock, Schertz, Southlake – 64
- Pharr, McKinney, College Station - 63
- Houston, Rockwall, Green Valley SUD, Montgomery County MUD 47, Cedar Hill, Conroe – 62
- McAllen, Euless, Travis County WCID 17, Seguin, Plano – 61
- Abilene, Temple, Cedar Park – 60

The other 68 large and medium-size utilities scored less than 60, although several had total scores in the high 50s. In other words, over half of the large and medium-size retail public water utilities in Texas scored below 60 out of 100 points in our evaluation of their efforts to advance water conservation. While recognizing the wide point spread among these 69 utilities, we believe this group of utilities by and large is "missing the boat" on water conservation.

The scores for each of the 126 large and medium-size utilities are presented on the next two pages in alphabetical order by the name of the utility:

LARGE AND MEDIUM UTILITIES - POPULATION ABOVE 25,000	
UTILITY NAME	SCORE (out of 100)
City of Abilene	60
Agua SUD	52
City of Allen	73
Amarillo Municipal Water System	49
Aqua WSC	50
City of Arlington	70
City of Austin Water & Wastewater	90
City of Baytown	47
City of Beaumont Water Utility Dept	28
City of Bedford	57
Bethesda WSC	58
City of Big Spring	65
Brownsville Public Utilities Board	50
City of Bryan	67
City of Burleson	74
City of Carrollton	74
City of Cedar Hill	62
City of Cedar Park	60
Clear Lake City Water Authority	48
City of Cleburne	49
City of College Station	63
City of Conroe	62
City of Coppell	50
City of Copperas Cove	59
City of Corpus Christi	73
City of Corsicana	23
Dallas County WCID 6	37
Dallas Water Utility	65
City of Deer Park	22
Del Rio Utilities Commission	40
City of Denison	57
City of Denton	49
City of Desoto	50
City of Duncanville	67
City of Eagle Pass	57
City of Edinburg	67
El Paso Water Utilities Public Service B	71
City of Euless	61
City of Farmers Branch	59
Town of Flower Mound	57
Fort Bend County WCID 2	50
City of Fort Worth	78
City of Friendswood	65
City of Frisco	82
City of Galveston	20
Galveston County WCID 1	67
City of Garland	69
City of Georgetown	46
City of Grand Prairie	71
City of Grapevine	68
Green Valley SUD	62
City of Greenville	72
City of Haltom City	60
City of Harker Heights	67
Harlingen Water Works System	50
Horizon Regional MUD	20
City of Houston	62
City of Huntsville	52
City of Hurst	77
City of Irving	76
Johnson County SUD	35
City of Keller	70
City of Killeen	54

City of Kingsville	10
City of La Porte	49
City of Lake Jackson	47
City of Lancaster	70
City of Laredo	66
City of League City	74
City of Leander	42
City of Lewisville	80
Town of Little Elm East	57
City of Longview	47
Lower Valley Water District	15
Lubbock Public Water System	64
City of Lufkin	48
City of Mansfield	37
McAllen Public Utility	61
City of McKinney	63
City of Mesquite	79
City of Midland Water Purification Plant	45
City of Mission	37
Montgomery County MUD 47	62
City of Nacogdoches	39
New Braunfels Utilities	65

North Alamo WSC	30
City of North Richland Hills	70
City of Odessa	38
City of Paris	54
City of Pasadena	57
City of Pearland	57
City of Pharr	63
City of Plano	61
City of Port Arthur	47
City of Richardson	67
Rockett SUD	45
City of Rockport	47
City of Rockwall	62
City of Rosenberg	75
City of Round Rock	64
City of Rowlett	55
City of San Angelo	81
San Antonio Water System	73
City of San Benito	54
City of San Juan	45
City of San Marcos	85
City of Schertz	64

City of Seguin	61
Sharyland WSC	50
City of Sherman	52
Southern Utilities	15
City of Southlake	64
City of Sugar Land	59
City of Temple	60
City of Texarkana	42
City of Texas City	42
City of The Colony	38
Travis County WCID 17	61
City of Tyler	43
City of Victoria	52
City of Waco	47
City of Waxahachie	47
City of Weatherford	57
City of Weslaco	42
City of Wichita Falls	49
City of Wylie	55

Total Scores

Total Scores for Water Conservation Effort - Small Retail Water Utilities

Based on the scoring system described in the previous section of this report, each of the 180 small retail public water utilities in Texas – all of the utilities serving at least 3300 connections but a population of less than 25,000 – received a numerical score based on a possible 55 points. None of the 180 small utilities scored 50 points or higher.

The top scoring utilities were 13 utilities with total scores of 44 or higher. The small utility with the highest total score was Wells Branch MUD 1 in the Austin metropolitan area with a score of 53 points. The other 12 utilities were in order:

- Fredericksburg – 49
- New Caney MUD – 48
- Colleyville, Sulphur Springs, Harris County MUD 102 – 47
- Universal City – 46
- Forney – 45
- Crowley, Highland Park, Pampa, Goforth SUD, SS Water Supply Corporation – 44

The next highest group in terms of total scores were 18 utilities with scores of 39 to 42:

- Borger, Brownfield, El Campo, Humble, Midlothian, Portland, Vernon, CLWSC Canyon Lake Shores, Springs Hill WSC, Addison, Windermere Community, Zapata County Waterworks – 42
- Kerrville, Harris County MUD 368, Harris County MUD 81 – 40
- Brownwood, Clute, Wellborn SUD - 39

The third highest group in terms of total scores were 34 utilities with scores of 34 to 37:

- Acton MUD, Bridgestone MUD, Chisholm Trail MUD, Bonham, Dumas, Gainesville, Galena Park, Hutto, Jersey Village, Port Lavaca, Robinson, Saginaw, Fort Bend County MUD 25, Northwest Park MUD, Quail Valley Utility District – 37
- Mabank – 36
- Azle, Converse, Katy, Pleasanton, Port Neches, Seabrook, West University Place, East Central SUD, Fort Bend County MUD 23, Northwest Harris County MUD 5, Rayford Road MUD, Remington MUD 1 – 35
- Benbrook Water Authority, Belton, Boerne, Sweetwater, Terrell, Watauga – 34

All other small utilities scored 32 or less. Over 60% of the small utilities were in this group

The scores for each of the 180 small utilities are presented on the next three pages in alphabetical order by the name of the utility:

SMALL UTILITIES - POPULATION BELOW 25,000

UTILITY NAME	SCORE (out of 55)
Acton MUD	37
Town of Addison	42
City of Alamo	27
City of Alice	27
City of Alvin	15
City of Andrews	25
City of Angleton	25
City of Aransas Pass	25
City of Athens	30
City of Azle	35
City of Bastrop	15
City of Bay City	22
City of Beeville	22
City of Bellaire	29
City of Bellmead	15
City of Belton	34
Benbrook Water Authority	34
Benton City WSC	30
City of Boerne	34
City of Bonham	37
Borger Municipal Water System	42
City of Brenham	27
City of Bridge City	27
Bridgestone MUD	37
Brookesmith Special Utility District	27
City of Brownfield	42
City of Brownwood	39
Brushy Creek MUD	32
City of Burkburnett	15
Canyon Municipal Water System	30
City of Carthage	25
Cash SUD	29
City of Chisholm Trail SUD	37
Clear Brook City MUD	5
City of Clute	39
CLWSC Canyon Lake Shores	42
CLWSC Triple Peak Plant	27
CNP Utility District	30
City of Colleyville	47
City of Converse	35
City of Crowley	44
Crystal Clear WSC	27
Cypress Spring SUD N Plant and NE Plant	32
Dalhart Municipal Water System	30
City of Donna	15
City of Dumas	37
East Central SUD	35
City of El Campo	42
City of Ennis	25
Town of Fairview	10
City of Forest Hill	20
City of Forney	45
Fort Bend County MUD 23	35
Fort Bend County MUD 25	37
City of Fort Stockton	15
City of Fredericksburg	49
City of Freeport	15
City of Gainesville	37
City of Galena Park	37
City of Glenn Heights	15
Goforth SUD	44
City of Graham	32
City of Granbury	31
City of Groves	32
Harris County FWSD 51	20
Harris County FWSD 61	20
Harris County MUD 102	47

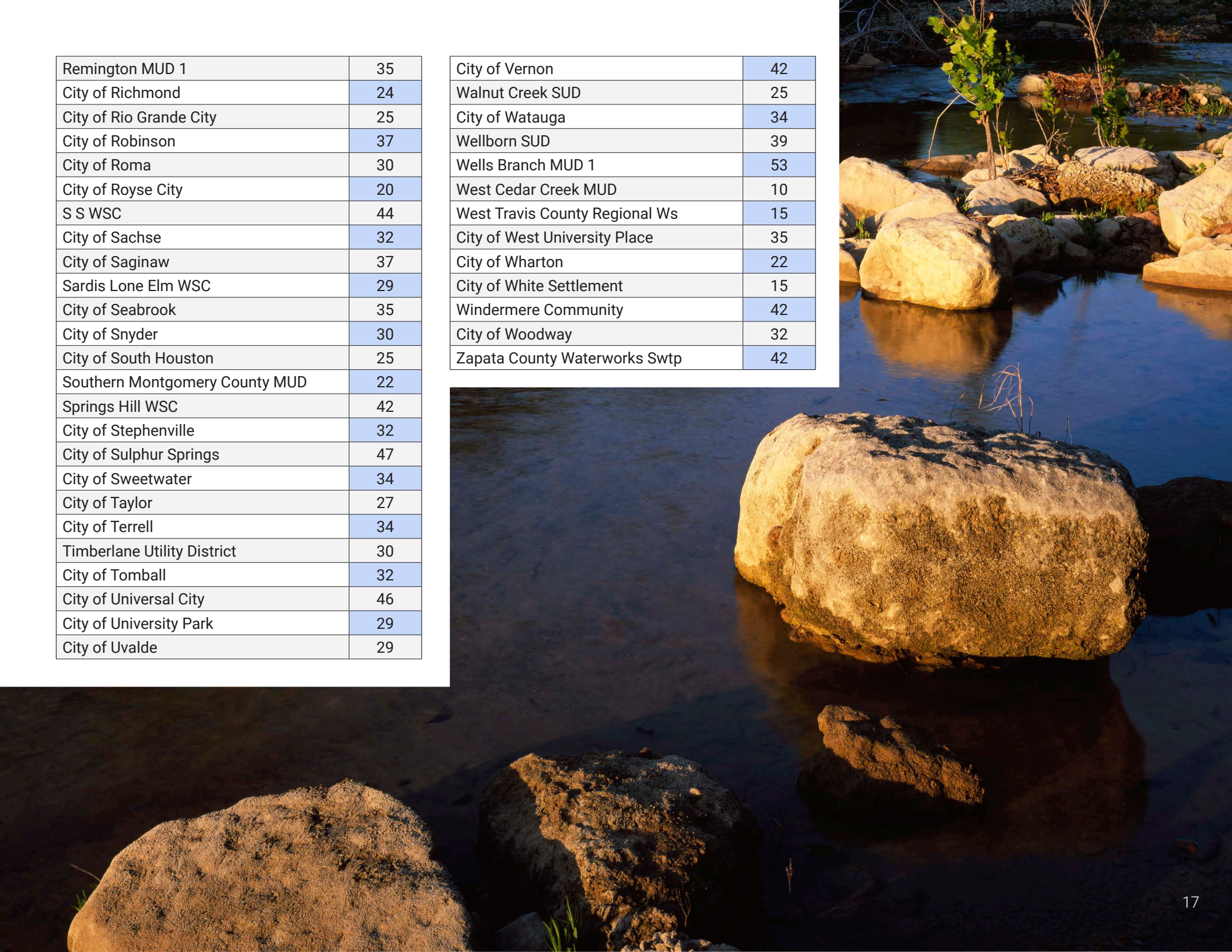
Harris County MUD 120	32
Harris County MUD 200 Cranbrook	12
Harris County MUD 26	30
Harris County MUD 368	40
Harris County MUD 53	20
Harris County MUD 55 Heritage Park	17
Harris County MUD 71	32
Harris County MUD 81	40
Harris County Utility District 6	32
Harris County WCID 109	32
City of Henderson	10
City of Hereford	15
City of Hewitt	10
City of Hidalgo	30
City of Highland Park	44
City of Highland Village	19
City of Horseshoe Bay	29
City of Humble	42
City of Hutto	37
City of Ingleside	30
Jackrabbit Road PUD	20
City of Jacksonville	22
City of Jasper	17
City of Jersey Village	37
Jonah Water SUD	20

City of Katy	35
Kempner WSC	22
City of Kerrville	40
City of Kilgore	29
City of Kyle	31
City of La Marque	29
Laguna Madre Water District	10
Lake Cities Municipal Utility Authority	10
Lakeway MUD	15
Lamar County Water Supply District	27
City of Lamesa	27
Lee County WSC	26
City of Levelland	32
City of Livingston	20
City of Lockhart	32
Lumberton MUD	22
City of Mabank	36
Manville WSC	30
City of Marshall	30
City of Mercedes	25
City of Midlothian	42
City of Mineral Wells	32
Montgomery County MUD 46	29
Montgomery County MUD 60	29
Montgomery County MUD 7	20

City of Mount Pleasant	32
Mountain Peak SUD	29
City of Murphy	29
Mustang SUD	22
City of Nederland	32
New Caney MUD	48
Northwest Harris County MUD 5	35
Northwest Park MUD	37
Nueces County WCID 3	10
City of Orange	22
Orange County WCID 1	27
City of Palestine	32
City of Pampa	44
Pecan Grove MUD	32
City of Pecos	25
Perryton Municipal Water System	32
City of Pflugerville	31
Plainview Municipal Water System	17
City of Pleasanton	35
City of Port Lavaca	37
City of Port Neches	35
Porter SUD	30
City of Portland	42
Quail Valley Utility District	37
Rayford Road MUD	35

Remington MUD 1	35
City of Richmond	24
City of Rio Grande City	25
City of Robinson	37
City of Roma	30
City of Royse City	20
S S WSC	44
City of Sachse	32
City of Saginaw	37
Sardis Lone Elm WSC	29
City of Seabrook	35
City of Snyder	30
City of South Houston	25
Southern Montgomery County MUD	22
Springs Hill WSC	42
City of Stephenville	32
City of Sulphur Springs	47
City of Sweetwater	34
City of Taylor	27
City of Terrell	34
Timberlane Utility District	30
City of Tomball	32
City of Universal City	46
City of University Park	29
City of Uvalde	29

City of Vernon	42
Walnut Creek SUD	25
City of Watauga	34
Wellborn SUD	39
Wells Branch MUD 1	53
West Cedar Creek MUD	10
West Travis County Regional Ws	15
City of West University Place	35
City of Wharton	22
City of White Settlement	15
Windermere Community	42
City of Woodway	32
Zapata County Waterworks Swtp	42



General Findings

A review of the Texas Water Conservation Scorecard evaluating the 306 retail public water utilities in Texas with 3300 connections or more – in conjunction with an in-depth look at the 35 largest of those utilities and related information available to the staff and volunteers working on the Texas Living Waters Project – leads to several major findings. These findings may help to guide actions to advance municipal water conservation in Texas. Here are the general findings (more detail behind these findings is found in Appendix A of this report):

Over half of the large & medium-size retail public water utilities in Texas and almost 2/3 of the small utilities would need to substantially increase their water conservation efforts in order to approach the potential that conservation provides to meet the municipal water needs of the state. Each of the retail public water utilities in Texas have more that they could do to advance conservation, even those in the top categories of water conservation effort based on this analysis.

Successive Texas State Water Plans have identified water conservation as key to meeting at least one-fourth of our state's future water demands, and municipal water conservation is an important component of that strategy. Some reviewers of these Plans, however, believe that conservation could play an even greater role in securing our water future. This Texas Water Conservation Scorecard demonstrates that the majority of retail water utilities in the state are "missing the boat" on what they could do to save water. Even major cities deservedly recognized for their accomplishments in conservation – San Antonio being a prime example – could do more to reduce water use and water loss.

The vast majority of the utilities are submitting legally required water conservation plans to the State of Texas, but these plans vary widely in quality, detail, and public accessibility.

At a minimum all retail water utilities legally required to prepare and submit conservation plans to the State need to do so, and most are. When the team preparing this Scorecard reviewed the submitted plans, however, we found wide disparity in the usefulness, cohesiveness, and even accuracy of information in those plans. Despite the efforts thus far of the Texas Water Development Board to provide guidance to utilities in preparing these plans, many utilities do not seem to take development of the plans seriously.

About one-fifth of the utilities, however, are not submitting legally required annual reports on the implementation of their conservation plans and/or are not submitting their legally required water audit reports detailing water loss in their systems.

Preparing a plan is one thing, but implementing it is quite another. Neither the public nor State water decision-makers are able to assess the performance of utilities on advancing conservation if those utilities do not regularly report on the progress they are making in carrying out their plans. Similarly, utilities cannot be held accountable for preventing the loss of literally billions of gallons of water each year in Texas if they do not conduct legally required annual water loss audits and report the results of those audits. A significant number of water utilities in Texas are not meeting their legal and professional obligations to submit these reports.

Approximately 40% of the utilities report a water loss of 11% or greater of the water pumped through their systems (roughly one-fifth of the utilities actually report a water loss of greater than 15%), and there are questions about the quality of some of the water audit reports submitted.

Some water loss in a utility is inevitable, at least on a temporary basis – water mains break, particular types of soil affected by the ever-changing Texas weather play havoc with water pipelines, some folks tap illegally into utility distribution lines. That is no excuse, however, for not carrying out a robust effort to find and repair leaking pipelines, respond expeditiously to water main breaks, and spot illegal taps, among other measures. Many utilities are ramping up their water loss control programs and making progress – but when major cities such as Dallas, Houston, and San Antonio are reporting losses of 10 to 14%, Texans need to take note. Utilities must also be kept to high standards in submitting accurate water audit reports – when some utilities report "negative" water losses, as in "we delivered more water than we pumped" – something is amiss.

Over half of the large and medium-size utilities beat the five-year target for water use reduction that they set in their respective "2009" water conservation plans, but a fourth of them did not meet their targets, and the remainder could not be evaluated because they did not turn in their annual reports with that information.

Under current state law, while utilities are required to include targets for water use reduction in their conservation plans, each utility sets its own five-year and ten-year targets (although a State task force made recommendations on appropriate targets for municipal conservation). Leaving aside the question of whether the targets they set were aggressive enough to achieve major reductions in water use, the majority of large and medium-size utilities appear to have done even better than their targets, according to available data. However, about a fourth of them fell short. Moreover, when a sizable number of utilities do not turn in annual reports, Texans cannot hold those utilities accountable for their performance in meeting targets.

For those utilities who did beat their five-year targets, the factors leading to their success are not clear and may include the implementation of drought contingency plans during certain dry years in that five-year period (which included the exceptional drought year of 2011).

The five-year period for most utilities reporting on their water use reduction progress under their previous conservation plan was 2009 through 2013. That included, of course, the year 2011, which is now considered to encompass the worst 12-month drought in the state's recorded history – a year in which many utilities at some point implemented their drought contingency plans to cut back temporarily on water use. In some instances, it may have been the drought contingency measures and not ongoing conservation actions that were the biggest factor in utilities beating their targets for water use reduction during those five years. On the other hand, some utilities reported much higher than average water use in 2011, so the effect of drought response on overall water use during 2009-2013 is not clear. Much more in-depth analysis than is possible here would be required to pinpoint how the drought affected water use in the case of each utility.

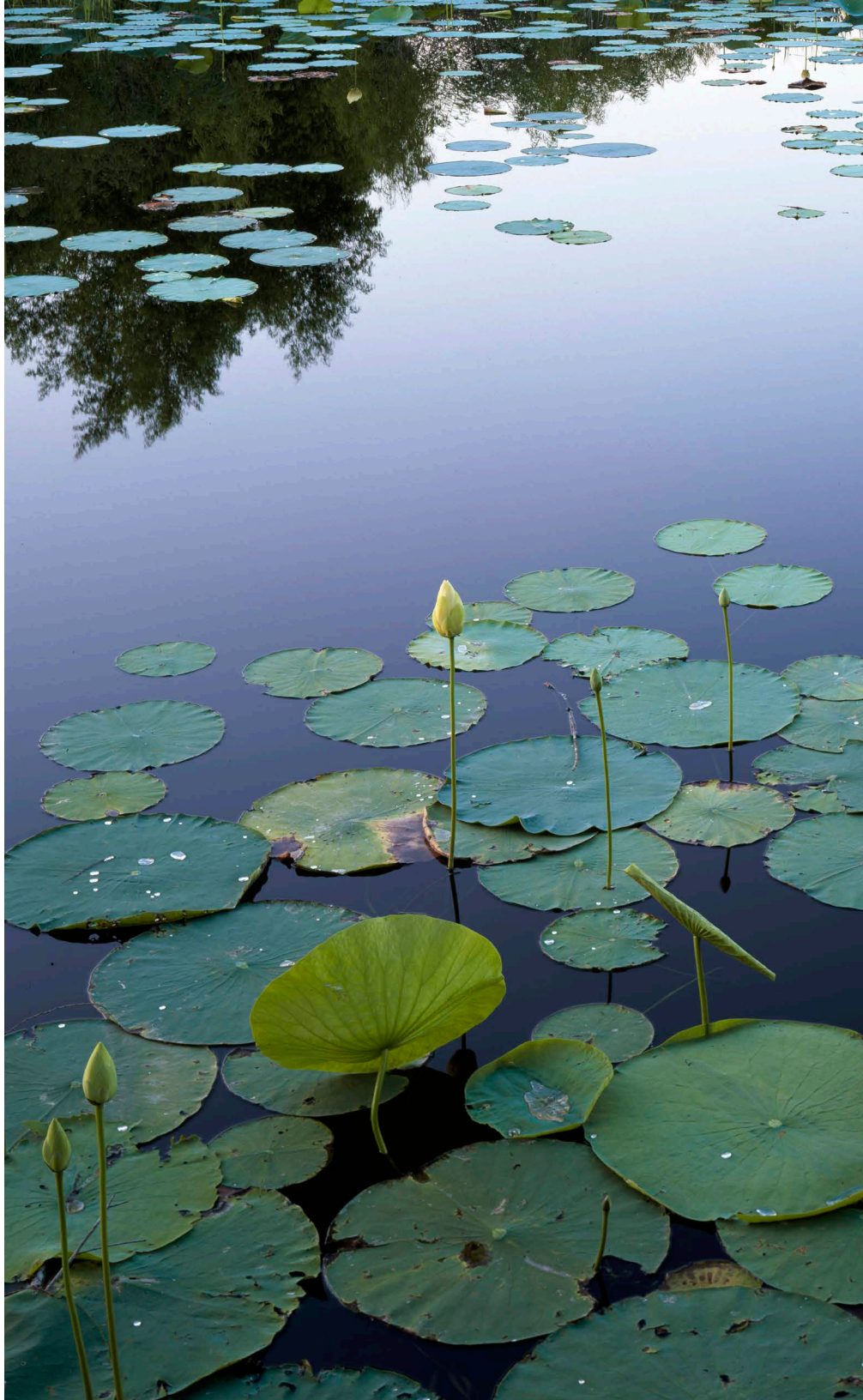
Only 13% of the large and medium-size retail public water utilities in Texas have met or achieved a lower per capita water use rate than the 140 GPCD recommended for municipal water suppliers over a decade ago by the state Water Conservation Implementation Task Force, predecessor to the current state Water Conservation Advisory Council.

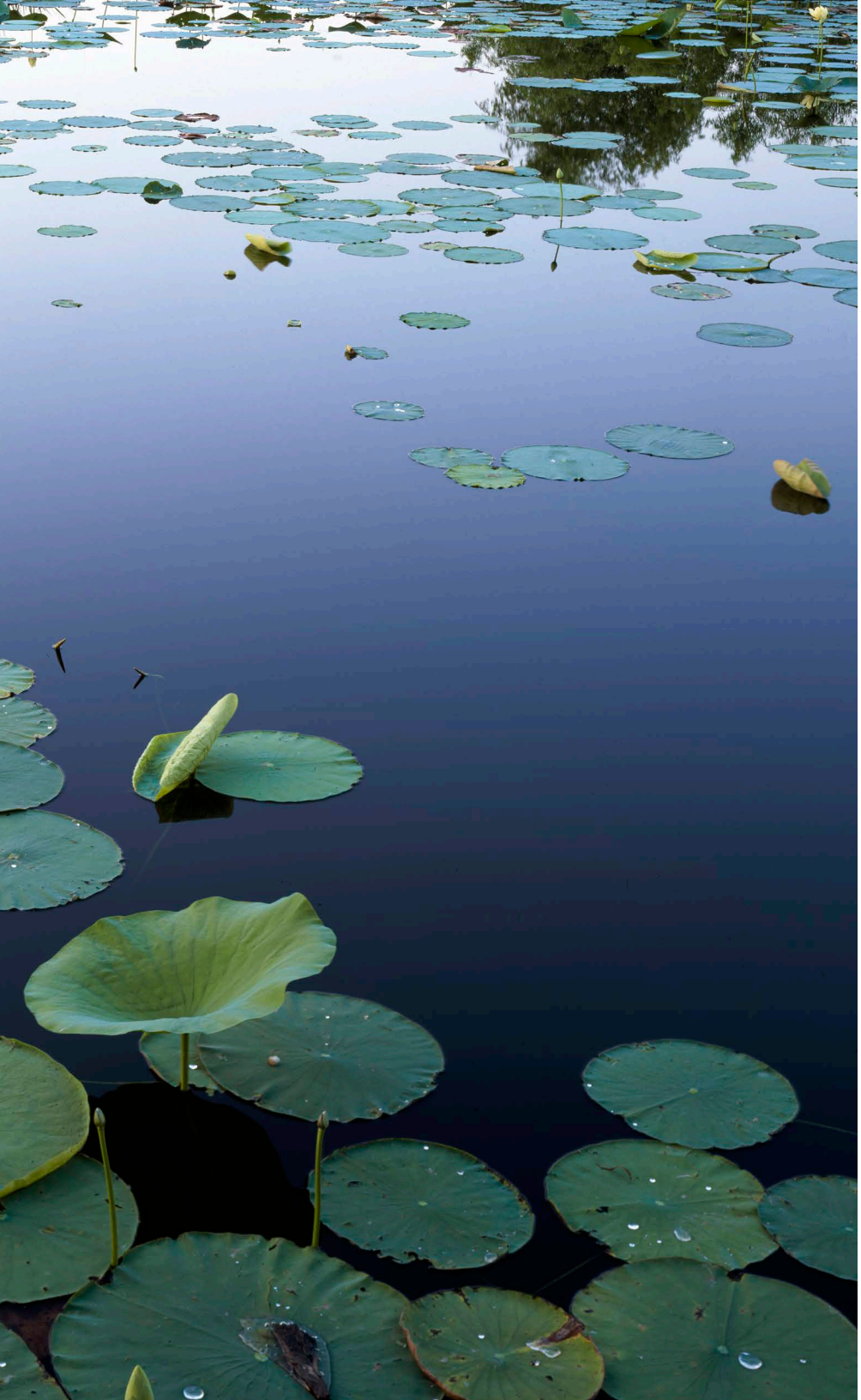
The State water task force recommended that municipal water suppliers strive to achieve a per capita water use rate of 140 GPCD or less, and some task force members pushed for a target of 125 GPCD or less. Only a small percentage of large and medium-size retail water utilities in Texas have achieved even the modest 140 GPCD target. Overall municipal per capita water use in Texas remains way above the official task force recommended level.

Other than those who have met the 140 GPCD or achieved a lower one, only a third of the large and medium-size utilities have set a new five-year target for per capita water use reduction in their latest conservation plans that meets or beats the average annual rate of reduction recommended by the 2004 Task Force.

The State task force recommended that municipal water suppliers reduce their water use by a minimum annual reduction of 1%, based on a five-year rolling average, until reaching a target of 140 GPCD or less. However, setting aside those utilities who have already met or done better than the 140 GPCD, almost two-thirds of the large and medium-size utilities have set five-year reduction targets in their most recent conservation plans below the minimum rate of progress recommended by the task force.

Of the more than 20 "best management practices" (BMPs) recommended for municipal water providers in the State's BMP Guide, only 45 percent of large and medium-size utilities and only one-fifth of the small utilities report they are using more than five BMPS. Only eight of the 126 large & medium-size utilities and none of the small utilities are using 15 or more BMPs.





The Water Conservation Advisory Council, a State body with diverse representation, works with the Texas Water Development Board to continually review and update the BMPs for municipal, agricultural, and industrial water conservation – all of which are available online at www.savetexaswater.org. The State BMP Guide presents the most easily accessible source of municipal conservation measures tailored to Texas utilities. However, the majority of Texas retail water utilities are not using more than a handful of these BMPs – a very disappointing level of water conservation effort.

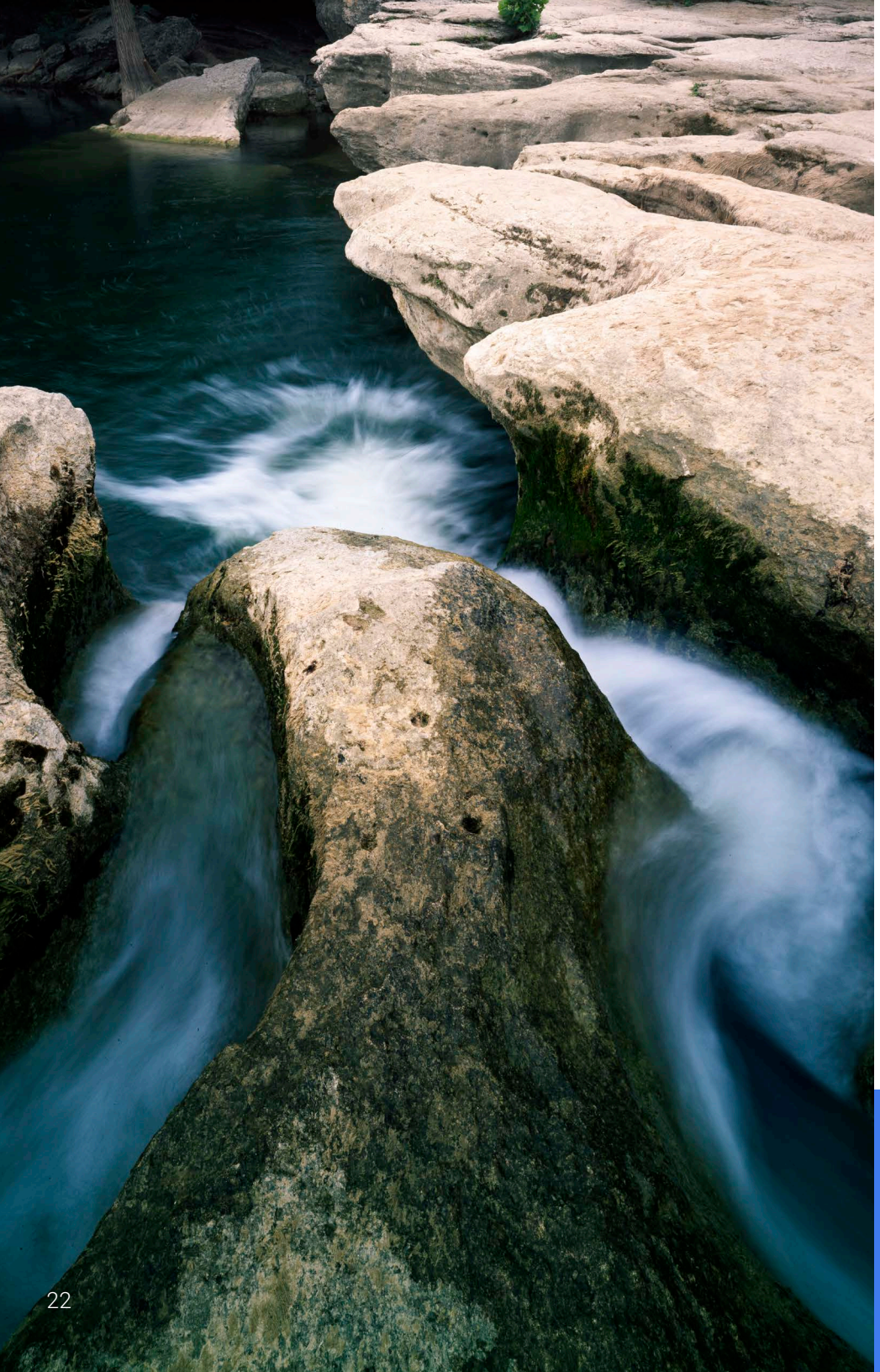
Only about a third of the large and medium-size utilities in Texas place any limitations on outdoor landscape watering on an ongoing basis in non-drought periods, despite substantial increases in water use during hot summer months and the impact that increased use has on building costly water infrastructure to meet peak water demands.

The utility profiles included with submitted water conservation reports show a substantial increase each year in water pumped during summer months over what is pumped in winter months. Indeed, the peak water use for Texas utilities is in the summer, at a time when single-family residences and even other water customers such as some institutions (college campuses, for example) are using significant amounts of water for outdoor landscaping.

Most utilities, however, appear to limit outdoor watering only during droughts. We do note that determining which utilities have ongoing or permanent limitations and which only have those limitations in place during drought was one of the most challenging data-gathering tasks in preparing this Water Conservation Scorecard. For the most part that required dutiful searching of utility or city websites, and in many instances the answer to the question was as clear as mud.

Approximately one-half of large and medium-size water utilities in Texas and one-third of small utilities have water rate structures that send a relatively strong "conservation pricing signal" to their customers, probably reducing the amount of water they use – although this does not necessarily mean that water is priced at its true value in these rate structures.

The analysis done for the Water Conservation Scorecard by researchers at the Environmental Finance Center at the University of North Carolina, based on water rate data available from the Texas Municipal League, indicate that a significant number of water utilities in the state have "conservation-oriented" rate structures that send a relatively strong pricing signal that helps to reduce water use. The analysis also shows, of course, that many utilities could be sending a stronger signal to customers to conserve. Moreover, this analysis does not answer the question of whether water is priced at its true value in water rate structures in Texas.



Some retail public water utilities such as Dallas Water Utilities are working on new water conservation initiatives that may greatly enhance their success in advancing conservation.

The Texas Water Conservation Scorecard provides a picture of the conservation efforts of water utilities at one point in time – early 2016. Many utilities are diligently working to improve their conservation programs. One example that we know of is Dallas Water Utilities, which presented to the Dallas City Council in April 2016 a draft update of its water conservation work plan. The draft is an impressive and highly comprehensive game plan for advancing conservation. If adopted and implemented, this initiative could dramatically improve this utility's score on water conservation efforts.

Some new options such as SWIFT financial assistance to local governments for conservation projects and PACE programs for funding water efficiency improvements by businesses are available to help advance water conservation in Texas

Water utilities in Texas are not entirely on their own in trying to advance water conservation. In addition to resources such as the State BMP Guide and traditional sources of state financial assistance available from the Texas Water Development Board for water loss control, new options for funding conservation efforts have been and are being made available. In 2013 the Texas Legislature and the voters of Texas approved a new State Water Implementation Fund for Texas (SWIFT) and its companion State Water Implementation Revenue Fund for Texas (SWIRFT) to provide state financial assistance for water projects recommended in the regional and State water plans. The Legislature directed TWDB to undertake to apply not less than 20% of the new funding for water conservation or reuse.

Texas local governments also now have the opportunity to establish PACE (Property Assessed Clean Energy) mechanisms to provide a new option for commercial,institutional, and industrial operations and owners of multi-family residential units in their communities to obtain attractive long-term financing to make energy efficiency and water efficiency improvements on their properties. Travis County, the City of Houston, and Williamson County have already approved PACE programs in their jurisdictions, and other local governments appear poised to follow suit. This new financing opportunity could be a boon to the water reduction efforts of utilities with significant commercial, institutional, industrial, and/or multi-family residential customers.

Bottom line: Many Texas retail water utilities are making progress on water conservation, but overall the rate of progress is slow. Much more can and should be done by utilities to reduce water use and control water loss. Many existing options to advance conservation are not being pursued. More utilities need to take advantage of these options and new opportunities to finance conservation in order to save water and money for current and future Texans.

Recommendations

Recommendations from Water Conservation Scorecard Findings

Based on our findings from the Texas Water Commission Scorecard, we make the following recommendations to utilities and State officials to advance municipal water conservation in Texas and to enhance the involvement of the public in that effort.

Recommendations for Retail Public Water Utilities (those with 3300 connections or more) – each utility should:

- Review the Texas Water Conservation Scorecard to develop a better understanding of how the utility's respective level of conservation effort compares to that of other similar utilities and consider how they might enhance their own conservation and water loss control efforts
- Improve the quality and clarity of their water conservation plans and reports so that the public may better understand what the utility is doing to advance water conservation and so that a utility's customers may hold the utility accountable for its conservation commitments
- Post its water conservation plan, a summary of that plan, and its most recent annual report on progress toward the implementation of that plan on the utility's website or the website of the municipality the utility serves
- Provide a summary of the utility's water conservation plan and information about how to access the complete plan to each customer of that utility once every five years after the revision and submittal of a revised plan to the Texas Water Development Board
- Provide a summary of its report to the Texas Water Development Board on implementation of its conservation plan and a summary of its water audit to each customer of that utility annually
- Include in its water conservation plan a discussion showing that it has considered the best management practices (BMPs) for municipal water conservation – including water loss control – found in the State BMP Guide, describing the BMPs it has adopted or will adopt (and on what schedule), and explaining why certain BMPs were considered but were not adopted
- Set targets and goals for per capita water use reduction and water loss reduction in its water conservation plan that actually reduce water use and loss from current or historic levels – using State-recommended targets as guidance but doing better than those targets where measures may be implemented to achieve an even lower water loss and per capita water use
- Adopt or encourage its municipal government to adopt outdoor watering limitations on a permanent or ongoing basis rather than just as part of a drought contingency plan – at a minimum, utilities should adopt "time-of-day" watering limitations during the hotter months of the year (primarily April through October) – any outdoor watering limitations adopted should be coupled with an educational outreach to make sure that customers know about the limitations and about how to make wise decisions about outdoor landscaping and watering

The Texas Water Development Board should:

Require a format to be included in all WCPs that standardizes presentation of information on:

- current and historic total per capita water use – and the way in which it was calculated
- current and historic residential per capita use – and the way in which it was calculated
- current and historic water loss on a per capita use – and the way in which it was calculated
- current and historic water loss percentage
- the definition of "dry years" and "normal years" if that distinction is made by a utility in reporting per capita water use

Develop on an appropriate schedule a system to allow utilities to enter information for various reports online in order to facilitate submission of data, ease the burden on the agency's staff to review and input data, and facilitate the generation of information available to the public

Work (in conjunction with the Texas Commission on Environmental Quality) to put all water conservation plan revision submittals on the same five-year cycle so that information available in those plans is more helpful to regional and state water planners and gives a comprehensive picture of water use and conservation efforts in the state at the same point in time

The State of Texas (at the appropriate level) should:

Provide more resources to assist (directly or indirectly) small utilities in educating their customers on water use and water conservation – this could include any or all of the following:

- funding the state water conservation education program "Water IQ" at the Texas Water Development Board (this program was created by the Texas Legislature in 2007 upon the recommendation of the state Water Conservation Implementation Task Force, but funds have never been directly appropriated by the Legislature for its implementation)
- establishment of a competitive grants program for small utilities to access funds for a water conservation education effort
- establishment of a template for small utilities to apply for short-term financial assistance through the SWIFT/SWIRFT programs to create a water conservation education program and encouragement to small utilities to make use of this funding option where appropriate

Require as a condition of receiving state financial assistance for water projects that a retail public water utility must have either reached a total GPCD of 140 or less and have a conservation plan that includes a target of reducing its total GPCD by a minimum of one percent annually on a five-year rolling average to progress toward a GPCD of 140 or less

Review State-recommended targets for GPCD reduction to determine what new guidelines should be prepared on per capita water use to accelerate progress on water use reduction

References

Alliance for Water Efficiency and Environmental Law Institute. 2012. The Water Efficiency and Conservation State Scorecard: An Assessment of Laws and Policies. http://www.allianceforwaterefficiency.org/final-scorecard.aspx.

Barnes, Glenn. 2015. Key Financial Benchmarks for Water Systems: Conservation Signal. UNC-Environmental Finance Center Blog. November 11, 2015. http://efc.web.unc.edu/2015/11/23/key-financial-benchmarks-for-water-systems-conservation-signal.

Dallas Water Utilities. 2016. DRAFT City of Dallas Water Conservation Five-Year Work Plan. April 2016. http://savedallaswater.com/pdf/2015_finalworkplan_draft.pdf.

Environmental Finance Center at the University of North Carolina and Sierra Club, Lone Star Chapter. 2014. Designing Water Rate Structures for Conservation and Revenue Stability. http://texaslivingwaters.org/wp-content/uploads/2014/03/Texas-Rate-Report-2014-Final-1.pdf.

Guz, Karen. 2016. Concierge Conservation. Presentation by Karen Guz, Director, Conservation, San Antonio Water System to the 2016 Gulf Coast Water Conservation Symposium. Houston. http://texaslivingwaters.org/wp-content/uploads/2016/03/8-Karen-Guz-1.pdf.

Hermitte, S.M. and R.E. Mace. 2012. The Grass is Always Greener… Outdoor Residential Water Use in Texas. Texas Water Development Board Technical Note 12-01.

Keeping PACE in Texas. PACE in a Box Toolkit. http://www.keepingpaceintexas.org/pace-in-a-box/.

National Wildlife Federation and Sierra Club. 2015. Water Conservation by the Yard: Estimating Savings from Outdoor Watering Restrictions. http://texaslivingwaters.org/wp-content/uploads/2015/03/SC_WaterConservByYard_report_031115_R.pdf.

Texas Municipal League. 2014 and 2015. Water and Wastewater Surveys. http://www.tml.org/surveys#water.

Texas PACE Authority. Key Documents. http://www.texaspaceauthority.org/key-documents/.

Texas Water Development Board. 2004. Water Conservation Best Management Practices Guide. Report 362. Water Conservation Implementation Task Force.

Texas Water Development Board. 2004. Water Conservation Implementation Task Force Report to the 79th Legislature. Special Report.

Texas Water Development Board. 2012. Guidance and Methodology for Reporting on Water Conservation and Reuse – developed by Texas Water Development Board and Texas Commission on Environmental Quality in consultation with Water Conservation Advisory Council. http://www.twdb.texas.gov/conservation/doc/SB181Guidance.pdf.

Texas Water Development Board. Water Conservation Best Management Practices Guide. https://www.twdb.texas.gov/conservation/BMPs/index.asp.

Texas Water Development Board. State Water Implementation Fund for Texas (SWIFT). http://www.twdb.texas.gov/financial/programs/swift/index.asp.

Water Conservation Advisory Council. 2014. A Report on Progress of Water Conservation in Texas: Report to the 84th Texas Legislature. December 2014. http://www.savetexaswater.org/about/doc/2014%20WCAC%20Report_final.pdf.

In addition to the references above, the researchers for the Texas Water Conservation Scorecard obtained from the Texas Water Development Board and the Texas Commission on Environmental Quality in electronic form public documents including but not limited to municipal water conservation plans, annual reports, the 2014 water audit reports, and related documents submitted to the agencies by retail public water utilities in Texas as well as public information with data from these sources in the form of Excel spreadsheets. Researchers also searched the websites of the 126 large and medium-size retail water utilities (those utilities providing water service to a population of 25,000 or more) for water conservation plans, other water conservation information, and outdoor watering restrictions imposed by a utility or a municipality under whose jurisdiction a utility operates.

Appendix A

Detailed Findings of the Texas Water Conservation Scorecard

General Findings of the Texas Water Conservation Scorecard were presented in the body of this report. This Appendix provides some additional detail regarding the results of the scoring of individual retail water utilities on the specific criteria used in the evaluation of the water conservation efforts of those utilities.

Meeting State Reporting Requirements

The vast majority (over 90%) of the 306 retail water utilities submitted a new or updated water conservation plan to the Texas Water Development Board (TWDB) and/or the Texas Commission on Environmental Quality (TCEQ), meeting the statutory requirement in the Texas Water Code – although the quality of those plans varies considerably.

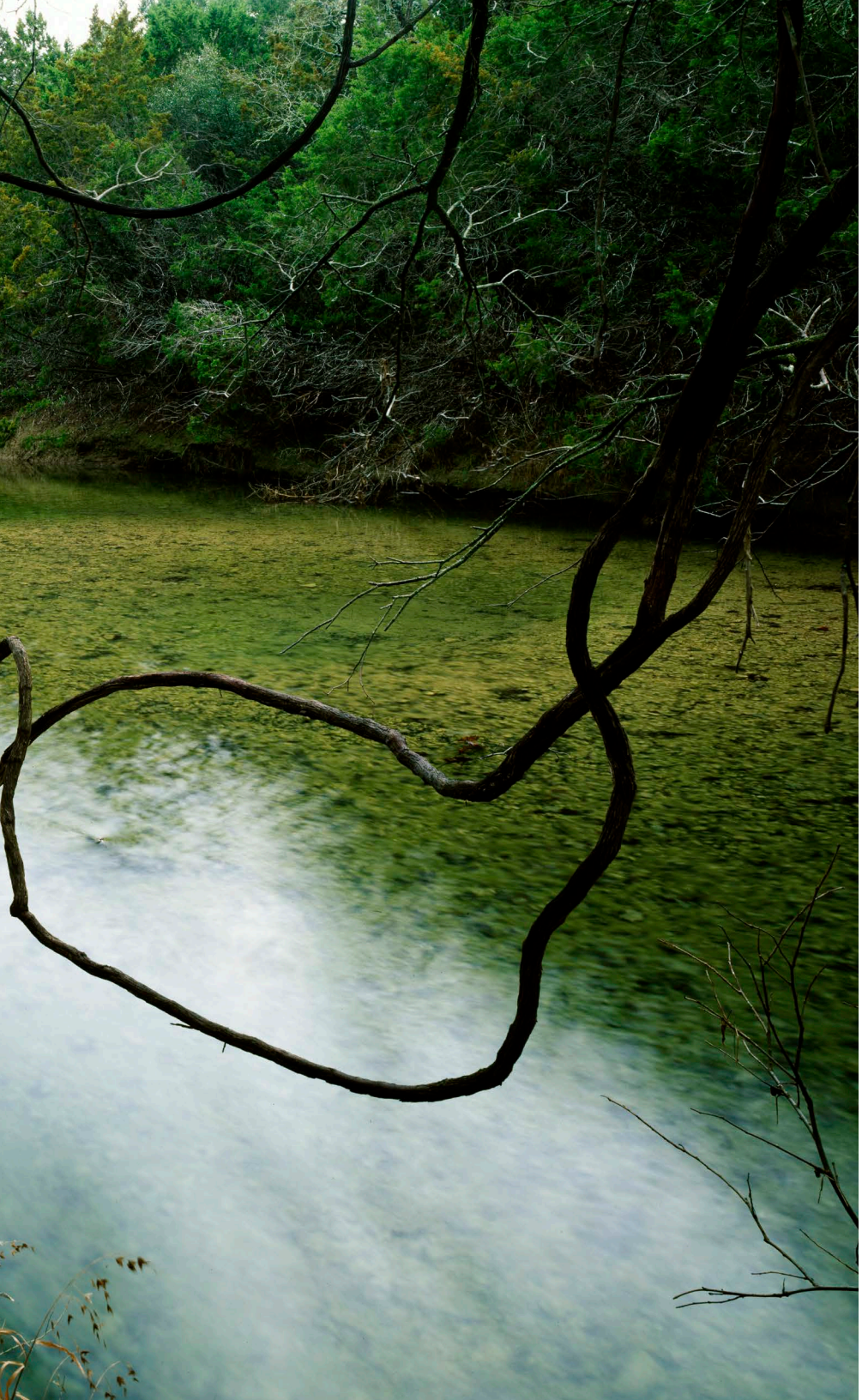
All of the large utilities (population of 100,000 and above) submitted their most recent required water conservation plans. The following medium-size utilities (those serving a population of at least 25,000 but less than 100,000) did not submit a revised plan on the five-year schedule, as required: Deer Park (was due 2014), Galveston (was due 2014), Horizon Regional MUD (was due 2011), Kingsville (was due 2015), Leander (was due 2014), Lower Valley Water District (was due 2011), Rockport (was due 2015). In addition, 22 small utilities (serving at least 3300 connections but a population of less than 25,000) did not submit revised plans on the five-year cycle.

Only 81% of the 306 retail water utilities submitted the most recently required annual report to the State of Texas on the implementation of their respective conservation plans. The vast majority (approximately 3/4) of those utilities who did not submit their annual reports were utilities who served a population of less than 25,000, in other words the "small" utilities in this evaluation.

Approximately 78% of the 306 retail water utilities submitted the most recent required water audit report to the State of Texas providing information on water losses in their respective water pumping and distribution systems. Again, the vast majority (almost 3/4) of those utilities who did not submit the required annual water audit report were utilities who served a population of less than 25,000.

Water Loss Rates

In evaluating water loss by the retail water utilities, the Scorecard used the total unadjusted water loss reported by each utility on the Water Audit Report that it is required to submit annually to the Texas Water Development Board (see the section on "Criteria for Scoring the Water Conservation Efforts by Retail Public Water Utilities" in the main body of this report for the discussion of the reasons for choosing this metric to score water loss). The annual reporting requirement for all retail water utilities with greater than 3300 connections was adopted by the Texas Legislature in 2013.



We used the Water Audit Reports submitted by these utilities in 2015 reporting data for the previous year of 2014 to score utilities on the water loss criterion. The "2014" Water Audit Reports were the latest available for this research. Although reports for 2015 have now been submitted by many utilities, the reports will not be quality checked by the Texas Water Development Board staff and available for public dissemination until September 2016, after the release of this Scorecard.

We sorted the utilities submitting their 2014 Water Audit Reports by dividing their reported unadjusted water loss figures into four roughly equal groupings ("quartiles") to get a relative sense of the ability of utilities to control their water loss when compared to each other. The resulting breakdown was as follows:

- 58 of the 306 utilities were the most effective in controlling water loss, keeping the percentage of unadjusted total water loss equal to or below 6.5% per year, according to the Water Audit Reports submitted to the Texas Water Development Board – the top three retail water utilities in this group were Pampa, Grapevine, and Universal City;
- 64 of the 306 utilities fell into the next group – a percentage loss of greater than 6.5% but less than or equal to 11%;
- 59 of the 306 utilities were in the next category with annual water loss rates of greater than 11% but lower than or equal to 15.4%;
- 58 of the utilities were in the worst category, with an annual water loss of over 15.4% - at the very bottom in terms of the utilities with the worst reported water loss were Roma (30.61%), Bellmead (31.19%), and Jonah Water Special Utility District (31.84%);
- 57 of the 306 utilities did not turn in their 2014 Water Audit Reports so they could not be evaluated on this criterion and received zero points for this measurement;
- A few remaining Water Audit Reports submitted to Texas Water Development Board were removed by the agency because of questions about the accuracy of the reports.

Online Public Accessibility of Water Conservation Plans and/or Water Conservation Info

[NOTE: Only the large and medium-size utilities – those serving a population of 25,000 or more were evaluated on these criteria.]

Of the 126 large and medium-size utilities evaluated, slightly over half of them made their water conservation plans available on their websites or the websites of the cities under whose jurisdiction they provide water service (some of the utilities who did not have their water conservation plans on their websites may have some information that is derived from their water conservation plans in other items on their website, but they did not get full credit in this scoring if the plan itself was not available).

Of the 126 large and medium-sized utilities evaluated, only 70% provided water conservation information other than their water conservation plan to their customers on their websites or the websites of the cities under whose jurisdiction they operate. However, this information ranged from a few basic "tips" on water conservation (not exactly a major education effort) to an extensive array of detailed information and programs (one of the best being the San Antonio Water System's water conservation information). Interestingly many of the utilities putting their water conservation plans on a website did not complement that plan with other water conservation information directed at the public, and vice-versa (for example, the San Antonio Water System has not put its water conservation plan on its website although SAWS has put what is termed their water management plan online and has put extensive water conservation information on their website).

Meeting Water Use Reduction Goals

[Only the 126 large and medium-size utilities were evaluated on this criterion of whether or not they met the five-year targets for water use reduction that these utilities set for themselves in their "2009" water conservation plans.]

Of the 126 large and medium-size utilities, approximately 60% of them beat (exceeded) their targets for water use reduction during a five-year period. It is not possible to say definitively whether this was due to their own water conservation efforts, the impact of implementation of state or federal requirements for water-conserving fixtures or appliances, the implementation of drought contingency plans and subsequent restrictions on water use during certain years such as 2011, unambitious targets set, or some combination of any or all of these factors.

One utility (College Station) hit its 5-year target for water use reduction on the nose.

Of the 126 large and medium-size utilities, over one-fourth of them (approximately 28%) did not meet their five-year target for water use reduction.

Of the 126 large and medium-size utilities, approximately 12% could not be scored on this criterion because they did not submit the required annual report indicating whether they did or did not meet the five-year target for water use reduction set in their respective "2009" plan.

Setting Strong Water Use Reduction Goals

[Only the 126 large and medium-size utilities were evaluated on this criterion of whether or not they set strong five-year targets for water use reduction in their "2014" or most recent required water conservation plans.]

The large and medium-size utilities have a varied record in achieving a low per capita water use and/or in setting five-year targets for water use reduction in their respective "2014" (or most recent) water conservation plans. The state Water Conservation Implementation Task Force (predecessor to the current state Water Conservation Advisory Council) in 2004 recommended that municipal

water utilities reduce their per capita water use by an average annual 1% until they reach a (total) GPCD of 140 or less. The 140 GPCD target was actually a compromise between Task Force members who were recommending a GPCD target of 125 and other Task Force members who were suggesting a GPCD target of 162 (which at that time was the state average for municipal water utilities). As a consequence, 125 GPCD and 140 GPCD may be considered benchmarks for assessing per capita water use.

On that basis, of the 126 large and medium-size utilities evaluated for this Scorecard:

- Fifteen utilities had already achieved a total GPCD of 125 or less as of the filing of their "2014" or most recent Water Conservation Plan
- Another nine utilities had already achieved a total GPCD of 140 or less but higher than 125 as of the filing of their most recent Water Conservation Plan

Of the remaining 104 large and medium-size utilities evaluated for this Scorecard:

- Only 22 utilities set a five-year water use reduction target that is measurably more aggressive than the target recommended by the state Task Force ("measurably more aggressive" is defined here as an average annual reduction of more than 1.25%)
- Only 15 utilities set a moderate five-year water use reduction target, one that roughly matches the Task Force recommendation (defined here as an average annual reduction of at least 0.85% but no more than 1.25%)
- 33 utilities set a very weak 5-year water use reduction target – less than the target recommended by the Task Force ("less than" the Task Force target is defined here as an average annual reduction of less than 0.85%)
- 18 utilities indicated no planned reduction in per capita water use or set targets that would actually increase their per capita water use from current or most recent 5-year historic levels
- 14 utilities either did not turn in their "2014" water conservation plan, their plan did not clearly state their five-year reduction target, their plan did not clearly present their baseline (current or historic per capita use) in order to be able to calculate the rate of reduction to reach the five-year target, or the baseline GPCD and the five-year target GPCD in the plan appear to have been calculated differently, so as to make computation of a rate of reduction inaccurate

An example of this last problem trying to determine the projected rate of per capita water use reduction planned is the situation with Amarillo. In its 2012 WCP (the most recent plan) Amarillo stated that it had a current total GPCD of 227 and a five-year target total GPCD of 175. These numbers appear to be

calculated differently without specifying the basis for each of the calculations. It is highly unlikely that a utility could reduce its water use by 50 GPCD in just five years except in a situation of extreme drought that required rather draconian restrictions on water use (Wichita Falls had to do that during a recent drought). Therefore, in our scoring system we were unable to calculate the projected rate of per capita water use reduction for Amarillo, and this utility did not get points for a five-year reduction target. This situation emphasizes the need for a utility to be clear as to the computation of its baseline per capita use and the computation of its five-year and ten-year targets.

Implementing Best Management Practices for Water Conservation

The State's BMP Guide, maintained by the Texas Water Development Board, provides online information on best management practices (BMPs) for water conservation for municipal water providers and how to implement those BMPS – over 20 BMPs for municipal conservation are at: https://www.twdb.texas.gov/conservation/municipal/index.asp.

Retail public water utilities are not making full use of these BMPs, however. According to the information provided by the utilities themselves through their annual reports on the implementation of their water conservation plans:

Of the 126 large & medium-size utilities:

- Only eight report that they are implementing 15 or more BMPs of the more than 20 BMPs in the State BMP Guide (San Antonio uses the most BMPs)
- Only six report that they are implementing 12 to 14 of those BMPs
- Only 14 report that they are implementing 9 to 11 of those BMPs
- Only 29 report that they are implementing 6 to 8 of those BMPs
- 42 report that they are only implementing 1 to 5 of those BMPs
- 14 report that they are not implementing any of those BMPs
- The remainder did not submit their annual reports with this information

Of the 180 small utilities:

- None have reported that they are implementing 15 or more of those BMPs
- Only two report that they are implementing 12 to 14 of those BMPs
- Only six report that they are implementing 9 to 11 of those BMPs
- Only 29 report that they are implementing 6 to 8 of those BMPs
- 74 report that they are implementing 1 to 5 of those BMPs
- 29 report that they are not implementing any of those BMPs
- The remainder did not submit their annual reports with this information

Outdoor Watering Limitations

[*Only the 126 large and medium-size retail water utilities were scored on this criterion.*]

The majority of the 126 large and medium-size retail water utilities or the local governments under which they operate have *no* permanent limitations on outdoor landscape watering of the type considered here, not even time-of-day limitations during hot summer months, despite the fact that outdoor watering is a significant use of water for single-family residential customers especially and often drives peak water use in the summer in Texas:

- Only 45 of the 126 large and medium-size retail utilities have limitations on outdoor landscape watering during non-drought periods as defined in this scoring system
- Of these 45 retail utilities, 26 only limit time-of-day watering
- Of these 45 retail utilities, 19 limit outdoor watering to no more than two times a week with a truly enforceable restriction
- Austin is the only retail utility that limits outdoor watering to once a week on a permanent basis (this restriction was just adopted in early May 2016)

NOTE #1: Conroe, Garland, and Mesquite "limit" outdoor watering to no more than twice a week, but these utilities do not specify which two days of the week an individual customer may water (most utilities with outdoor watering restrictions do this by the street address of the customer). If each customer is able to choose which two days he or she is going to do outside watering in any given week, then this restriction really becomes unenforceable. For that reason, none of these three utilities – Conroe, Garland, or Mesquite – were given points in this scoring for having a "no more than twice a week" outdoor watering "restriction."

NOTE #2: Both El Paso and Georgetown have limitations on outside watering to no more than three times a week. This is a positive step but not as progressive as limiting watering to no more than twice or no more than once a week, which should be adequate for maintaining appropriate outdoor landscapes.

NOTE #3: Scoring utilities on this criterion was challenging because some utilities do not make it clear on their respective websites whether a current outdoor watering restriction is an ongoing conservation measure or a drought-related response. Moreover, some cities continue to keep drought restrictions in place for long periods of time – so it is somewhat of a judgment call as to what credit to give or not give in these situations. In the case of Lubbock, for example, the no more than twice a week outdoor watering limitation

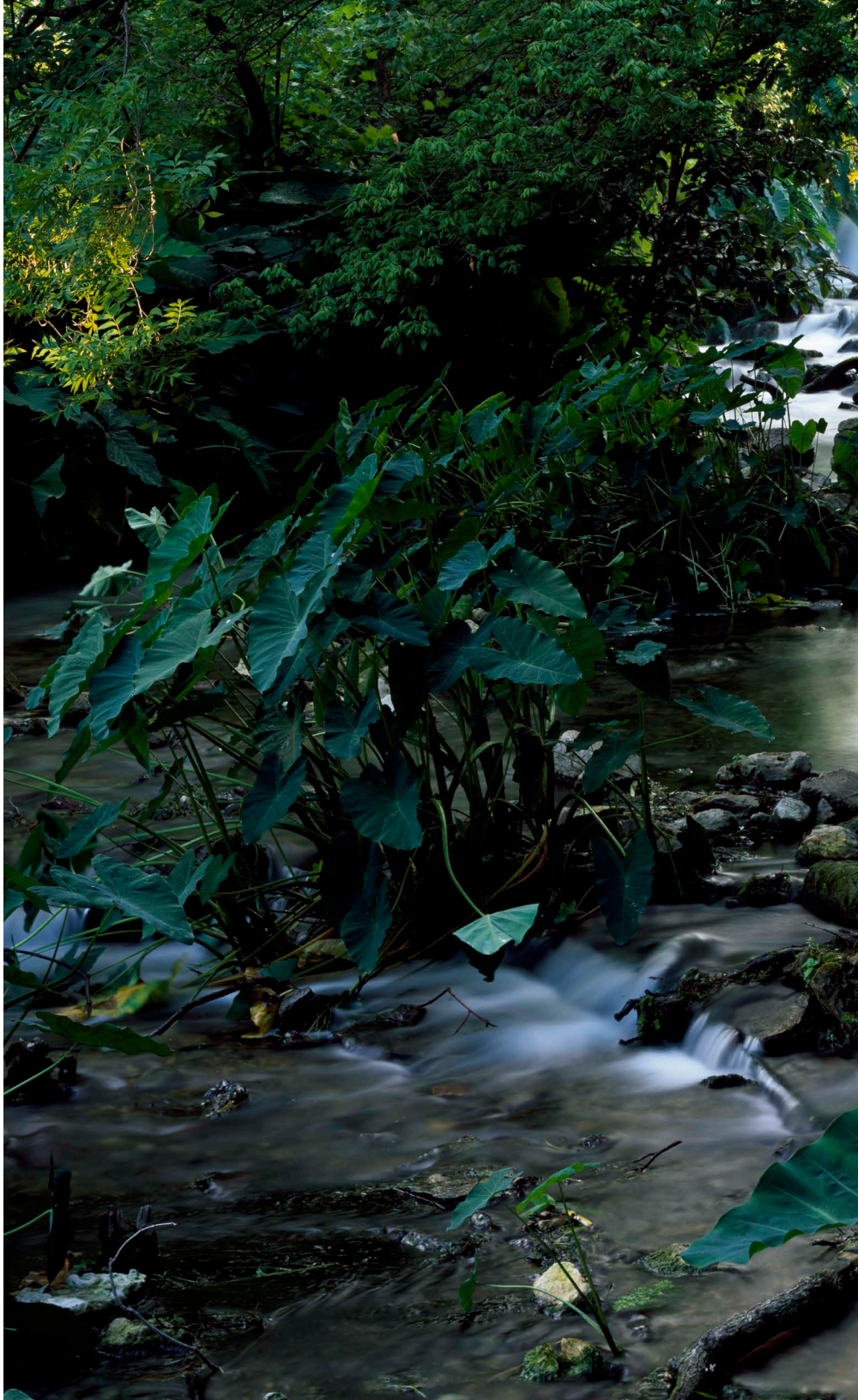
apparently has been in place for a continuous 10 years as a drought contingency measure (and sometimes more stringent restrictions have been in place). In these fast-changing times a decade is a pretty long time, so our Scorecard gives Lubbock credit for a no more than twice a week watering restriction even though – technically – it is a drought measure and not a "permanent" conservation measure. On the other hand, Cedar Park has had a similar restriction of two days per week watering in place continuously as a drought measure for a much shorter time than Lubbock, so our scoring did not give Cedar Park credit for this as a permanent conservation measure.

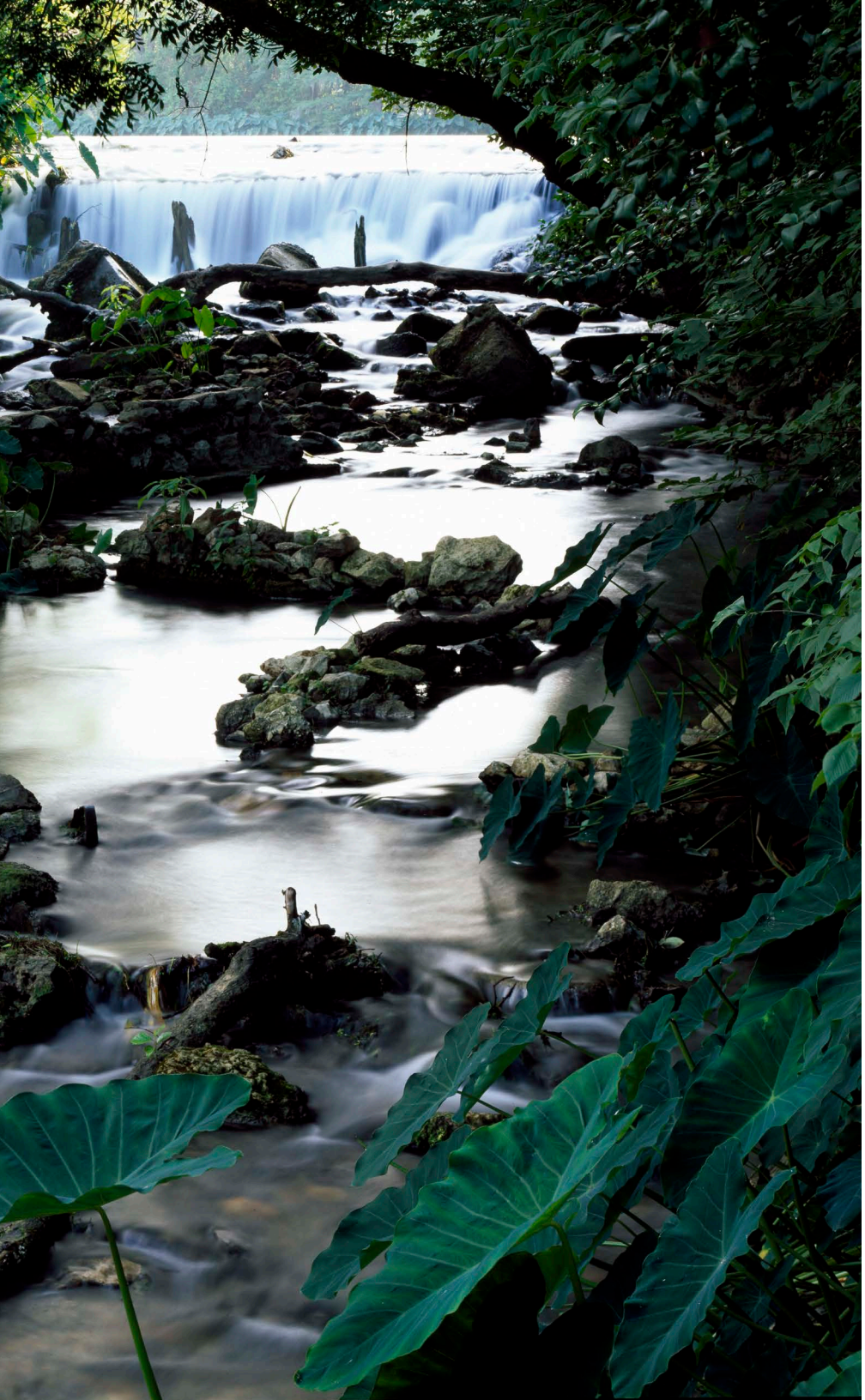
Strength of Conservation Pricing Signal

Using the data from the Texas Municipal League's annual survey of water rates as supplemented by additional data compilation and analysis by researchers at the Environmental Finance Center (EFC) at the University of North Carolina, retail water utilities were categorized by the relative "conservation pricing signal" in their respective water rates. As recommended by EFC, the indicator used for this pricing signal was the increase in the marginal price of water as the consumption of water goes up, in this instance using two consumption levels – 10,000 gallons of water per month and 5,000 gallons of water per month. The results were as follows:

Of the 126 large and medium-size retail water utilities:

- 64 of the utilities were in the top quartile (a marginal price increase of at least 40%) – their water rate structures send a relatively strong conservation pricing signal
- 56 of the utilities were in the second quartile (a marginal price increase of at least 25% but less than 40%) – sending a moderate conservation pricing signal
- Only four of the utilities were in the third quartile (some marginal price increase but less than 25%) - sending only a weak conservation pricing signal
- Only one of these utilities (Southern Montgomery County MUD) had no marginal price increase from 5,000 to 10,000 gallons and thus no conservation pricing signal
- The average value of the marginal price increase was slightly over 39% - basically at the breakpoint between a moderate and strong conservation pricing signal
- The highest value of the marginal price increase was approximately 61% - League City was the utility with the water rate structure that had the highest value among the large & medium-size utilities





Of the 180 small retail water utilities:

- 61 of the utilities were in the top quartile – their water rates send a relatively strong conservation pricing signal
- 99 of them utilities were in the second quartile – sending a moderate conservation pricing signal
- 14 of the utilities were in the third quartile – sending only a weak conservation pricing signal
- Six of the utilities sent no conservation pricing signal
- The average value of the marginal price increase set by these small utilities was almost 36%, only slightly below the average value for the large & medium-size utilities
- The highest value of the marginal price increase was approximately 68% - Harris County Freshwater Supply District #51 was the small utility with the water rate structure that had the highest value among small utilities

Reminder: Our Texas Water Conservation Scorecard was based on publicly accessible data. If and when a retail water utility did not submit legally required plans or reports to the State of Texas and/or if a utility did not provide clear information in those plans or reports, then a utility may not have received points on the criteria dependent on that information. Utilities need to make sure that they are providing legally required information accessible to the public and that the information made available is understandable.

Appendix B

Since each retail water utility is unique to some extent, we have tried to go beyond just the numerical scoring and provide additional context for evaluating the efforts of each of the 35 largest retail water utilities in the state – those serving a population of 100,000 or more. Here, paired with its score based on our ten criteria, is an individual narrative for each of the 35 utilities. Taken together, the score and the narrative provide a "Snapshot" of the utility.

Each narrative goes into a little more depth about the utility's water supplies, specific conditions, and water conservation actions. The narratives are somewhat more subjective than the score for each utility, but they allow us to highlight some positive actions by utilities with relatively low scores as well as point out some potential actions that even fairly highly rated utilities could take to advance water conservation in their respective service areas. These Snapshots reflect the status of the water utilities as of the Spring of 2016.

City of Abilene

Population 116,412

May 2016

Questions	Points
1. WCP or Water Conservation Information Submitted?	5
2. Annual Report (AR) Submitted?	5
3. Water Audit Report (WAR) Submitted?	5
4. Total Percent (%) Water Loss	15
5. WCP and Conservation Info Accessibility?	3
6. Achieved 5-Yr Conservation Goal Set in 2009 WCP?	10
7. Set a Strong Conservation Goal in Its 2014 WCP?	0
8. Number of Best Management Practices (BMPs) implemented?	2
9. Outdoor Watering Schedule?	0
10. Conservation Pricing Signal?	15

The City of Abilene gets good marks for controlling water loss, and its municipal per capita water use is moderate. However, the City indicates little interest in doing anything more than maintaining its current water use. Abilene has not taken steps to pursue any significant water use reduction from current levels, although there are many conservation BMPs the City could implement. The fact that Abilene is not pursuing additional water conservation measures that might dramatically lower water use may complicate its efforts to justify developing new, controversial water supplies such as a proposed surface water reservoir.

The City of Abilene is located in West Central Texas between a humid subtropical climate to the east and a semi-arid one to the west. Abilene is in the Brazos G regional water planning area. The City's 2013 population of 124,836 population used 86% of total water delivered while 31,253 wholesale customers used the remaining 14%. Abilene has a broad range of municipal, industrial, and even agricultural water users within its retail service area of 108 square miles and a wholesale service area of 874 square miles. The City also provides reuse water for golf courses and other customers.

Abilene's water sources (all surface water) are diversified, and the City diverts (on average) approximately 24,500 acre-feet per year from these sources. The City's sources include the Hubbard Creek Reservoir (via contract with the West Central Texas Municipal Water District), Lake Fort Phantom Hill, and O.H. Ivie Reservoir (via contract from the Colorado River Municipal Water District). The City owns and is allocated use of water for municipal purposes from Lake Abilene, a source that has been deemed not dependable and so is not currently used. The City also holds water rights in Lake Kirby. Abilene owns and operates a wastewater reuse system that produces water for sale for irrigation use. The total irrigation water delivered is expected to grow from the current 3,557 ac-feet per year to 5,333 ac-feet per year in 10 years.

Abilene's 2014 WCP and accompanying retail Utility Profile did not report current per capita water use, although the earlier 2010 WCP indicated that the City's GPCD was "historically … (when not under water use restrictions)" 149. The 2014 WCP stated a municipal conservation goal of maintaining a GPCD of 162 by the end of 2019 and 160 by the end of 2024. Abilene has many opportunities to reduce current municipal water use that it is not taking advantage of – the City has not adopted any permanent restrictions on outdoor landscaping watering, and the City reports that it has only implemented four out of over 20 possible BMPs for municipal water providers in the state's BMP Guide available from the Texas Water Development Board.

The City does have "water conservation goals" for wholesale water use, industrial water use, and agricultural water use, but they are largely to simply maintain historic or current use levels and standards, not a thrust toward reduction of water use. Abilene also says that its water loss is to maintain "per capita water loss at less than 15%" – it is not clear what that translates to in terms of total water loss. However, Abilene in the most recently available Water Audit Report submitted to TWDB reports a total water loss of slightly over six percent, which is a laudable rate and indicates that the City has an effective water loss control program.

Amarillo Municipal Water System

Population 191,541

May 2016

Questions	Points
1. WCP or Water Conservation Information Submitted?	5
2. Annual Report (AR) Submitted?	5
3. Water Audit Report (WAR) Submitted?	5
4. Total Percent (%) Water Loss	15
5. WCP and Conservation Info Accessibility?	5
6. Achieved 5-Yr Conservation Goal Set in 2009 WCP?	0
7. Set a Strong Conservation Goal in Its 2014 WCP?	0
8. Number of Best Management Practices (BMPs) implemented?	4
9. Outdoor Watering Schedule?	0
10. Conservation Pricing Signal?	10

Amarillo's per capita water use has been all over the map over the last decade, and it is not possible to evaluate whether the utility's goal of reducing municipal use to 175 GPCD by 2017 is realistic since the baseline for setting that goal is not clear. Because of the high percentage of single family residential customers in Amarillo's service area and the spike in water use from winter months to summer months, an obvious focus for water conservation in the City would be reducing outdoor use. Amarillo does have a low rate of water loss for a large utility.

The City of Amarillo is the largest metropolitan area in the Texas Panhandle and lies within the Region A water planning region and three groundwater conservation districts. The Amarillo Municipal Water System has a service area population of 192,221. In its 2012 WCP (its latest plan) Amarillo indicates that it obtains water from several sources, including the Canadian River Municipal Water Authority (CRMWA) and city-owned groundwater well fields, and that the City provides reclaimed water for industry and irrigation. Since the City's wells tap into the depleting Ogallala Aquifer there is an imperative for Amarillo to advance water conservation.

Amarillo has many options to reduce water use and groundwater withdrawals that it has not employed thus far or that it should consider strengthening, including the following:

- Implementing an ongoing outdoor landscape watering schedule, such as time-of-day limitations on lawn irrigation or restricting watering to certain days of the week;
- Making treated wastewater available for landscape irrigation;
- Increasing the number of Best Management Practices (BMPs) adopted and implemented (in its most recent Annual Report to TWDB the Amarillo Municipal Water System said that it was implementing only four of the over 20 municipal BMPs included in the State BMP Guide);
- Increasing the "conservation pricing signal" sent to water utility customers by the utility's water rate structure to encourage those customers to be more efficient in the use of water in order to save money

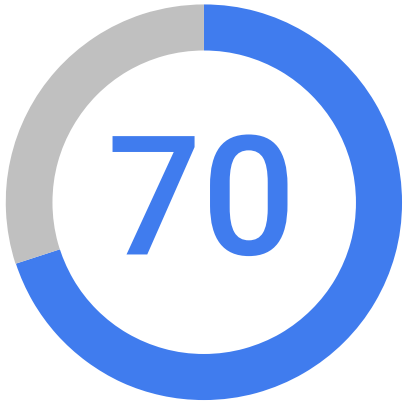
The 2012 WCP provides water use data that makes the case that an ongoing outdoor watering schedule or programs targeting outdoor use could have an impact on Amarillo's Total GPCD:

- At 133 GPCD, residential water use (which includes outdoor landscape watering) in 2011 accounted for about half of the total water use of 261 GPCD
- Seasonal water use totals of 153 GPCD in winter 2011 versus 402 GPCD in summer 2011 (note that 2011 was an exceptional drought year, but Amarillo's ratio of summer to winter water use was also substantial in other years reported in its 2012 WCP).

Outdoor landscape irrigation is likely a significant part of the increase in summer water use over winter water use. Other major cities are targeting outdoor landscape watering in various ways that might provide a path for Amarillo to take. For examples, Dallas has limited outdoor watering to no more than twice a week on a permanent basis, while San Antonio has developed outreach and assistance programs to customers to help them reduce outdoor water use.

City of Arlington

Population 371,750



May 2016

Questions	Points
1. WCP or Water Conservation Information Submitted?	5
2. Annual Report (AR) Submitted?	5
3. Water Audit Report (WAR) Submitted?	5
4. Total Percent (%) Water Loss	5
5. WCP and Conservation Info Accessibility?	5
6. Achieved 5-Yr Conservation Goal Set in 2009 WCP?	10
7. Set a Strong Conservation Goal in Its 2014 WCP?	10
8. Number of Best Management Practices (BMPs) implemented?	10
9. Outdoor Watering Schedule?	5
10. Conservation Pricing Signal?	10

The City of Arlington has a lower rate of per capita water use than many of its North Central Texas neighbors. Arlington has shown a dedication to conservation with its adoption of multiple best management practices (BMPs) to achieve greater efficiency in the use of water, and the utility has set reasonable goals for reducing water use and been able to beat those goals. Arlington should consider adopting a permanent "no-more-than-twice-a-week" watering schedule similar to what several other cities in the region have done, with good result. The City's water rate structure could send a stronger "conservation pricing signal."

The City of Arlington lies within the Dallas-Fort Worth Metroplex and the Region C water planning area and has an average rainfall of 39". Arlington has a service area of 99 square miles and provides retail water service for 369,543 people. City planners expect the population to increase to 428,000 people by 2060. Arlington is a customer of Tarrant Regional Water District and receives surface water from that wholesale supplier.

Single and multi-family residential customers constitute the vast majority of Arlington's retail water connections (64% and 33% respectively, 97% total) and accounted for 73% of 2013 retail water use. Arlington's industrial, commercial and institutional customers account for 3% of accounts but use 27% of the water produced by the utility. A vast majority of the cities non-residential customers are commercial or industrial. Arlington's highest volume retail water users are the GM Assembly Plant, University of Texas at Arlington, and Arlington ISD.

In its 2014 WCP the City reports that its historic five-year (2009-2013) total GPCD was 159. The single-family residential GPCD for that same period was 112, a substantial portion of the total. The 2014 WCP sets a target to reduce total GPCD to 151 by 2019 and to 143 by 2024, which is in keeping with the recommendation of a state task force to reduce municipal per capita water use at a minimum of 1% each year on a five-year rolling average. Arlington beat its 2009 WCP goal, so there is a reasonable expectation that the City will be able to meet if not beat the GPCD goals in its 2014 WCP.

Limiting outdoor water use is one of the most important things a utility with a large single-family residential customer sector can do to stretch current water supplies to meet the needs of a growing population. Arlington's summer to winter differential (or "peak") is about 1.8 – 1.9, which probably reflects the spike in outdoor watering during hot weather.

Thus far, Arlington has not placed year-round limits on outdoor watering except for time of day restrictions. Implementing a no-more-than-twice-a-week watering limitation would enhance the City's ability to beat its conservation goals. Arlington does provide several tools and some information on efficient lawn watering and other conservation practices. Some of the programs include, the Lawn Whisperer, a native plant guide, native plant sales, and free sprinkler system inspections. Arlington could also revise its water rate structure to send a stronger conservation pricing signal to customers to encourage cutting outdoor water use.

City of Austin Water & Wastewater

Population 903,570

May 2016

Questions	Points
1. WCP or Water Conservation Information Submitted?	5
2. Annual Report (AR) Submitted?	5
3. Water Audit Report (WAR) Submitted?	5
4. Total Percent (%) Water Loss	5
5. WCP and Conservation Info Accessibility?	5
6. Achieved 5-Yr Conservation Goal Set in 2009 WCP?	10
7. Set a Strong Conservation Goal in Its 2014 WCP?	15
8. Number of Best Management Practices (BMPs) implemented?	10
9. Outdoor Watering Schedule?	15
10. Conservation Pricing Signal?	15

Austin has moved to the top ranks of Texas cities practicing water conservation in recent years. Austin dramatically decreased per capita water use from 2009 to 2014 through several initiatives, including a focused effort to reduce peak water demand in the summer. Austin has unfinished business such as curbing water loss, however, and Austin Water (the City utility) in its 2014 WCP set a target for per capita water use in "wet years" higher than what it already has demonstrated is achievable. Austin just moved to "head of the class" in limits on outdoor watering – adopting a permanent no-more-than-once-a-week outdoor watering restriction.

The City of Austin, located in Central Texas and the Region K water planning area, is known for its conservation-minded, yet rapidly growing population, now approaching one million. The City draws its water from the Highland Lakes on the Colorado River. Austin has its own water rights on the Colorado but also contracts with the Lower Colorado River Authority (LCRA) for water. Austin Water operates three water treatment plants to process this water for distribution. Among Austin's high volume water customers are "high-tech" companies (Samsung being the highest water user) and The University of Texas at Austin.

In its 2009 WCP Austin set a goal for 2014 of reducing total per capita water use from 170 GPCD to 156, but the City beat that goal, achieving 128 GPCD using an array of conservation strategies and benefitting from implementing no-more-than-once-a-week outdoor watering as part of its drought contingency plan during that period. In its 2014 WCP, however, Austin has retreated somewhat, setting a baseline of 162 GPCD in its latest WCP and a target of "reducing" from that baseline to 141 GPCD by 2019 if drought conditions do not occur. Austin does have an alternative goal of 124 GPCD by 2019 if the City remains in drought stage restrictions. However, the Austin City Council in early May 2016 adopted a permanent no-more-than-once-a-week outdoor watering restriction for households using automatic sprinkler systems (hose-end watering could be done on a second day). That may allow Austin to achieve the 124 GPCD goal.

The City of Austin's most recent water audit indicates a water loss of over 13%. The city is implementing a multi-year plan to reduce water loss, including a campaign to detect underground water leaks. Austin is also applying for state financial assistance for installation of an advanced water metering system.

Austin Water provides easily-accessed conservation information to its residents through both website and social media presence, and the utility promotes conservation through extensive advertising using multiple media. Additionally, Austin Water has a five-tiered rate structure that provides residents an incentive to conserve both money and water through judicious water use.

Over the years the City of Austin has benefitted from active citizen participation and input for its water conservation program, including citizen task forces that have developed detailed proposals for curbing water use. This effort has produced progressive conservation initiatives adopted by the City and its water utility, and it has brought greater citizen support for carrying out these initiatives.

City of Beaumont Water Utility Dept

Population 125,000

May 2016

Questions	Points
1. WCP or Water Conservation Information Submitted?	5
2. Annual Report (AR) Submitted?	5
3. Water Audit Report (WAR) Submitted?	0
4. Total Percent (%) Water Loss	0
5. WCP and Conservation Info Accessibility?	3
6. Achieved 5-Yr Conservation Goal Set in 2009 WCP?	0
7. Set a Strong Conservation Goal in Its 2014 WCP?	0
8. Number of Best Management Practices (BMPs) implemented?	0
9. Outdoor Watering Schedule?	0
10. Conservation Pricing Signal?	15

Beaumont's location in the wettest part of Texas appears to have submerged its interest in advancing water conservation. Per capita water use in Beaumont is high, even in relation to some other cities in East Texas, and the City's reported water loss is alarming. Although the City touts its water conservation education activities, the reality seems to be that Beaumont is not making it a priority to help customers reduce consumption of water. It is hard to see how Beaumont is going to achieve its apparent water use reduction goals based on its current level of conservation effort.

The City of Beaumont is located in the far eastern part of Texas, close to the Louisiana border. According to data from the National Oceanic and Atmospheric Administration, over the last 30 years Beaumont has had an annual average rainfall of over 60 inches, which is 70% more than the average for the state. The City's Water Utilities Department reports on the City website that it has a surface water treatment plant capable of producing 40 million gallons of water a day and a groundwater well pumping system with the capacity to provide 17 million gallons of water a day. The City's surface water source is the Neches River, and its three groundwater wells are into the Chicot formation of the Gulf Coast Aquifer.

Based on data from its 2014 WCP it appears that the City delivered (sold) almost 5.8 billion gallons of water a year on average during the 2009-2013 period to residential, commercial, industrial, public, and other customers. Its top five retail customers on average accounted for about nine percent of the total. A disturbing statistic from the 2014 WCP was that in addition to the 5.8 billion gallons of water a year sold, on average another 3.7 billion gallons of water pumped by the utility was "unaccounted-for" (lost or unmetered) each year during 2009-2013. This translates to a whopping 37.65% of water pumped per year on average during that period.

The discussion of "planning goals" (presumably its version of "five-year" and "ten-year" targets for water use reduction) in the 2014 Beaumont WCP is at best confusing, including its comments on the "total technical potential for reducing per capita water use" and the much less positive "most likely conservation scenario." In one part of the 2014 WCP the City reports its most recent municipal GPCD as 208 (in 2013), although the average for the 2009-2013 period was 225 per year, and the highest use (in drought year 2011) was 247. It appears that Beaumont is aiming for a GPCD of 198 by either 2020 or 2023. Exactly how the City is going to accomplish that is not clear, although the utility probably would argue that its 2014 WCP lays that out. However, anyone who has looked at much more detailed water conservation plans from other utilities is left scratching their head after reviewing Beaumont's 2014 WCP.

A dedicated resident can spend some time digging through the City of Beaumont's website and eventually find a bit of information on water conservation. Unfortunately, that consists only of a short bullet list of voluntary suggested tips for reducing a person's water use. The one original idea that Beaumont has included on its site is a Water Conservation Quiz that allows residents to see if they have good water use habits. Although the City apparently did some advertising to encourage citizens to save water (especially in the drought year 2011) and has sponsored a water education program in a few schools, the conservation education effort seems minimal for a utility that appears to be relying so much on education to reduce per capita water use.

Brownsville Public Utilities Board

Population 175,494

May 2016

Questions	Points
1. WCP or Water Conservation Information Submitted?	5
2. Annual Report (AR) Submitted?	5
3. Water Audit Report (WAR) Submitted?	5
4. Total Percent (%) Water Loss	10
5. WCP and Conservation Info Accessibility?	3
6. Achieved 5-Yr Conservation Goal Set in 2009 WCP?	10
7. Set a Strong Conservation Goal in Its 2014 WCP?	0
8. Number of Best Management Practices (BMPs) implemented?	2
9. Outdoor Watering Schedule?	0
10. Conservation Pricing Signal?	10

The Brownsville Public Utilities Board (BPUB) reports that its customers have a very low rate of per capita water use, especially in relation to other water utilities in Texas. However, the utility has not committed to maintaining that low rate, and it implements only a small number of water conservation BMPs. No doubt the low rate of water use does not provide the same impetus for water conservation that curbing a high rate of use would. Brownsville PUB has a challenge in controlling water loss within its system although it is in the middle tier of utilities on water loss.

BPUB is the utility that provides water to the City of Brownsville, the El Jardin Water Supply Corporation, and the Brownsville Navigation District. As of 2013 BPUB provided retail water service to over 189,000 people. The utility's service area is located in the Lower Rio Grande Valley in the very southernmost part of Texas, and it is in the Region M water planning area.

The primary source of water for the BPUB water is the Rio Grande, with supplemental water from almost complete ownership of the Southmost Regional Water Authority (SRWA)'s brackish groundwater treatment facility. BPUB has three water treatment plants with the capacity to provide 47 million gallons of treated water per day, well above current water demands. BPUB utilizes at least 624 miles of water pipelines, making it a challenge to control water loss. The utility's recent water loss rate has hovered around 10% per year. While this number represents a dramatic decrease in water loss in a few years, and some other Texas cities have higher rates of water loss, there is still room for improvement in this regard. Therefore, it is disappointing that BPUB's 2014 WCP has set a "goal" of keeping water loss under 13%, instead of committing to maintain or even reduce its currently lower rate of water loss.

As noted, Brownsville PUB has a very low rate of per capita water use, reporting 98 GPCD in its 2014 Annual Report. Even with that low number in its Annual Report, BPUB's 2014 WCP sets as its baseline for per capita water use a GPCD of 111 and a five-year target of 120 GPCD in 2019 (the 2014 WCP identified 120 GPCD as BPUB's most recent five-year average). This is going in the wrong direction from a water conservation standpoint, and the 2014 WCP does not provide a clear explanation for setting a five-year target higher than its 2014 per capita use. The 2014 WCP five-year target for residential water use – 65 GPCD, however, is lower than that of many other utilities in Texas.

BPUB is an EPA WaterSense Partner, providing a $50 incentive to use High Efficiency Toilets. That program and a very basic list of online conservation tips (such as taking showers instead of baths and watering lawns in the cooler parts of the day), however, constitutes the bulk of the "suite" of water conservation measures implemented by BPUB. Unfortunately, a recent visit to the BPUB website to get information on WaterSense resulted in a number of "error" messages and did not provide the information sought. The City of Brownsville did adopt an ordinance as early as 1999 limiting lawns containing grass to no more than 50 percent of a property's visible "landscape improvements," which has probably been a factor in helping to keep per capita water use low within the City.

City of Carrollton Population 122,100

May 2016

Questions	Points
1. WCP or Water Conservation Information Submitted?	5
2. Annual Report (AR) Submitted?	5
3. Water Audit Report (WAR) Submitted?	5
4. Total Percent (%) Water Loss	15
5. WCP and Conservation Info Accessibility?	5
6. Achieved 5-Yr Conservation Goal Set in 2009 WCP?	10
7. Set a Strong Conservation Goal in Its 2014 WCP?	5
8. Number of Best Management Practices (BMPs) implemented?	4
9. Outdoor Watering Schedule?	5
10. Conservation Pricing Signal?	15

The City of Carrollton's 2014 WCP sets both its five- and ten-year per capita water use goals at a level higher than its 2013 water use. That is going in the wrong direction from a water conservation perspective. Because of the high percentage of residential customers in the City's service area an obvious focus for conservation in Carrollton would be reducing indoor and outdoor water use in homes. Carrollton does have a low water loss rate, although its service area for maintaining its utility system is relatively small compared to some other cities in the region.

The City of Carrollton - with a population of over 122,000 – lies within Denton, Dallas, and Collin counties just south of Lewisville Lake in the Dallas-Fort Worth Metroplex and the Region C water planning area. The City has a service area of 37 square miles with 48,802 connections. Carrollton essentially relies upon surface water provided under contract by Dallas Water Utilities for the City's supply, which is totally for retail customers. The bulk of Carrollton's water customers are residential (95% of the utility's connections and on average over 2/3 of the City's water use), and Carrollton's residential GPCD of 113 is a substantial portion of the City's total GPCD of 170.

In the 2014 WCP the City stated five- and ten-year goals of 169 GPCD and 167 GPCD respectively, which is higher than their 2013 GPCD of 159. Instead of using the 2013 water use as the baseline, the city set its baseline at the higher five-year average water use of 170 GPCD. Even though the City has the right to do that, the fact that both its five- and ten-year per capita water use goals are higher than the actual per capita use in 2013 shows that Carrollton can use less water than its projected future use. To be fair, Carrollton has come a long way since the late 1990s when per capita water use was well in excess of 200 GPCD, but today's 170 GPCD is way above what a State task force recommended as a target over a decade ago (140 GPCD) and even farther above what some cities have achieved in water conservation.

Carrollton has already taken a step in the right direction by implementing a seasonal outdoor watering schedule from April 1 through October 31 that restricts watering by sprinkler system from 10 AM to 6 PM and encourages customers to conduct outdoor watering no more than twice per week on a voluntary basis. With its high percentage of residential water users, if the City chose to implement a mandatory no more than twice a week outdoor watering limitation as many of the other cities in North Central Texas have done, that could dramatically reduce annual water use. Historically, Carrollton's water use doubles during the summer, which is certainly due in part to outdoor watering during the hottest time of the year.

The City does have excellent information on its website about outdoor water conservation, and Carrollton also offers a free irrigation system inspection to residential customers by a licensed irrigation technician each year during the spring and summer or until annual funds for the program are exhausted. That is certainly helpful in making sure that irrigation systems are not wasting water due to leaks or improperly function sprinkler heads. Nevertheless, a mandatory limit on number of days of watering allowed each week would also reduce water waste.

City of Corpus Christi Population 297,467

May 2016

Questions	Points
1. WCP or Water Conservation Information Submitted?	5
2. Annual Report (AR) Submitted?	5
3. Water Audit Report (WAR) Submitted?	5
4. Total Percent (%) Water Loss	10
5. WCP and Conservation Info Accessibility?	5
6. Achieved 5-Yr Conservation Goal Set in 2009 WCP?	10
7. Set a Strong Conservation Goal in Its 2014 WCP?	10
8. Number of Best Management Practices (BMPs) implemented?	8
9. Outdoor Watering Schedule?	0
10. Conservation Pricing Signal?	15

The City of Corpus Christi has a high per capita water use, which may partly be a reflection of the volume of water the City provides to certain large industrial operations but does represent an opportunity to achieve significant reductions in water use. The City prepared a detailed water conservation plan (2013) that was made available in draft form for public input and that outlines numerous measures in effect or under consideration to reduce overall water use, peak water demand, and its already relatively low rate of water loss. Some planned initiatives have not been implemented as of early 2016.

The City of Corpus Christi Water Department through its retail and wholesale operations provides water to nearly 500,000 residents and some major petrochemical operations in a seven-county service area in the Coastal Bend Region. Wholesale customers include water operations serving the cities of Alice, Beeville, Mathis, Robstown, and San Patricio. Corpus Christi relies solely on surface water sources for its water supply, specifically Lake Corpus Christi (Nueces River Basin), Choke Canyon Reservoir (Frio River Basin), and Lake Texana (on the Navidad River in the Lavaca River Basin). In addition, in 1999, Corpus Christi purchased senior water rights to 35,000 acre-feet of water annually in the Colorado River, which in the future might be transported to Lake Texana for connection to the existing Mary Rhodes Pipeline. The City through the Corpus Christi Aquifer Storage and Recovery District is exploring the prospect of storing water under ground for use in dry years.

The City in its 2013 WCP has set a moderate goal of reducing total per capita water use by one percent annually from its baseline (2012) 205 GPCD. The City is also seeking to reduce its peak water demand.

Corpus Christi had a water loss rate of 7.5 percent as of 2012 and has set a goal of reducing that rate to 7.1 percent over a five-year period and 6.7 percent over 10 years.

Corpus Christi Water Department provided a public participation opportunity for the City's water customers and residents to review and comment on the draft of its most recent (2013) WCP, including the availability of the draft plan on the City's website and a public meeting to explain and receive input on the plan. This opportunity for public involvement in developing water conservation plans is not the norm among retail water utilities but should enhance the prospect for "buy-in" by water customers and residents in practicing water conservation.

The City has had an extensive water conservation education program, among other efforts, and it has taken steps to encourage its wholesale customers to engage in water conservation. The most recent Corpus Christi WCP identifies several new initiatives by the City in pursuing water conservation, including a rainwater harvesting rebate program and an irrigation consultation service for large commercial customers. The rainwater harvesting and irrigation consultation programs were scheduled to begin in late 2013, but a review of the City's website as of March 2016 does not provide information about these measures being implemented as of yet.

Dallas Water Utility

Population 1,253,000

May 2016

Questions	Points
1. WCP or Water Conservation Information Submitted?	5
2. Annual Report (AR) Submitted?	5
3. Water Audit Report (WAR) Submitted?	5
4. Total Percent (%) Water Loss	5
5. WCP and Conservation Info Accessibility?	5
6. Achieved 5-Yr Conservation Goal Set in 2009 WCP?	0
7. Set a Strong Conservation Goal in Its 2014 WCP?	5
8. Number of Best Management Practices (BMPs) implemented?	10
9. Outdoor Watering Schedule?	10
10. Conservation Pricing Signal?	15

A decade ago Dallas was widely criticized for its high per capita water use at a time when it was aggressively moving to pursue controversial surface water reservoir projects in East Texas. Per capita water use is still high, but it has been reduced. Dallas has steadily expanded its conservation effort, and in 2012 Dallas became the first major Texas city to adopt an ongoing "no-more-than-twice-a-week" outdoor watering limit. Dallas Water Utility does continue to be challenged in controlling water loss. City leaders are now finalizing a new DWU work plan that could dramatically advance conservation in Dallas.

Dallas Water Utility (DWU) provides retail water service to approximately 1.25 million people in Dallas and wholesale service that covers well over one million other North Central Texas residents in water planning region C. DWU reported in its 2014 Utility Profile that during 2009-2013 it delivered to retail customers an average of about 67 billion gallons of water annually. On average about 40% was for single-family residential use, 25% for multi-family residential, about 26% to commercial customers, and less than ten percent to industrial operations.

All of the raw water sources for Dallas are surface water sources, including Lakes Ray Hubbard, Lewisville, Ray Roberts, Grapevine, and Tawakokni (via contract with Sabine River Authority), and the Elm Fork of the Trinity River. In addition, DWU has contracts for water from Lake Fork and from Lake Palestine, although these are not fully connected to Dallas at present (DWU and Tarrant Regional Water District are partnering on an Integrated Pipeline to bring Lake Palestine water to the D-FW area). Dallas also has developed a reuse water supply.

As of 2003, according to data in the 2007 State Water Plan, Dallas had a per capita water use of 238 total GPCD. Dallas has made substantial progress in curbing water use since that time, although total GPCD remains high – a baseline of 204 total GPCD according to the 2014 WCP. This 2014 WCP sets a target to reduce that figure to 196 by 2019, although DWU's 10-year target of 195 in that plan is not ambitious. Dallas also continues to have high water loss in its system – the water loss rate averaged about 15% a year from 2009 through 2013. The 2014 WCP does set a target of reducing that water loss to 10% by 2019.

There are very positive signs of progress overall in DWU's water conservation efforts. Dallas has dramatically expanded its conservation program over the last decade with a wide array of best management practices, high efficiency toilet vouchers and rebates, a growing and highly professional conservation staff, use of the innovative "Lawn Whisperer" campaign to educate residents on outdoor landscaping, and the limits on outdoor watering, among other highlights. Also, the utility's water rate structure sends a strong conservation pricing signal.

In April 2016 DWU presented to the Dallas City Council a draft water conservation work plan, a very detailed and sophisticated document, to continue its expansion of water conservation efforts. The plan outlines specific strategies and their costs and estimated impacts on water use, with a full justification for the measures proposed. If adopted, the plan has the potential to accelerate reductions in water use and to make significant progress in curbing water loss.

City of Denton

Population 110,300

May 2016

Questions	Points
1. WCP or Water Conservation Information Submitted?	5
2. Annual Report (AR) Submitted?	5
3. Water Audit Report (WAR) Submitted?	0
4. Total Percent (%) Water Loss	0
5. WCP and Conservation Info Accessibility?	5
6. Achieved 5-Yr Conservation Goal Set in 2009 WCP?	10
7. Set a Strong Conservation Goal in Its 2014 WCP?	5
8. Number of Best Management Practices (BMPs) implemented?	4
9. Outdoor Watering Schedule?	5
10. Conservation Pricing Signal?	10

The City of Denton is striving to be "Sustainable Denton" – a municipality dedicated to providing an environmentally and economically sustainable quality of life for its current and future residents. This initiative includes an impressive and extensive sustainability plan adopted by the Denton City Council in 2012. Water is part of that plan, and Denton has certainly reduced its per capita water use over the past several years. But there are additional steps such as permanent outdoor water limitations and a strong water conservation pricing signal that Denton needs to take to assure a sustainable water future.

The City of Denton, located north of Dallas and Fort Worth and in the Region C water planning area, provides water services to over 116,000 people who live within its 139 square-mile service area. Denton draws its water from Lake Lewisville and Lake Ray Roberts. Denton is a minority water rights holder in both lakes, which are managed by Dallas Water Utilities. The City reports that on average it pumps about 18 million gallons of water a day to its customers but peak days may see pumping of around double that amount.

According to its 2013 Utility Profile, the City's annual average per capita water use rate for the previous five-years was 163 GPCD. Denton's Annual Report submitted to the Texas Water Development Board (TWDB) actually showed a total GPCD of 138, which certainly beat the goal for reduction set in the City's 2009 WCP. The City's 2014 WCP is somewhat confusing as to Denton's five-year target for per capita water use reduction by 2019 and the baseline for setting that target. However, TWDB has identified 155 total GPCD as Denton's target for 2019 and calculates that as being a reduction of an average 0.38% annually over the five-year period of the City's current WCP. While that is moving in the right direction, it certainly constitutes a much slower rate of reduction than the City has achieved thus far. To be fair, however, Denton had a GPCD as high as 189 a decade and a half ago, so it has made steady progress.

Outdoor landscape watering appears to be a key to further reductions in Denton's per capita water use. Denton's own website reports that the average household it serves uses 320 gallons of water per day. Of that amount, 40% goes toward lawn irrigation, increasing to 70% during the summer. Denton has taken some steps to address outdoor watering. The City has a time of day watering restriction (no watering between 10 AM and 6 PM) during the hottest months of the year. To address similar seasonal demand issues created by outdoor watering, other water suppliers in the North Central Texas area have introduced a limit of "no-more-than-twice-a-week" watering on a permanent basis. Denton would be well-advised to consider this step.

An additional focus for Denton should be on its water rate structure and how that impacts water use. Denton's rate structure sends a very weak "conservation pricing signal" to its residential customers. The first change in price per 1000 gallons does not come in Denton's rates until a household uses 15,000 gallons of water a month – and that is only for billings during May through October. For billings during November through April a residential customer receives a volume charge of $2.75 per 1000 gallons used, regardless of how much that customer uses. Yes, a customer's bill would be lower if they used less water, but if each additional 1000 gallons you use is about the same cost as a Grande Iced Coffee at Starbucks, you can cut back on the caffeine and rehydrate with a lot more water.

El Paso Water Utilities Public Service B

Population 631,253

May 2016

Questions	Points
1. WCP or Water Conservation Information Submitted?	5
2. Annual Report (AR) Submitted?	5
3. Water Audit Report (WAR) Submitted?	5
4. Total Percent (%) Water Loss	10
5. WCP and Conservation Info Accessibility?	5
6. Achieved 5-Yr Conservation Goal Set in 2009 WCP?	10
7. Set a Strong Conservation Goal in Its 2014 WCP?	10
8. Number of Best Management Practices (BMPs) implemented?	6
9. Outdoor Watering Schedule?	0
10. Conservation Pricing Signal?	15

El Paso Water Utilities (EPWU) is a good model for water conservation by a large retail water utility. EPWU has undertaken a wide range of activities over many years to reduce water use and water waste. Reduction in per capita water use in El Paso over the past four decades has been dramatic, and the utility continues to work for additional reductions. Of particular note is the EPWU's success in minimizing water loss in its distribution system.

EPWU serves the City of El Paso, the sixth largest city in Texas (with a population of over 787,000 people as of 2014). According to the 2014 Utility Profile submitted to the State, EPWU provides water to over 217,000 accounts, including wholesale customers. El Paso is located in the far northern part of the Chihuahuan Desert and receives on average only eight inches of rain each year. El Paso draws its water supplies from the Rio Grande and two aquifers, the Hueco and Mesilla Bolsons. El Paso is in the Region E water planning area.

As of 2013, El Paso supplied 112,000 acre feet of potable water to its customers, with approximately two-thirds of that amount coming from the Hueco Bolson, approximately a fourth from the Mesilla, and only 9% from the Rio Grande. El Paso also provides reclaimed water for non-potable use (over 8,000 acre feet per year). EPWU for over 25 years has been injecting treated wastewater back into the Hueco Bolson to augment that water source, and EPWU has a joint brackish groundwater desalination project with Fort Bliss that is currently the largest such facility in the country.

EPWU has had an active water conservation program for a number of years. As a result of a variety of water conservation measures over the past four decades, water use in El Paso has steadily declined from an average over 220 GPCD in the 1970s. El Paso met the five-year GPCD goal in its 2009 WCP (135 GPCD) and has set a goal for 2019 of 130 GPCD. In 2013 the GPCD was 132. The 2011 Region E water plan set a target GPCD for El Paso of 118 by the year 2060.

As reported in its 2014 WCP, the historic five-year water loss experienced by EPWU was only 6.6 percent. The target is to reduce that water loss to 6 percent annually by 2020. This is a very enviable water loss scenario for a major water supplier.

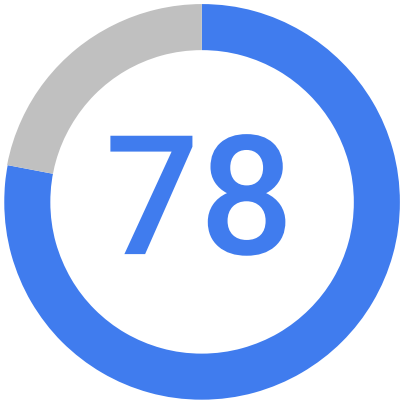
Over the years EPWU has deployed a wide range of water conservation programs and activities. BMPs used have included the following (not a complete list):

- Conservation analysis and planning (including a water conservation manager and staff)
- Water conservation pricing (increasing block rate structure)
- Free landscape irrigation audits and a Turf Rebate program for landscape conversion, and outdoor watering limited to no more than three times a week
- Extensive public education activities
- Voluntary rebate and retrofit programs for toilets, clothes washers, refrigeration systems, waterless urinals, and other equipment

These and other BMPs are described in some detail in El Paso's 2014 WCP.

City of Fort Worth

Population 727,575



May 2016

Questions	Points
1. WCP or Water Conservation Information Submitted?	5
2. Annual Report (AR) Submitted?	5
3. Water Audit Report (WAR) Submitted?	5
4. Total Percent (%) Water Loss	0
5. WCP and Conservation Info Accessibility?	5
6. Achieved 5-Yr Conservation Goal Set in 2009 WCP?	10
7. Set a Strong Conservation Goal in Its 2014 WCP?	15
8. Number of Best Management Practices (BMPs) implemented?	8
9. Outdoor Watering Schedule?	10
10. Conservation Pricing Signal?	15

The City of Fort Worth is on the right track to produce good results with a relatively solid water conservation plan and efforts underway to advance key components of it. Targeted tools such as a water loss detection and repair program, a weather station program, a good conservation pricing signal, and ongoing limits on landscape watering have the potential to help Fort Worth reduce its relatively high rate of per capita water use and its very high rate of water loss. The City provides helpful conservation information to the public on its website and collaborates with other water providers on conservation messaging.

The City of Fort Worth in North Central Texas is in the Region C water planning area. According to 2014 census estimates, it boasts a population of 812,238 residents. The City provides water supplies to over 1.1 million people that reside in Tarrant, Denton, Johnson, Parker and Wise counties. The majority of those people are supplied directly through retail service (770,000 residents) and the remaining residents receive their water as a result of 30 wholesalers purchasing water from Fort Worth and then supplying it to their customers. The water is all surface water, coming from four different supply sources—the West Fork of the Trinity (via Lake Bridgeport, Eagle Mountain Lake and Lake Worth), the Clear Fork of the Trinity (via Lake Benbrook), Cedar Creek Reservoir, and Chambers County Reservoir.

According to its 2014 WCP, as of 2013, Fort Worth's five-year average water-use rate was 171 GPCD. The WCP sets a five-year target of 160 GPCD by 2020, slightly higher than the minimum 1% per year reduction rate for municipal water suppliers suggested by a State task force in 2004. Since Fort Worth was able to beat the five-year goal for per capita water use reduction set in its 2009 WCP, the utility should be able to meet or beat its new five-year target.

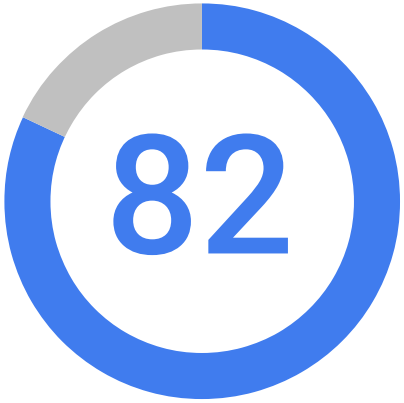
On the education front, Fort Worth has teamed with Tarrant Regional Water District to produce regionally consistent messaging on conservation. This initiative helps reduce confusion about conservation requirements and recommendations among area residents served by different water suppliers. In addition, the Fort Worth website is a model for how to provide pertinent water conservation information to customers in a well-organized format. Programs and services are clearly broken into use categories (residents, irrigation, commercial) that make it easy for various water users to find information applicable to them.

Fort Worth has taken aggressive actions to reduce water use for outdoor landscaping. The City has limited outdoor watering year-round to no more than twice a week, in line with a number of other water suppliers in the region. Fort Worth has also developed an interactive weather station program to help the public make informed decisions about outdoor watering. The utility's customers will receive weekly information (via emails or other means) about how much supplemental water is needed, if any, to maintain a healthy landscape based on the area's last seven days of weather.

Fort Worth implemented a new water loss reduction program in 2012. The City's 2014 WCP reports that leaks detected and repaired via this program saved an estimated 350 million gallons of water in fiscal year 2013. The City's 2014 Water Audit Report, however, continues to show a very high 19.1% water loss rate, so much more work to minimize water loss is needed.

City of Frisco

Population 116,989



May 2016

Questions	Points
1. WCP or Water Conservation Information Submitted?	5
2. Annual Report (AR) Submitted?	5
3. Water Audit Report (WAR) Submitted?	5
4. Total Percent (%) Water Loss	15
5. WCP and Conservation Info Accessibility?	3
6. Achieved 5-Yr Conservation Goal Set in 2009 WCP?	10
7. Set a Strong Conservation Goal in Its 2014 WCP?	10
8. Number of Best Management Practices (BMPs) implemented?	4
9. Outdoor Watering Schedule?	10
10. Conservation Pricing Signal?	15

The City of Frisco has an enviably low rate of water loss in its distribution system, and it continues to make progress in reducing per capita water use. However, the its current GPCD remains far above that of many other Texas cities and far higher than the per capita water use target recommended in 2004 by a state task force. Residential water use, Frisco's highest water use sector, would be a logical focus for conservation efforts. Frisco should explore revising its block water rate structure to better incentivize more efficient use of water.

The City of Frisco lies within the Dallas-Fort Worth Metroplex and the Region C water planning area. As of 2013, the City provides retail water service for 137,330 people and is reliant on the North Texas Municipal Water District (NTMWD) as its sole water supplier. Frisco is a member city of the NTMWD and a wholesale provider to the Town of Hackberry. Frisco's water infrastructure is sized to provide a capacity of up to 127 million gallons of water per day to its customers, but during 2009-2013 the average daily water use was one-fifth of that capacity and the highest peak daily use (2012) was only slightly over 40% of capacity.

In its 2009 WCP Frisco set a goal of reducing its very high per capita water use (a five-year average of 239 GPCD) down to 215 GPCD by 2014. In its 2014 WCP Frisco reported that its five-year average had reached 215 GPCD, so the City has made progress. The 2014 plan sets a target of total GPCD of 204 by 2019, so Frisco continues to move forward. However, a 204 GPCD is much higher than the target of 140 GPCD recommended for municipal water suppliers by the state's Water Conservation Implementation Task Force in 2004. In fact, Frisco's target of 191 total GPCD by 2024 exceeds that target. At this rate it would take decades for Frisco to reach a GPCD of 140. Thus, Frisco obviously has much more work to do in water conservation.

According to Frisco's 2014 Utility Profile, residential customers account for the bulk of Frisco's water use – as of 2013 the residential GPCD for Frisco was 191 (a single-family residential GPCD of 119 and a multi-family residential GPCD of 72). The high ratio of summer water use to average water use in Frisco indicates that reducing outdoor landscape watering provides an opportunity to lower residential water use, and Frisco has now adopted permanent restrictions on lawn and landscape watering that should prove helpful.

Another helpful step for Frisco to take in addressing residential water use might be in the area of water rates. Frisco charges customers using any volume of water between 2,000 and 15,000 gallons a month the same rate. In other words, a water efficient customer using 3,000 gallons and a high water user customer using 14,000 gallons would be charged at the same rate, drastically lessening the impact of a block rate structure. Revising this structure to provide a better incentive for customers to conserve water would be an option for Frisco to consider.

As a member city of the conservation-oriented North Texas Municipal Water District, Frisco has the support and resources to be a model for other cities in North Texas in pursuing water conservation. To do so, however, Frisco will need to adopt more BMPs for water conservation and become more ambitious in accelerating its reductions in per capita water use.

City of Garland

Population 225,000

May 2016

Questions	Points
1. WCP or Water Conservation Information Submitted?	5
2. Annual Report (AR) Submitted?	5
3. Water Audit Report (WAR) Submitted?	5
4. Total Percent (%) Water Loss	15
5. WCP and Conservation Info Accessibility?	5
6. Achieved 5-Yr Conservation Goal Set in 2009 WCP?	10
7. Set a Strong Conservation Goal in Its 2014 WCP?	5
8. Number of Best Management Practices (BMPs) implemented?	4
9. Outdoor Watering Schedule?	5
10. Conservation Pricing Signal?	10

The City of Garland has a moderate per capita water use rate of 145 GPCD. Garland notes a number of conservation practices in their WCP that they intend to implement, but a clear time frame for implementation and a system for measuring the effectiveness of these practices is needed. Establishment of year-round landscape watering restrictions is a good start in addressing Garland's jump in water use in the summer. An additional focus on conservation education, a stronger conservation pricing signal in its water rates, and setting more ambitious water use reduction goals could put Garland in the top ranks of utilities advancing conservation.

The City of Garland covers 57 square miles of land northeast of Dallas. Garland is a member city of the North Texas Municipal Water District (NTMWD) which supplies water from several reservoirs to Garland and numerous other cities in North Central Texas Garland is in the Region C water planning area.

The Garland Water Utility serves a population of 231,618 people. Residential water use is roughly 90 GPCD out of the City's total GPCD of 145. The water loss rate reported by Garland in its 2014 Water Audit Report – 3.82% - was dramatically lower than the rates indicated in the City's Utility Profile for the years 2009 through 2013. If this lower figure is an indication that Garland has successfully tackled its historical water loss, that is a positive development.

Garland has set a rather unambitious goal for per capita water use reduction in its most recent WCP. The Plan adopted in 2014 has a five-year goal of reducing total usage from 145 to 141 GPCD or less by 2019 and a ten-year goal of reducing from 145 to just 138 GPCD or less by 2024. Garland's previous WCP had more aggressive goals that were not only met, but exceeded. Although the city's 2009 and 2014 WCPs include a fairly robust list of conservation practices, according to the Water Conservation Annual Report that the Garland water utility submitted to the state, the city has implemented just six of the more than 20 BMPs in the State BMP Guide. Adopting additional BMPs could take the City to the next level of conservation.

One area of great potential savings is in outdoor water use, particularly the water used on landscapes. A look at Garland's summer vs. winter water use shows that summer use is often double that of winter use, probably the result of outdoor landscape watering. Much more water is put on lawns in Texas than is needed in most parts of the state, so this is an easy place to save. One thing Garland could do to realize additional savings in water use for non-essential needs would be to adopt a water rate structure with a stronger conservation pricing signal to encourage customers to make more thoughtful choices about outdoor watering.

Garland has now put limits on lawn watering, which can result in significant savings. In addition to time-of-day watering restrictions and a requirement for rain sensors on new irrigation systems, customers may water their lawns with sprinkler systems no more than two days a week between April 1 and October 31 and no more than once a week the rest of the year. However, customers have "the flexibility of choosing which day of the week to water." That, unfortunately, makes the restriction virtually unenforceable. If Garland wants a true limitation on watering to no more than twice a week during the hotter months, it must designate days.

City of Grand Prairie

Population 171,028

May 2016

Questions	Points
1. WCP or Water Conservation Information Submitted?	5
2. Annual Report (AR) Submitted?	5
3. Water Audit Report (WAR) Submitted?	5
4. Total Percent (%) Water Loss	0
5. WCP and Conservation Info Accessibility?	5
6. Achieved 5-Yr Conservation Goal Set in 2009 WCP?	10
7. Set a Strong Conservation Goal in Its 2014 WCP?	15
8. Number of Best Management Practices (BMPs) implemented?	6
9. Outdoor Watering Schedule?	10
10. Conservation Pricing Signal?	10

The City of Grand Prairie has a moderate per capita daily water use, reflecting a reduction from previous years, and has not set a goal to reduce that water use from recent annual average levels. The City reports that its water loss data is "unreliable" due to an unmonitored exchange of water with another provider over several years that was not discovered until 2013. Grand Prairie's goal for curtailing water loss is unambitious, proposing just a 1% reduction by 2019 and another 1% by 2024.

As of 2014, the water utility system of the City of Grand Prairie – located between Dallas and Arlington – served over 183,000 residents. The City is located in the Region C water planning area and currently utilizes three water sources: water purchased through contracts with the Cities of Dallas (up to 33.2 MGD) and Fort Worth (up to 2.5MGD) and groundwater pumped from ten City-owned wells drawing from the Trinity Aquifer (up to 8 MGD). Additional contracts have been made or are pending with other cities to provide water in the future.

According to Grand Prairie's 2014 WCP, from 2009 to 2013 per capita water use averaged 135 GPCD per year, with a low of 125 in 2009 and a high of 151 in 2011. This use level represents a decrease from the previous five-year period in which the annual GPCD ranged from a low of 151 to a high of 179. That may be the result of an active water conservation education effort on the part of the City. However, despite this success, the City's target for per capita water use in the 2014 WCP is only 140 GPCD ("or less") for both 2019 and 2024, higher than the most recent average water use. The City in its 2014 WCP attempts to justify this unambitious goal with the assertion that a greater level of water conservation would be problematic for the water utility's revenues, customer convenience and acceptance, and water quality (the City claims that "unidirectional flushing" of its water lines is necessary to meet water quality requirements until certain other quality issues are resolved). These assertions bear further examination.

Grand Prairie reports that its "peak" demand for water for each of the years 2009-2013 was in excess of 40 MGD while its average demand in those years varied from 23 to almost 28 MGD. That means that water demand on a peak day was 70-79% more than on an average day, probably a reflection of outdoor water use during the hottest part of the summer. This situation points to a potential target for water conservation efforts by Grand Prairie: reducing peak water demand through putting reasonable ongoing limitations on outdoor watering of lawns and taking more ambitious initiatives to encourage the use of more water-conserving and drought tolerant outdoor landscaping.

The City by ordinance does already prohibit outdoor landscape watering (with some exceptions) between the hours of 10 AM and 6 PM during the period from April 1 to October 1 of each year, and the City requires that irrigation systems within the City installed after January 1, 2012 have properly working rain and freeze sensors (for cut-off of the systems when those circumstances occur). These are positive actions by the City.

City of Houston

Population 2,099,000

May 2016

Questions	Points
1. WCP or Water Conservation Information Submitted?	5
2. Annual Report (AR) Submitted?	5
3. Water Audit Report (WAR) Submitted?	5
4. Total Percent (%) Water Loss	10
5. WCP and Conservation Info Accessibility?	5
6. Achieved 5-Yr Conservation Goal Set in 2009 WCP?	10
7. Set a Strong Conservation Goal in Its 2014 WCP?	5
8. Number of Best Management Practices (BMPs) implemented?	2
9. Outdoor Watering Schedule?	0
10. Conservation Pricing Signal?	15

The City of Houston has not undertaken the same level of water conservation effort put forth by other major cities in Texas. The City has not set ambitious targets for per capita water use reduction nor adopted a wide range of BMPs. In recent years, however, the City has installed a metering system to help customers access real-time water use information, taken steps to address its historically high water loss rate, built a water education center, and created a Green Building Resource Center to assist residents interested in water and energy efficiency.

Houston is the largest city in Texas with a population of over 2.2 million. The City provides retail water service to over 488,000 single-family, multi-family, and commercial, industrial, and institutional connections. The City is also the largest wholesale water provider in the region, supplying water to 274 contract customers such as municipal utility districts (MUDs), regional water authorities, industries, and other municipalities. The City of Houston draws its water supplies from several sources, including Lakes Houston, Conroe, and Livingston, the San Jacinto River, bayous, and groundwater pumping. Houston is in the Region H water planning area.

Houston has had a moderate rate of per capita water use, compared to historical rates in some other cities, likely in part a result of Houston's annual average rainfall of almost 50 inches, which reduces the need for outdoor watering. In 2013 the GPCD for the City's retail customers was 144. Houston has set a water use reduction target of only 1.6% over the next five years, which would bring GPCD down to only slightly below 142 – hardly an aggressive target for a water utility that has not undertaken a comprehensive water conservation program.

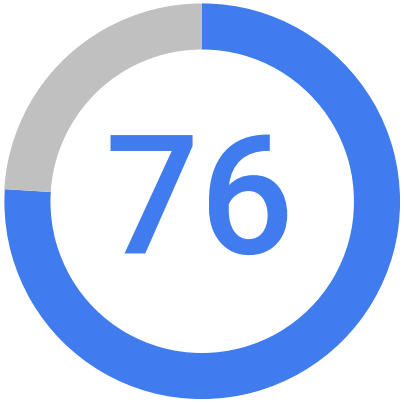
Houston historically has had a very high water loss rate in its distribution system. As reported in its 2014 WCP, the historic five-year water loss experienced by Houston was 14 percent. The City of Houston has undertaken an active effort to curb this water loss – including acquiring state financial assistance to replace water lines – and Houston reports that it has decreased its loss to around 11%. But that remains a high volume of water loss for a utility the size of Houston.

Some of Houston's recent initiatives have the potential for reducing water use. For example, the City's new Automated Meter Infrastructure (AMI) network transmits water use data through radio waves ultimately to a central computer where the data may be accessed by customers. As of early 2014, about 75% of retail customer accounts were on the network, but only 10% of single-family customers had signed up to review the data generated.

Having real-time water use data is a key tool for a customer to be able to reduce that use. However, once the data is available customers must take steps to curb excessive water use. The City's Green Building Resource Center has information on how to do that, but the City may need to provide services such as water use audits and water fixture rebates or retrofits to encourage customers to take action. A new PACE program adopted by the City of Houston in late 2015 may offer an attractive source of funding for water efficiency improvements by the owners of commercial, industrial, and multi-family residential properties in the City and its ETJ.

City of Irving

Population 216,290



May 2016

Questions	Points
1. WCP or Water Conservation Information Submitted?	5
2. Annual Report (AR) Submitted?	5
3. Water Audit Report (WAR) Submitted?	5
4. Total Percent (%) Water Loss	10
5. WCP and Conservation Info Accessibility?	5
6. Achieved 5-Yr Conservation Goal Set in 2009 WCP?	10
7. Set a Strong Conservation Goal in Its 2014 WCP?	5
8. Number of Best Management Practices (BMPs) implemented?	6
9. Outdoor Watering Schedule?	10
10. Conservation Pricing Signal?	15

Overall, the City of Irving is doing well on water conservation, but the City needs to continue to drive down outdoor landscape watering through more outreach to residential customers and to consider specialized programs to achieve water savings from the utility's heavy commercial and industrial water use customers. Irving also should set a goal for water loss in its system that is commensurate with what it has been able to achieve in recent years and not let water loss creep back up to previous levels.

The City of Irving lies within the Dallas-Fort Worth Metroplex and the Region C water planning area and has an average rainfall of 36". Irving has a service area of 68 square miles and provides retail water service for 220,750 people. City planners expect the city to be built out by 2040, with the population reaching 284,500 residents by that time. Irving relies on surface water for its supply. The city gets a majority of its water from Lake Jim Chapman and also has a contract with the City of Dallas for water from Lake Lewisville.

Single and multi-family residential customers constitute the vast majority of Irving's retail water connections (42% and 52% respectively, 94% total), but only 62% of 2013 retail water use. Irving's industrial, commercial and institutional customers account for 6% of accounts but 38% of the water produced by the utility. The 2014 WCP the City reports that its historic five-year (2009-2013) average total GPCD was 170 while the residential GPCD for that period was 97.

The 2014 WCP sets a very modest target to reduce total GPCD to 168 by 2019 and to 166 by 2024. Irving does plan to reduce residential water use from 97 GPCD to 92 GPCD in 2019 and to 88 GPCD by 2024. According to the 2014 WCP, the residential goal reflects a goal of reducing water use by 1% per year. Irving's rationale for the conservative total GPCD goal is that historic data showed a range of annual GPCDs, but the average was 170 so they determined that was a good starting point for goal-setting. Irving asserts that it projects a modest decrease in per capita water use because its high commercial and industrial water use allows little flexibility in reducing total GPCD. The City also expects the majority of its future growth to be in those sectors. If that is the case, however, then Irving would be well served to focus programs specifically to target commercial & industrial water use and ensuring that new businesses and construction are as water efficient as practicable.

Irving's summer to winter differential (or "peak") ratio for water use is about 1.8, probably a reflection of heavier outdoor watering during the hotter months. To address that, Irving has recently placed year-round limits on outdoor watering. Outdoor watering is limited to no more than twice per week and is prohibited on all days from 10 AM to 6 PM during April 1 through October 31. Limiting outdoor water use is a positive step, but customers would likely benefit from a more pro-active landscape education program to increase water savings in this sector. On its website Irving does have information on the "WaterMyYard" program (a Texas AgriLife tool to help homeowners determine when it is appropriate to water landscapes), a native plant guide, and other tips to help reduce indoor and outdoor water use.

City of Killeen

Population 128,000

May 2016

Questions	Points
1. WCP or Water Conservation Information Submitted?	5
2. Annual Report (AR) Submitted?	5
3. Water Audit Report (WAR) Submitted?	5
4. Total Percent (%) Water Loss	5
5. WCP and Conservation Info Accessibility?	3
6. Achieved 5-Yr Conservation Goal Set in 2009 WCP?	10
7. Set a Strong Conservation Goal in Its 2014 WCP?	0
8. Number of Best Management Practices (BMPs) implemented?	6
9. Outdoor Watering Schedule?	0
10. Conservation Pricing Signal?	15

The City of Killeen has a low per capita water use rate, but it is not clear why that is the case. Moreover, Killeen has set a water use goal for the next decade that goes in the wrong direction – if water use reaches the target level, Killeen water customers would be consuming at least 23 gallons a day more than they have been using on average in recent years! It is mystifying why Killeen would pursue this approach because there are options the utility could pursue to keep water use low or even reduce it.

Killeen is located in the Brazos Valley in Central Texas, and it is part of the Brazos Region G water planning area. The City purchases all of its treated water from the Bell County Water Control & Improvement District (WCID) Number 1, for which Lake Belton is the water supply. Killeen has only retail water customers. It has no wholesale operations.

In its 2014 WCP, the City of Killeen reported that its historic five-year average total GPCD was 117. This figure was based on the period of 2009 through 2013. During this time frame the highest total GPCD was 126 in 2011 (a drought year), and the lowest total GPCD was 108 in 2010. In its 2014 Annual Report, Killeen said that its total GPCD for that year was 107.

Given this very low rate of per capita water use since 2009, especially in relation to per capita water use reported by so many other cities in Texas, it is truly perplexing as to why Killeen in its 2014 WCP would set a total GPCD target in both 2019 and 2024 at 140. Just the anticipated normal replacement of old toilets with new high efficiency ones, old clothes washers with washers meeting new federal efficiency requirements, and similar developments over the course of a decade would argue that per capita water use will decline, not increase.

The situation with residential GPCD is as strange as the total GPCD one. The historic five-year average residential GPCD reported in Killeen's 2014 WCP was 79 (although that does not jive with its 2014 Utility Profile numbers, which are higher), and the City's 2014 Annual Report indicated the residential GPCD for that year was 69. If correct, these are enviable numbers for per capita residential water use, much lower than that for most large water utilities in Texas. Yet Killeen has set both its five-year and ten-year targets for residential GPCD at 100!

The explanation for Killeen's reported low per capita water use is unclear. It does not seem to be the result of initiatives by the City. The City's 2014 WCP is "bare bones." Its website says that "Stage One of the Water Conservation Plan" is in effect from May 1 through September 30 and offers only tips for voluntarily reducing water use during that time (this seems to confuse conservation and drought response). The City does not offer any programs to reduce outdoor landscape watering, even though single family residential water use accounts for over 2/3 of annual water use in Killeen, peak water use (in the summer) is at least 50% higher than average use, and outdoor watering is likely a significant factor in both single-family use and peak use. If Killeen stepped up its game, became more pro-active in promoting conservation, and tackled outdoor use with reasonable limitations and educational outreach, its low per capita water use might go even lower, and it could be a trend-setter for efficient water use in Texas.

City of Laredo

Population 199,715

May 2016

Questions	Points
1. WCP or Water Conservation Information Submitted?	5
2. Annual Report (AR) Submitted?	5
3. Water Audit Report (WAR) Submitted?	5
4. Total Percent (%) Water Loss	5
5. WCP and Conservation Info Accessibility?	5
6. Achieved 5-Yr Conservation Goal Set in 2009 WCP?	10
7. Set a Strong Conservation Goal in Its 2014 WCP?	15
8. Number of Best Management Practices (BMPs) implemented?	6
9. Outdoor Watering Schedule?	0
10. Conservation Pricing Signal?	10

The City of Laredo made substantial progress in reducing per capita water use during the early years of this decade and has set ambitious goals for further reductions. Laredo has also put a special focus on reducing water loss in its distribution system and has achieved success in doing so. The City has implemented several water conservation BMPs but could upgrade its website information to help its residents do their part to conserve water.

Laredo, with an estimated population of just under 250,000 (as of 2012) is located on the Texas-Mexico border. The City's primary source of water supply is the over-permitted Rio Grande. Laredo pumps an average of 45 million gallons of water per day from the river. The City has two Water Plants, Jefferson and Colombia, with a capacity of 65 million gallons per day.

In its 2009 WCP Laredo set a goal of reducing per capita water use from its four-year average of 190 GPCD to 170 by 2014 and 150 by 2019. The City actually achieved a GPCD of 134 by 2014. Similarly, in its 2009 WCP Laredo set a goal of reducing "unaccounted-for water" to 15% by 2014 and 10% by 2019, but the City reported in 2014 that its water loss had decreased from 22% in 2009 to 9% in 2013 ("unaccounted-water" and "water loss" are not directly comparable, but the City has clearly made progress in reducing water loss in its distribution system).

One of the keys to Laredo's progress has been that it created a water conservation program in 2006 that has been expanded over the years. The program includes a City water conservation planner, City water conservation inspectors who handle enforcement of water conservation and drought contingency plans, a public education effort that promotes water conservation, and the WaterSense High Efficiency Toilet (HET) Rebate Program. This last program offers a rebate of $100 per toilet (limit of two toilets per household) for the purchase of any EPA WaterSense-labeled HET that replaces a toilet purchased before 1993. The rebate offer began has a pilot program in 2012 but is ongoing as long as demand exists and funding is available.

In its 2014 WCP Laredo revised its 2019 per capita water use goal to 130 GPCD, 20 GPCD lower than in its 2009 WCP, and set a new goal of reaching 110 GPCD by 2024, an impressive target. Similarly, the new WCP set a new goal of reducing "unaccounted-for water" to 5%, presumably by 2024. Laredo is implementing an Advanced Meter Reading (AMR) system (to be complete by 2018) to achieve this goal. The City says that its 2014 WCP was drafted "with significant input from the Citizens Environmental Advisory Committee, the Lamar Bruni Vergara Environmental Science Center, the Rio Grande International Study Center, and the general public."

While the Laredo WCP sets out commitments to use conservation strategies and "promote a culture among its citizens that values efficient water utilization and conservation of our water resources," there is little online to help educate a citizen on how to do his or her part. Laredo's Utilities Department website with the background "Water is Life" is an outdated site full of links to other organizations rather than useful information for Laredo citizens. Laredo is not currently restricting its residents in use of water on any level but rather relies on its citizens to voluntarily conserve water, making up-to-date conservation information for the public critical.

Lubbock Public Water System

Population 218,327

May 2016

Questions	Points
1. WCP or Water Conservation Information Submitted?	5
2. Annual Report (AR) Submitted?	5
3. Water Audit Report (WAR) Submitted?	5
4. Total Percent (%) Water Loss	5
5. WCP and Conservation Info Accessibility?	5
6. Achieved 5-Yr Conservation Goal Set in 2009 WCP?	10
7. Set a Strong Conservation Goal in Its 2014 WCP?	5
8. Number of Best Management Practices (BMPs) implemented?	4
9. Outdoor Watering Schedule?	10
10. Conservation Pricing Signal?	10

While Lubbock is located in a dry area of the state (the Texas Panhandle), the City of Lubbock is not aggressively moving to reduce its water use or water loss - especially when compared to the desert city of El Paso in Far West Texas, which has a much lower per capita water use and a much lower rate of water loss in its distribution system.

As of 2014, the City of Lubbock estimated its population at over 242,000. The City – located in the Region O water planning area – is a member of the Canadian River Municipal Water Authority (CRMWA) and currently utilizes three water supply sources. The approximate breakdown of water usage in 2014 was as follows:

- 60% from CRMWA (a blend of surface water and groundwater)
- 20% from a well field owned and operated by the City in Bailey and Lamb Counties
- 20% from Lake Alan Henry, located 60 miles SE of Lubbock in Garza and Kent Counties

Lubbock has set very modest goals for lowering per capita water use of these supplies in the coming years. According to its Water Use Management Plan, "the average per capita use from 2009 to 2013 was 153 GPCD with a high of 178 GPCD in 2011 and a low of 140 GPCD in 2009. This average per capita use rate is greater than the target rate of 140 GPCD recommended by the state water conservation task force. The water conservation task force recommends a one percent per year reduction until the target of 140 GPCD is reached." However, Lubbock has set a target for reducing per capita water use at a rate of only a 0.5% per year, which results in a 2019 goal of 150 GPCD and a 2024 goal of 147 GPCD.

The City of Lubbock has not adopted on a permanent basis a limitation on the number of days per week that customers may water outdoor landscapes, although that is a restriction in Stage 1 of its drought contingency plan, and the City has kept at least Stage 1 of the DCP in effect for several years with positive effects on water use. The City allows customers using irrigation systems to water their landscapes only between the hours of 6:00 PM to 10 AM from April 1 through September 30. The City has also set the following "standards" in its WCP (adopted as a city ordinance), but it is not clear if or how these standards are enforced:

- Summer irrigation should provide a maximum of 1.5 inches per zone per week
- Winter irrigation may occur only when temperatures are above 35°F so as not tocause a freezing hazard and should provide a maximum of 1.0 inch per zone permonth for dormant grasses (i.e. Bermuda) and 1.0 inch per zone every two weeks forcool season grasses (i.e. Fescue)
- Irrigation should occur without water runoff.

Lubbock in its 2014 Utility Profile reported a water loss rate of 12% in 2014 and a five-year average of 10% water loss. In its 2014 WCP the City set a goal of not exceeding that water loss rate over the next five to ten years but indicated no program to reduce that water loss.

McAllen Public Utility

Population 157,125

May 2016

Questions	Points
1. WCP or Water Conservation Information Submitted?	5
2. Annual Report (AR) Submitted?	5
3. Water Audit Report (WAR) Submitted?	5
4. Total Percent (%) Water Loss	15
5. WCP and Conservation Info Accessibility?	3
6. Achieved 5-Yr Conservation Goal Set in 2009 WCP?	10
7. Set a Strong Conservation Goal in Its 2014 WCP?	0
8. Number of Best Management Practices (BMPs) implemented?	8
9. Outdoor Watering Schedule?	0
10. Conservation Pricing Signal?	10

The City of McAllen has seen a wide variation in its rate of per capita water use in the last decade or so, but the overall trend has been to reduce that use. However, in its most recent WCP the utility has set a "reduction" goal that would mean higher per capita water use levels than McAllen has already achieved. The question arises as to what this means about the utility's commitment to conservation. McAllen says that it is employing a fairly large number of BMPs for water conservation, but there are additional actions the utility could undertake.

The City of McAllen is located in the Lower Rio Grande Valley and the Region M water planning area. The City's 2013 WCP states that its sole water source is the Rio Grande (although the Utility Profile attached to the WCP indicates a small amount of water supplies available from groundwater). The river water is delivered to McAllen via the canals of four Valley irrigation districts. As of 2013, according to its Utility Profile, McAllen provided retail water service to over 160,000 people and a large volume of water to the City of Edinburgh on a wholesale basis.

McAllen's per capita water use has varied quite a bit from year to year in the in the last several years. During the five-year period 2009 through 2013, according to the City's 2013 Utility Profile, the average annual (total) GPCD was 136. However, that average masks a very wide fluctuation: a high of 177 in 2009, a drop to 149 in 2010, a tremendous decrease to 106 and 108 in 2011 and 2012 respectively (due to implementation of a drought contingency plan?) and then back up to 141 in 2013. The City's 2014 Annual Report to the Texas Water Development Board (TWDB) shows a total GPCD of 145 for that year.

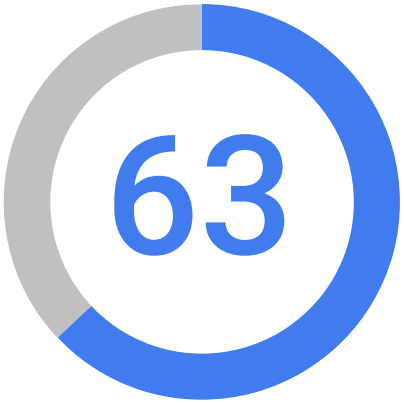
Even with this fluctuation the total GPCD since 2009 has never been 150 or above. Therefore, it is startling that McAllen in its most recent WCP (adopted in 2012 and revised in 2013) would set a goal to "reduce" municipal per capita water use to 168 GPCD by 2015 and 160 GPCD by 2020. McAllen claims that this goal is based on a 10-year average GPCD of 187, but the utility does not specify which 10 years it is using for this calculation. In looking at the 10-year period that starts with 2004 and ends with 2013, based on the utility information provided to TWDB, the average annual GPCD is actually 155 (which includes a high of 193 GPCD in 2006 and no other year above 178). So where did McAllen get 187 and why did they use that as a baseline when the utility's per capita water use is so much lower than that already achieved? Has the utility decided it really doesn't want to do much more to conserve water?

McAllen could take at least two additional steps that would likely help reduce water use in the single-family residential sector (which accounts for over 60% of the water used annually among McAllen's retail customers). One step would be to adopt permanent limitations on the time of day and number of days each week that a household may do outside landscape watering, as many North Central Texas and some other utilities have done.

A second step would be for McAllen to revise its water rate structure to send a "conservation pricing signal" that would encourage households to use less water, especially in terms of outdoor watering during the summer. As of now, McAllen sets its "volume charge" for water at $1.35 per 1000 gallons per month no matter how much water a household uses up to 12,999 gallons. That provides little incentive for residential customers to be efficient in their water use.

City of McKinney

Population 131,475



May 2016

Questions	Points
1. WCP or Water Conservation Information Submitted?	5
2. Annual Report (AR) Submitted?	5
3. Water Audit Report (WAR) Submitted?	5
4. Total Percent (%) Water Loss	0
5. WCP and Conservation Info Accessibility?	3
6. Achieved 5-Yr Conservation Goal Set in 2009 WCP?	10
7. Set a Strong Conservation Goal in Its 2014 WCP?	5
8. Number of Best Management Practices (BMPs) implemented?	10
9. Outdoor Watering Schedule?	10
10. Conservation Pricing Signal?	10

The City of McKinney is making progress in reducing its per capita water use but at a slow pace. Recent steps by McKinney to restrict water use for outdoor landscaping may speed up the rate of reduction if those restrictions are enforced and coupled with a strong education component to help customers make informed decisions about their landscapes. McKinney might also advance water conservation by working with commercial and institutional customers to reduce water use and by lowering the City's rate of water loss, which averaged 14% annually from 2009 through 2013 but spiked to a reported 27% in 2014.

McKinney lies within the Dallas-Fort Worth Metroplex and the Region C water planning area and has an average rainfall of 41 inches. As of 2014, the City provided retail water service to 135,454 people in a 63 square mile service area. McKinney is a member city of the North Texas Municipal Water District, which provides the City with its water supply (surface water) and crafted a model water management plan that McKinney adopted.

As of 2013, single-family residential customers represented 90% of McKinney's retail water connections and accounted for about 58% of the City's annual water use. In its 2014 WCP the City reported that its annual residential per capita water use (single-family and multi-family combined) was 107 GPCD and that its annual total GPCD was 185 (based on 5-year averages for the period 2009-2013). In its 2014 WCP the City of McKinney set a goal of reducing its per capita water use to a total GPCD of 180 by 2019 and a subsequent goal of reducing total GPCD to 175 by 2024. That is moving in the right direction, but it is a slow rate of progress – an annual average reduction of only one half of one percent, half the minimum rate the state's Water Conservation Implementation Task Force recommended in 2004.

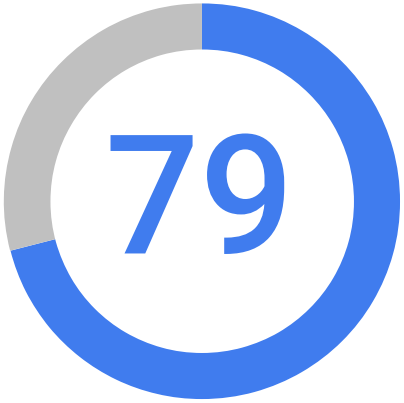
Focusing on reducing outdoor landscape watering may help McKinney achieve a higher rate of progress. McKinney reports that its summer water use is at least twice as high as water use during winter months, and outdoor watering is no doubt a big factor. McKinney has taken positive steps to reduce that water use by placing limits on outdoor watering even during non-drought periods. Outdoor watering is now limited to no more than twice per week and is prohibited on all days between 10 AM to 6 PM during April 1 through October 31.

McKinney exempts a customer from watering restrictions, however, if he or she has a registered, properly programmed and functioning evapotranspiration (ET) controller to manage that customer's irrigation system. This exemption is problematic. A simple limitation on outdoor watering to no more than twice a week on designated days is much easier to enforce than a program that depends upon close oversight of ET controllers to assure that they are properly installed, programmed, and working.

In addition to focusing on outdoor water use, McKinney might benefit from advancing water conservation among its commercial and institutional customers, who use about 32% of the retail water produced by the City. McKinney's 2014 WCP does not indicate any specific efforts aimed at these sectors (although outdoor watering restrictions also apply to these customers).

City of Mesquite

Population 139,550



May 2016

Questions	Points
1. WCP or Water Conservation Information Submitted?	5
2. Annual Report (AR) Submitted?	5
3. Water Audit Report (WAR) Submitted?	5
4. Total Percent (%) Water Loss	10
5. WCP and Conservation Info Accessibility?	5
6. Achieved 5-Yr Conservation Goal Set in 2009 WCP?	10
7. Set a Strong Conservation Goal in Its 2014 WCP?	15
8. Number of Best Management Practices (BMPs) implemented?	4
9. Outdoor Watering Schedule?	5
10. Conservation Pricing Signal?	15

The City of Mesquite has a water conservation program with many best management practices, but its goals for water use reduction and water loss are not ambitious by some measures. The City's 2015 WCP has selected a "baseline" for current per capita water use that may lower the bar for future conservation efforts.

As of 2014, the City of Mesquite, which is located in eastern Dallas County, estimated its population at over 142,000, and its water utility served approximately 54,000 metered water connections. Mesquite is located in the Region C water planning area and is a member city of the North Texas Municipal Water District (NTMWD), which is the source of the City's water. NTMWD is a wholesale water supplier not only for Mesquite but for 12 other member cities and a number of customer cities. NTMWD has an extensive water conservation education campaign that benefits the conservation efforts of its member and customer cities, and the District also has produced a model water conservation plan for consideration by those cities.

According to Mesquite's 2015 WCP, the City's 5-year (2009-2013) average per capita water use was 122 GPCD, but the WCP notes that for over 800 days during this period the City's customers were under mandatory watering restrictions due to the implementation of its drought contingency plan. Instead of using the 5-year average, the 2015 WCP uses a baseline of 166 GPCD, which was the water use figure for 2009, described as a year in which "weather patterns and outdoor water use was more typical of total and residential water use." Depending upon whether one views the 5-year average or the 2009 water use as the appropriate baseline, the 2015 WCP's GPCD goals for 2019 (141) and for 2024 (132) are either far above recent water use and thus unimpressive or they are very aggressive.

The City of Mesquite has now tried to limit landscape watering with sprinklers or irrigation systems to no more than two times per week year-round (not just during drought conditions), and has posted a very comprehensive "Texas Urban Landscape Guide" (produced by Texas AgriLife) on the City website to educate the public about appropriate landscape choices and practices. In addition, the City prohibits lawn or landscape watering between the hours of 10 AM to 6 PM from April 1 through October 31 and also prohibits watering during precipitation or freeze events. Further the City requires rain or freeze sensors or evaporative transpiration (ET) controllers on all new irrigation systems. These actions should work to help the City reduce per capita water use over the long-term. One aspect of the no-more-than-twice-a-week watering limitation is problematic, however. Customers may choose which two days each week they might water, which makes this outdoor watering "restriction" largely unenforceable.

In its 2015 WCP Mesquite reported that its five-year average water loss rate (and its baseline for setting water loss targets) was 10%. In that context the City's goal of not exceeding a water loss rate of 12% over the next five to ten years is not aggressive.

City of Midland Water Purification Plant

Population 111,147

May 2016

Questions	Points
1. WCP or Water Conservation Information Submitted?	5
2. Annual Report (AR) Submitted?	5
3. Water Audit Report (WAR) Submitted?	0
4. Total Percent (%) Water Loss	0
5. WCP and Conservation Info Accessibility?	3
6. Achieved 5-Yr Conservation Goal Set in 2009 WCP?	10
7. Set a Strong Conservation Goal in Its 2014 WCP?	5
8. Number of Best Management Practices (BMPs) implemented?	2
9. Outdoor Watering Schedule?	0
10. Conservation Pricing Signal?	15

Despite its location in arid West Texas the City of Midland does not have an aggressive water conservation program nor has it set ambitious goals for reducing water use in the future. The City did experience a significant decrease in per capita water use from 2009 to 2014, which may reflect the imposition of drought contingency measures during a very dry period but does not stem from any type of ongoing, comprehensive water conservation initiatives.

Midland, located in the Permian Basin, had a population of over 111,000 as of the 2010 census. The City's water supplies come from both surface water and groundwater sources. Midland, which is in the Region F water planning area, is a member of the Colorado River Municipal Water District (CRMWD), and approximately 60% of its water as of 2014 was supplied by contracts with CRMWD, according to the City's Utility Profile. The water provided by CRMWD is surface water from Lakes J.B. Thomas, J.V. Spence, and O.H. Ivie reservoirs. The remainder of the City's water is from groundwater, which is blended with the surface water. The City owns and operates directly a well field with 31 wells in the Ogallala Aquifer and has a contract with the Midland County Fresh Water Supply District #1 for groundwater from 69 District wells.

The City of Midland has a fairly high per capita water use, although that water use has decreased. In its 2009 WCP the City set a goal of 247.5 GPCD by the year 2014, but the actual GPCD in 2014 was only 186. As noted above this decline may have been the result of implementation of the City's drought contingency plan during that period. In fact, the City of Midland as of early Spring 2016 remains under a "Moderate Stage 2 Water Shortage Condition" under its drought contingency plan, which includes a limitation on outdoor watering to twice a week while the City is in this drought stage. This is not a permanent outdoor watering restriction, however, and the City has not adopted an ordinance governing outdoor landscapes on an ongoing basis, even though the area's annual average rainfall is only about 15 inches.

In its current (2015) WCP Midland has set a very conservative goal of reducing its per capita water use by only six gallons, down to 180 GPCD by 2019, which is less than a 1% average annual reduction. That unambitious goal is reflected in the City's minimal 2015 WCP. The City does give its citizens a list of the "Top 11 Painless Ways to Cut Your Bills and Conserve Water," but the City does not offer programs to help citizens implement the suggested measures. On its website, the City of Midland has a telephone number as well as online form for citizens to report water leaks, standing water in a street, and a water leak at a park, which could be helpful in controlling water loss in the distribution system. In its 2014 Utility Profile the City reported a five-year average water loss of 10% although the loss reported for 2014 was 15%.

The City of Midland in 2014 did complete the construction of a reclaimed water facility that diverts water from the City's wastewater treatment plant for reuse for landscape irrigation at Midland College and has water available for other purposes. The City estimates that the volume of reclaimed water is equal to the amount of water used by 120 homes each year.

North Alamo WSC

Population 109,311

May 2016

Questions	Points
1. WCP or Water Conservation Information Submitted?	5
2. Annual Report (AR) Submitted?	0
3. Water Audit Report (WAR) Submitted?	0
4. Total Percent (%) Water Loss	0
5. WCP and Conservation Info Accessibility?	0
6. Achieved 5-Yr Conservation Goal Set in 2009 WCP?	0
7. Set a Strong Conservation Goal in Its 2014 WCP?	15
8. Number of Best Management Practices (BMPs) implemented?	0
9. Outdoor Watering Schedule?	0
10. Conservation Pricing Signal?	10

The North Alamo Water Supply Corporation (North Alamo WSC) does not appear to take water conservation seriously. This utility's most recent WCP (2012) is very short and general and may have been filed merely to meet a state requirement. The "plan" sets a reasonable target for water use reduction but identifies no specific measures for achieving it. Indeed, the utility has not filed the required annual reports on the implementation of its "plan." On its website North Alamo WSC provides a link to its drought contingency plan but absolutely no information about water conservation.

North Alamo WSC, with headquarters in Edinburg, provides water and wastewater service to about 125,000 residents (according to its 2012 WCP) in eastern Hidalgo County, Willacy County, and northwestern Cameron County in the Lower Rio Grande Valley – a service area of almost 1000 square miles. On its website North Alamo WSC states that it has over 43,000 water meter connections serving households, businesses, county facilities, schools, and other water systems. North Alamo WSC is in the Region M water planning area and draws its water from the Rio Grande and from brackish groundwater recovered using reverse osmosis treatment plants.

Apparently the first water conservation "plan" filed by North Alamo WSC with the State of Texas was its 2012 WCP, although statutorily a plan should have been submitted in 2009 and revised in 2014. The 2012 WCP sets a goal of reducing residential (not total) GPCD to 103 by 2018 (down from 117 GPCD in 2011). No target is indicated for reducing total GPCD, which was 160 in 2011. The plan provides no information about water conservation programs being implemented or considered to reach the residential GPCD goal.

The only "continuing public education" on conservation mentioned in the 2012 WCP is having materials available at the utility's office to encourage residential water conservation and cooperating with other agencies in promoting water conservation. This does not constitute a robust public outreach on water conservation, and a word search for "water conservation" on the utility's website produces no results. North Alamo WSC does say that it has an inclining block water rate structure, which should provide an incentive for customers to curb water use.

In its 2012 Utility Profile North Alamo WSC reported a five-year average water loss rate of 14.28%, including a high of 16.38% in 2011. The utility's 2012 WCP sets a target of 15% water loss (termed "unaccounted-for use of water" in the plan) by 2018, which really is no reduction whatsoever from historic rates. To be fair, maintaining water distribution pipelines to prevent leaks is a major challenge for water utilities such as North Alamo WSC serving a large area with a limited revenue base; but curbing water loss in this utility would provide the potential for substantial progress in conserving water while making additional water available for sale that would produce revenue (and avoid the cost of developing new water supplies).

City of Odessa

Population 113,033

May 2016

Questions	Points
1. WCP or Water Conservation Information Submitted?	5
2. Annual Report (AR) Submitted?	0
3. Water Audit Report (WAR) Submitted?	5
4. Total Percent (%) Water Loss	5
5. WCP and Conservation Info Accessibility?	3
6. Achieved 5-Yr Conservation Goal Set in 2009 WCP?	0
7. Set a Strong Conservation Goal in Its 2014 WCP?	5
8. Number of Best Management Practices (BMPs) implemented?	0
9. Outdoor Watering Schedule?	0
10. Conservation Pricing Signal?	15

Providing a complete assessment of the current conservation efforts by the City of Odessa is difficult because the water utility's revised water conservation plan is not due until sometime this year – 2016 (its previous WCP was done in 2011, so Odessa is not on the same schedule as most utilities in revising its WCP). Odessa's per capita water use has historically been high for a city located in arid West Texas, but the average GPCD during 2009-2013 was significantly lower (about 30 GPCD lower) than that during 2004-2008. Odessa continues to have a high rate of water loss (15% in 2014).

Odessa is located in the Permian Basin and is part of the Region F water planning area. At present the City gets its water supply via a contract with the Colorado River Municipal Water District (CRMWD) – primarily surface water but sometimes augmented by groundwater. Odessa is currently seeking an additional water supply that would be equal to the total amount of water that is delivered to the City by CRMWD (about 16 million gallons a day). The supply Odessa is seeking is groundwater from the Trans-Peco region. The water would come via contract with a private party, Republic Water Company, but thus far that entity has been unable to get a groundwater withdrawal permit from the Middle Pecos Groundwater District.

As of 2013 the City of Odessa was providing almost 5 billion gallons of water a year to its retail customers – with approximately 60% of that water going to single-family residential use, about 11% going to multi-family residential use, about 26% to commercial, and the small remainder going to industrial use. Odessa reported in its 2011 WCP that from its wastewater stream the City supplied reclaimed water for at least two industrial customers and several irrigation customers, including three golf courses and the athletic fields at University of Texas-Permian Basin Park. According to Odessa's 2013 Utility Profile, peak water use (which in Texas is during summer months) is anywhere from 50% to 79% more than average water use in the City.

Odessa set a ten-year goal in its 2009 WCP of reducing per capita water use at a rate of 0.5% annually from a baseline of 182 total GPCD. There were no changes to that goal when Odessa revised its WCP in 2011. According to the City's 2013 Utility Profile, Odessa had a five-year average total GPCD of 152 during 2009 through 2013, including a total GPCD of 115 in 2013. If Odessa maintains that level of per capita use, then it will certainly beat its water use reduction goal for 2019. However, the period of 2009 through 2013 included drought periods when the City was implementing its drought contingency plan and restricting outdoor watering, and apparently those restrictions were lifted in 2015. How this may have impacted water use remains to be seen.

For a city in such an arid region, however, it would certainly seem prudent for Odessa to consider establishing some permanent limitations on outdoor landscape watering, just as many cities in North Central Texas have done, with subsequent reductions in water use. Much water is lost to evaporation when lawns and vegetation is watered in the summer months, especially during the heat of the day. While Odessa offers a few tips on outdoor water use (and indoor water use) on its City website, that seems inadequate to prevent water waste.

City of Pasadena

Population 144,174

May 2016

Questions	Points
1. WCP or Water Conservation Information Submitted?	5
2. Annual Report (AR) Submitted?	5
3. Water Audit Report (WAR) Submitted?	5
4. Total Percent (%) Water Loss	5
5. WCP and Conservation Info Accessibility?	3
6. Achieved 5-Yr Conservation Goal Set in 2009 WCP?	0
7. Set a Strong Conservation Goal in Its 2014 WCP?	15
8. Number of Best Management Practices (BMPs) implemented?	4
9. Outdoor Watering Schedule?	0
10. Conservation Pricing Signal?	15

Pasadena reports in its 2015 WCP a fairly low annual average water use of 125 GPCD during 2009-2013, and the City's Utility Profile shows only 114 GPCD for 2014; but the City's WCP sets an unambitious target of 115.5 GPCD per year by 2025. Pasadena has made a very minimal effort on water conservation, primarily relying on phase-in over time of state and federal mandated water efficient fixtures such as high-efficiency toilets and on some limited public education. Pasadena has a high (17%) rate of water loss (as of 2014) although that rate has declined from 24% in 2011.

The City of Pasadena, located in southeastern Harris County, reported in its 2015 WCP that as of 2014 the City provided water and wastewater service to a population of over 151,000. It also serves as a small wholesale supplier to the City of Seabrook, Clear Lake Water Authority, the Port of Houston Authority, and two industrial operations. The City projects its population to grow by only about 5000 by 2020. Pasadena is in the Region H water planning area.

The major source of Pasadena's water supply is surface water provided under contract with the City of Houston through the Southeast Water Purification Plant (Pasadena's share of the capacity of that plant is 40 MGD), but Pasadena also has seven groundwater wells into the Gulf Coast Aquifer that are capable of producing 14.9 MGD. The City's 2014 Utility Profile, however, indicates that on average the City is using less than a third of its current water supply capacity.

The City of Pasadena's 2015 WCP is a short, bare-bones document that has some estimated projected reductions in gallons per capita per day for various water use categories – "unmetered" use, indoor use, seasonal use, and irrigation use – and estimated projected reductions due to public education programs; but there is no explanation of how these estimates were derived and no specific set of activities showing how these reductions may be achieved over the next five to ten years. The City's 2015 WCP gives the impression that water utility officials prepared it only for the purpose of submitting it to the State of Texas to fulfill a state legal requirement and not because it is a well-thought-out blueprint for achieving greater water conservation and efficiency. The City's drought contingency plan, which is included with the 2015 WCP submitted to the State, is more detailed, but that plan is only for short-term use in dry periods and not a long-term conservation program.

The City of Pasadena has no rebate or retrofit program for water efficient fixtures, no lawn irrigation or other water use audit services for residential customers, no special programs for commercial and institutional water customers, nor any other special initiatives for promoting water conservation that are found in cities in Texas that are considered leaders in the water conservation field. The City's relatively large water supply capacity and relatively low water use per capita seem to have provided little incentive for Pasadena to make water conservation a priority for its water utility.

City of Pearland

Population 110,415

May 2016

Questions	Points
1. WCP or Water Conservation Information Submitted?	5
2. Annual Report (AR) Submitted?	5
3. Water Audit Report (WAR) Submitted?	5
4. Total Percent (%) Water Loss	5
5. WCP and Conservation Info Accessibility?	5
6. Achieved 5-Yr Conservation Goal Set in 2009 WCP?	0
7. Set a Strong Conservation Goal in Its 2014 WCP?	15
8. Number of Best Management Practices (BMPs) implemented?	2
9. Outdoor Watering Schedule?	0
10. Conservation Pricing Signal?	15

Pearland reports a low rate of per capita water use – an annual average of 117 GPCD – and a goal of reducing that to 109 GPCD by 2019. However, Pearland's low water use rate may be a reflection of its location in a wet part of the state. The City has not had an extensive water conservation program. Moreover, the City has not provided a clear game plan for achieving its five-year water use reduction goal. Without pursuing new initiatives the City may be hard-pressed to keep water use low as residential development continues at breakneck speed.

Pearland as of 2010 had a population of slightly over 91,000 according to the U. S. Census; but the city is growing at an extremely rapid rate, and the most recent figure from the State of Texas indicates that the population already has surpassed 110,000. Most of the City of Pearland is located in Brazoria County although parts of the City extend into Fort Bend and Harris Counties. The City of Pearland provides only retail water service. It has two main sources of supply: eleven groundwater wells that the City owns and operates and surface water purchased from the City of Houston at three connections.

The City of Pearland has not implemented a robust suite of water conservation measures. A positive note is that the 2014 WCP and tips for water conservation are easily accessible on the City's website. This latest WCP, however, discusses a number of basic water conservation measures only in terms of the City "considering" them. For example, the 2014 plan says the City will "consider" the following:

- Developing or providing a water conservation curriculum for Pearland Public Schools;
- Providing a water conservation booth at public events in which the city participates;
- Adopting landscape water management regulations

However, no timetable is provided in the plan for developing and moving forward on any of these initiatives, and the City's website as of early 2016 does not indicate that any of them have been pursued. Most of the other activities that the City cites in its 2014 WCP as conservation measures are fairly standard items for most Texas municipal water suppliers, including, for example, universal metering and an inverted block water rate structure.

One of the conservation measures that the City discusses in its 2014 WCP is "leak detection and repair" of the City's water distribution lines, which is aimed at keeping what is termed "unaccounted for water" (water leaks, illegal diversions, etc.) below 10%. However, it is hard to determine how active and effective this effort is. One of the figures in the City's 2014 WCP (page 2-2) shows a wildly ranging incidence of "water loss" during the period from 2008 through 2014. The figure shows a low of approximately 2.5% in 2014 and a high of approximately 24% in 2012 (as best can be judged from looking at the figure), but there is no discernible trend – the water loss rates go up and down from year to year. Moreover, for some years there is a discrepancy between what the figure in the text of the 2014 WCP shows as annual water loss and what the City's Utility Profile included as an appendix to the 2014 WCP shows as annual water loss (page D-4).

City of Plano

Population 266,600

May 2016

Questions	Points
1. WCP or Water Conservation Information Submitted?	5
2. Annual Report (AR) Submitted?	5
3. Water Audit Report (WAR) Submitted?	5
4. Total Percent (%) Water Loss	5
5. WCP and Conservation Info Accessibility?	3
6. Achieved 5-Yr Conservation Goal Set in 2009 WCP?	10
7. Set a Strong Conservation Goal in Its 2014 WCP?	5
8. Number of Best Management Practices (BMPs) implemented?	8
9. Outdoor Watering Schedule?	5
10. Conservation Pricing Signal?	10

The City of Plano's most recent WCP sets per capita water use targets that are actually higher than levels the City was able to achieve during the previous five years, going in the wrong direction from a water conservation perspective. Because of the high percentage of single family residential customers in Plano's water service area and the spike in water use from winter months to summer months, an obvious focus for water conservation in the City would be reducing outdoor water use.

The City of Plano lies within the Dallas-Fort Worth Metroplex and the Region C water planning area and has an average rainfall of 41" (about 5' more than the Texas average). As of 2013, the City, with a service area of 72 square miles, provides retail water service for 266,600 people and wholesale water to 6,800 people living in The City of Colony. Plano is a member of the North Texas Municipal Water District (NTMWD), which is the City's sole water supplier. Plano developed its WCP in concert with and modeled after NTMWD's Water Conservation, Drought Contingency and Water Emergency Response Plans.

The Single Family Residential category constitutes the bulk of Plano water users (86%), and the Residential GPCD of 132 is quite high, as is Plano's Total GPCD of 197. There is an opportunity to achieve significant reductions in water use in the residential sector.

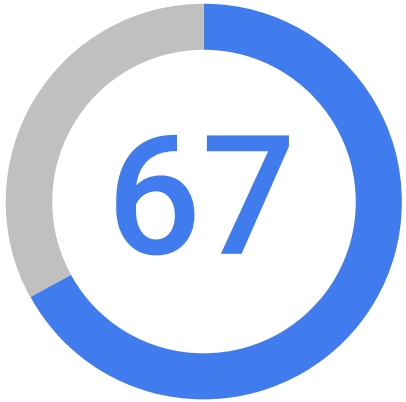
In its 2009 WCP the city did an excellent job comparing seasonal water use between summer and winter months. According to the 2009 WCP, the summer GPCD was 338 while the winter GPCD was 154 (less than half of summer's). Obviously outdoor water use increases sharply during the summer. In Plano's case, the stark difference in water use between the summer months and winter months shows the difference that an outdoor watering schedule might make in decreasing water use, especially significant for the Single-Family Residential sector.

Plano has already taken a step in the right direction by implementing a watering schedule from April 1 through October 31 that restricts outdoor watering by sprinkler system from 10 AM to 6 PM. While Plano encourages limiting irrigation with sprinklers to a maximum of twice per week during the same period even when not in a drought stage, this schedule is neither year-round nor mandatory, so the potential benefit of this practice for reducing water use is not realized.

In its 2014 WCP the City's water use goal for the subsequent 5-year period is a GPCD of 225, which is higher than both the 5-year historic average of 224 and the more recent (2013) GPCD of 197. Instead of using the 2013 or 5-year historic average water use as the baseline for moving forward, the city set its baseline at 234 GPCD (from 2009), asserting that this number is more "typical" of weather patterns and outdoor water use. The City says in the WCP that neither the historic average nor the 2013 GPCD are representative of "normal" water use patterns because outdoor watering restrictions were in place at the time due to a drought. However, the fact is that Plano has already shown that it can reach lower levels of water use than their baseline or 5-year target. The only question remaining is its willingness to do so.

City of Richardson

Population 101,200



May 2016

Questions	Points
1. WCP or Water Conservation Information Submitted?	5
2. Annual Report (AR) Submitted?	5
3. Water Audit Report (WAR) Submitted?	5
4. Total Percent (%) Water Loss	10
5. WCP and Conservation Info Accessibility?	3
6. Achieved 5-Yr Conservation Goal Set in 2009 WCP?	10
7. Set a Strong Conservation Goal in Its 2014 WCP?	0
8. Number of Best Management Practices (BMPs) implemented?	4
9. Outdoor Watering Schedule?	10
10. Conservation Pricing Signal?	15

The City of Richardson's 2014 WCP sets total per capita water use targets for 2019 and 2024 that are higher than the City's water use levels during the previous five years. From a water conservation perspective this approach goes in the wrong direction. The spike in Richardson's water use during the summer months indicates that reducing outdoor water use should be a focus of the City's water conservation effort, and the City is taking steps to do so. Working with industrial and commercial customers to reduce water use might also be productive.

The City of Richardson lies within the Dallas-Fort Worth Metroplex and the Region C water planning area and has an average rainfall of 37". As of 2014, the City, with a service area of 28 square miles, provided retail water service for 108,617 people. Plano is a member of the North Texas Municipal Water District and relies upon surface water from the District for its supply.

Single-family residential customers constitute the bulk of Richardson's retail water connections (86%) and almost half of the City's annual water use (based on the five-year average for 2009-2013). In its 2014 WCP the City reports that its previous five-year residential per capita water use (single-family and multi-family) was 132 GPCD, which is high, and that its total GPCD was 232, also a high figure.

The 2014 WCP sets a target of total GPCD for both 2019 and 2024 at 242, in other words an increase, not a reduction, in water use from the historic average (although the target for residential GPCD is a reduction to 129). Apparently Richardson has done so based on the assertion that the historic average reflects a drought period in which the implementation of its drought contingency plan limited outdoor watering to no more than once a week during much of that period, and that a higher level of water use is to be expected in non-drought periods. However, with reasonable ongoing limits on outdoor watering and effective education a more positive outcome is certainly possible. Given that Richardson usually sees summer water use that is at least twice as much as during winter months, a focus on reducing outdoor watering should produce results.

Richardson has taken a step in the right direction by placing limits on outdoor watering even during non-drought periods. Outdoor watering is now limited to no more than twice per week and is prohibited on all days from 10 AM to 6 PM during April 1 through October 31. The City has an enforcement plan with fines for watering outside of the schedule and other offenses. Richardson also provides excellent information about outdoor landscaping on its website, including "Texas SmartScape" design tools and "WaterMyYard" (a Texas AgriLife tool to help homeowners determine when it is appropriate to water landscapes).

Richardson has significant water use in the industrial and commercial sectors (approximately 11% and 16%, respectively, during the 2009-2013 period), but its 2014 WCP does not indicate any specific efforts targeted to these sectors (outdoor watering restrictions, of course, apply to any of these customers as well as to residential customers). These sectors might be an additional focus for Richardson's water conservation efforts.

City of Round Rock

Population 100,707

May 2016

Questions	Points
1. WCP or Water Conservation Information Submitted?	5
2. Annual Report (AR) Submitted?	5
3. Water Audit Report (WAR) Submitted?	5
4. Total Percent (%) Water Loss	5
5. WCP and Conservation Info Accessibility?	3
6. Achieved 5-Yr Conservation Goal Set in 2009 WCP?	10
7. Set a Strong Conservation Goal in Its 2014 WCP?	15
8. Number of Best Management Practices (BMPs) implemented?	6
9. Outdoor Watering Schedule?	0
10. Conservation Pricing Signal?	10

The City of Round Rock reported confusing information about its per capita water use in its 2014 WCP, which made evaluation of its conservation efforts and targets difficult. Although the City has implemented a number of BMPs, it is not using some options to advance water conservation. Reducing outdoor watering by its customers would probably be a productive focus for the City's conservation efforts.

The City of Round Rock is in Williamson County within the Austin metropolitan area. Round Rock itself has a rapidly growing population that has already surpassed 100,000. For regional water planning purposes Round Rock lies within Brazos Region G.

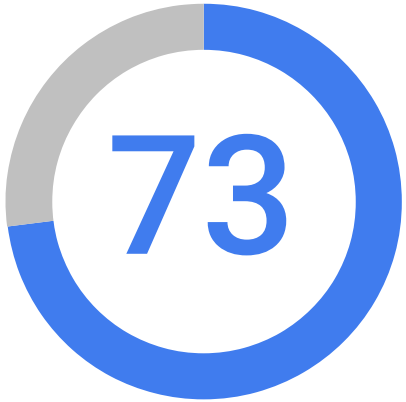
Round Rock obtains water from both groundwater (the northern segment of the Edwards Aquifer) and surface water (Lake Georgetown and Stillhouse Lake via contract with the Brazos River Authority; Lake Travis via contract with the Lower Colorado River Authority). Projected future water demands in excess of water available from these supplies led Round Rock a few years ago to create a partnership with the nearby cities of Cedar Park and Leander called the Brushy Creek Regional Utility Authority for the purpose of building a regional water treatment plan and delivery system that would use water from Lake Travis. Round Rock is also making increasing use of wastewater reuse as a supply source – providing irrigation water to a golf course, Settlers Park, the Dell Diamond baseball facility, new higher education facilities, and several homeowners' associations, among other customers.

Round Rock's 2014 WCP presented contradictory statistics about its total per capita water use. In the section of the plan entitled "Water Savings Targets" it said that: "Over the last five years, Round Rock's total gallons per capita per day (GPCD) have averaged 150 gallons." However, in the Utility Profile completed by Round Rock and attached to the plan, the utility reported that the five-year average for that same period (2009 through 2013) was 205 GPCD (ranging from a low of 185 GPCD in 2009 to a high of 236 GPCD in 2011). The City said that its five-year and 10-year target was to reach and maintain 140 GPCD, but the baseline from which they were seeking to reduce was unclear: 150 GPCD or 205 GPCD or what? We understand that the City is in the process of submitting corrected information to TWDB on this point.

About one-half of Round Rock's retail water use each year is estimated to be residential. A significant increase in water use occurs in Round Rock in the summer, most likely the result of outdoor landscape watering by residential and other customers. However, Round Rock sets no permanent limitations on outdoor watering (they do encourage voluntary measures), and the City's water rate structure does not provide a strong incentive for customers to curb their irrigation water use. A customer using 18,000 gallons of water a month is charged at the same rate per 1000 gallons as a customer using 3,000 gallons of water a month. Adopting permanent outdoor watering limitations as many North Texas utilities such as Dallas and Fort Worth have done, and revising its water rate structure to reward customers who curb outside water use would be logical steps for Round Rock to take for water conservation.

San Antonio Water System

Population 1,343,164



May 2016

Questions	Points
1. WCP or Water Conservation Information Submitted?	5
2. Annual Report (AR) Submitted?	5
3. Water Audit Report (WAR) Submitted?	5
4. Total Percent (%) Water Loss	5
5. WCP and Conservation Info Accessibility?	3
6. Achieved 5-Yr Conservation Goal Set in 2009 WCP?	10
7. Set a Strong Conservation Goal in Its 2014 WCP?	10
8. Number of Best Management Practices (BMPs) implemented?	10
9. Outdoor Watering Schedule?	5
10. Conservation Pricing Signal?	15

San Antonio Water System (SAWS) continues to struggle with water loss, and San Antonio has not adopted ongoing limitations on outdoor watering other than time-of-day restrictions. In many other ways, however, SAWS sets the "gold standard" for water conservation programs among major Texas cities due to its large and energetic conservation staff and wide array of creative and increasingly targeted conservation initiatives. SAWS has achieved a dramatic decrease in per capita water use over the last 20 years. There is concern, however, that a major new water supply project will undermine the incentive for additional conservation.

San Antonio, located in South Central Texas and in the Region L water planning area, is currently the second largest city in Texas with a population of over 1.3 million. The city's water, wastewater, stormwater, and water reuse services are provided by the San Antonio Water System (SAWS), a consolidated agency formed in 1992. As noted in its 2014 WCP, "SAWS is one of the more complex water systems in the country." That complexity stems in part from the dissolution of the Bexar Metropolitan Water District (BexarMet), which had served part of Bexar County and small portions of two other counties, and the transfer of the BexarMet system to SAWS in 2012. As a result, SAWS said in its 2014 WCP that it covers over 900 square miles of territory, has over 450,000 customer accounts, and encompasses 5000 miles of water mains (some news articles have reported a higher number of customers and miles of mains).

The extent of the SAWS water distribution system and the assumption of the BexarMet system are probably factors in the utility's relatively high rate of water loss, which averaged 14% in the 2009-2013 period. The water loss was only 9% in 2009 but rose to 17% the next year and has remained high. Controlling water loss is a key area for SAWS to tackle.

The main water source for SAWS continues to be the Edwards Aquifer, including one of the most extensive Aquifer Storage & Recovery (ASR) projects in the country that stores Edwards Aquifer water in the Carrizo Aquifer in wet years for withdrawal as needed during dry periods. SAWS also has been using some other groundwater sources and a small contracted volume of water from Canyon Lake. Currently the utility is pursuing a highly controversial pipeline project – Vista Ridge – to bring groundwater from Lee and Milam Counties in excess of what SAWS projects is needed for many years. That potential abundance of water raises concerns about how dedicated SAWS will continue to be in dampening demand for water through conservation (restrictions on water pumping from the Edwards Aquifer as a result of a federal lawsuit in the 1990s was a major impetus for San Antonio's conservation effort in the first place).

As of now, SAWS has an impressive water conservation program with approximately 20 full-time staff members and a substantial budget, and the utility implements more BMPs than any other water utility in the state. SAWS does extensive and intensive conservation planning, and it increasingly is tailoring initiatives to address its highest water use customers, especially in the area of outdoor watering (SAWS has termed this "concierge conservation"). However, at present San Antonio only limits the number of days allowed for outside watering each week as part of its drought contingency plan, not on a permanent basis.

City of Tyler Population 102,254

May 2016

Questions	Points
1. WCP or Water Conservation Information Submitted?	5
2. Annual Report (AR) Submitted?	5
3. Water Audit Report (WAR) Submitted?	5
4. Total Percent (%) Water Loss	10
5. WCP and Conservation Info Accessibility?	3
6. Achieved 5-Yr Conservation Goal Set in 2009 WCP?	0
7. Set a Strong Conservation Goal in Its 2014 WCP?	10
8. Number of Best Management Practices (BMPs) implemented?	0
9. Outdoor Watering Schedule?	0
10. Conservation Pricing Signal?	5

The City of Tyler has a high rate of per capita water use for a city in an area of Texas with relatively high average rainfall. There are several factors that may account for what is essentially a waste of water. Tyler's water conservation program would charitably be described as "minimal," employing few if any best management practices. Moreover, the City's water rate structure is one of the worst in Texas from a conservation standpoint. Tyler basically provides an incentive for customers to use more water – sending a "water apathy pricing signal" rather than a "conservation pricing signal."

The City of Tyler lies within Smith County in Northeast Texas and the Region I ("eye") water planning area. As of 2013, the City, with a service area of 52 square miles, provides retail water service for 126,098 people and wholesale water to Walnut Grove WSC, City of Whitehouse, and Community Water. The City's water supply includes groundwater (Carrizo and Wilcox Aquifers) and surface water (primarily Lake Tyler and Lake Palestine), with the latter accounting for 86% of the available supply.

Tyler states in its 2014 WCP reported that its 2013 per capita water use was approximately 187 GPCD (although the five-year average for 2009 through 2013 was over 200 GPCD). The targets for water use reduction set in the 2014 WCP are to reach 178 GPCD by 2019 and 168 GPCD by 2024, which translates to a 1% annual reduction. The City did not meet the five-year per capita water use targets set in its 2009 WCP, however, and the 2014 WCP provides no real strategy for achieving water savings.

Looking more closely at some of the data available on water use in Tyler offers some insight to a path forward for the City to reduce water use, if indeed the City is interested in doing so. A significant component of water use in Tyler is single-family residential use, which constitutes roughly half of total retail use each year. The City's water use increases tremendously during summer months. Reviewing the City's 2014 Utility Profile shows that in the months of June, July, August, and September water pumped to retail customers may be twice as much as water pumped during other months. This suggests that outdoor landscape watering during the hottest times of the year is driving much of the City's annual water use (outdoor watering is a significant part of annual single-family residential use). Tyler could realize significant water savings by adopting permanent outdoor watering limitations as many cities in North Central Texas have done, curbing excessive water use while maintaining landscapes.

Tyler could also redesign its water rate structure to send a conservation pricing signal to its customers. The current "promotional" (as contrasted to "conservation-oriented") rate structure allows customers to use wildly divergent amounts of water (2,000 to 23,000 gallons a month) while being charged the same rate per 1000 gallons and actually lowers the rate charged per 1000 gallons when monthly use goes above 23,000 gallons. This rate structure tells a family who might be evaluating whether they should conserve water that there is no cost-incentive to use 5,000 gallons a month instead of 20,000 gallons. This send the signal to water customers that water is cheap no matter how much you conserve or waste.

City of Waco

Population 124,805

May 2016

Questions	Points
1. WCP or Water Conservation Information Submitted?	5
2. Annual Report (AR) Submitted?	5
3. Water Audit Report (WAR) Submitted?	5
4. Total Percent (%) Water Loss	10
5. WCP and Conservation Info Accessibility?	5
6. Achieved 5-Yr Conservation Goal Set in 2009 WCP?	0
7. Set a Strong Conservation Goal in Its 2014 WCP?	5
8. Number of Best Management Practices (BMPs) implemented?	2
9. Outdoor Watering Schedule?	0
10. Conservation Pricing Signal?	10

The City of Waco did not meet its 2014 water use reduction goals, has employed only a small number of best management practices for water conservation, has set a very modest goal for reducing per capita water use by 2019, and has a water rate structure that provides only a moderate water conservation incentive to its customers. Reducing outdoor water use and commercial and industrial water use might yield great benefits for conservation in Waco. The City's reported rates of water loss have varied widely in recent years (10% in 2010, 6% in 2011, 12% in 2012, 4% in 2013, 5% in 2014).

The City of Waco in McLennan County, mid-way between Dallas and Austin, is located along the Brazos River in the Region G water planning area. Waco has an average rainfall of 34.6 inches. As of 2014, the City provided retail water service for 129,570 people and wholesale water service to a few small cities. Waco's primary water supply is Lake Waco with additional supplies from the Trinity Aquifer and the Brazos River. Lake Waco is in the city limits and is formed by an impoundment on the Bosque River, a tributary of the Brazos.

Single-family residential customers constitute the bulk of Waco's retail water connections (85%) but only accounted for 37% of the city's water use (2013). Waco's commercial customers encompass 14% of the city's retail accounts but use 51% of the retail water produced by the utility. Industrial customers use about 11% of the retail water produced. The City's industrial customers include Cargill Meat, Coca-Cola, Pilgrim's Pride, and Mars Chocolate. The large portion of water used in the commercial and industrial sectors suggests that these areas would be a good focus for conservation efforts.

In its 2014 WCP the City indicated that its five-year historic average for per capita water use was a total GPCD of 225, but Waco used a baseline of 226 total GPCD to set its five- and ten-year targets for reducing water consumption. The 2019 target is to reduce water use to 221 total GPCD, and the 2024 target is 196 total GPCD by 2024. The first five-year target translates to a very modest rate of water use reduction, much less than the annual average reduction of 1% recommended by the state Water Conservation Implementation Task Force in 2004. The 2024 target is a much more aggressive rate of water use reduction. Nevertheless, at the end of that 10-year period a total GPCD of 196 would be far above the 140 total GPCD suggested by the 2004 Task Force report.

Waco might be able to achieve a better rate of water use reduction by adopting common sense restrictions on outdoor landscape watering. The City does not have any ongoing limitations on time-of-day watering or number of days per week that lawn or landscape irrigation is allowed. According to the City's utility profile, however, the ratio of Waco's summer peak water use compared to average water use has ranged from 1.64 to 1.84, a spike in water use during the summer that is probably due largely to outdoor watering. Adopting a measure being taken by many water utilities in North Texas, permanently limiting outdoor turf watering to no more than twice a week, would give Waco an opportunity to decrease that ratio and its overall per capita water use.

City of Wichita Falls

Population 101,314

May 2016

Questions	Points
1. WCP or Water Conservation Information Submitted?	5
2. Annual Report (AR) Submitted?	5
3. Water Audit Report (WAR) Submitted?	5
4. Total Percent (%) Water Loss	0
5. WCP and Conservation Info Accessibility?	3
6. Achieved 5-Yr Conservation Goal Set in 2009 WCP?	10
7. Set a Strong Conservation Goal in Its 2014 WCP?	0
8. Number of Best Management Practices (BMPs) implemented?	6
9. Outdoor Watering Schedule?	5
10. Conservation Pricing Signal?	10

The City of Wichita Falls and its residents did an impressive job in reducing water use during 2011 through 2015, a period of exceptional drought. The crisis led the City to develop and put into operation a temporary direct potable water reuse plant, one of the first in Texas. The challenge for Wichita Falls now that the most recent drought is over is to translate lessons learned during that traumatic period into an ongoing water conservation program that will result in long-term efficient use and stewardship of resources. Reverting to past practices during wetter times would be a wasted opportunity.

Wichita Falls is located in North Texas near the Red River, the border with Oklahoma, in the Region B water planning area. As of 2014 the City had a population of 105,000. Wichita Falls provides retail water service to its residents and institutions within the community as well as wholesale water to other retail providers in the region. As of 2015, the City's primary water sources were three lakes – Arrowhead, Kemp, and Kickapoo. Wichita Falls also constructed and put on line a temporary direct potable reuse plant.

During the course of the drought, as a result of implementation of its drought contingency plans, the City basically cut its per capita water use in half to about 100 GPCD. Of course, the tools that accomplished this feat were blunt instruments. The drought persisted so long and was so intense that the City reached Stage 5 of its drought plan, which resulted in elimination of all outdoor irrigation, the banning of home washing of vehicles, and a prohibition on filling swimming pools with City water, among other actions. Water customers also saw a 53 percent hike in water bills to generate funds for temporary and long range water supply projects.

The drought ended abruptly with major rains in May 2015, about four and a half years after it began. Lakes Arrowhead and Kickapoo, which had dropped to about 20 percent of combined capacity lapped over their respective spillways by the end of May. In June 2015 Wichita Falls lifted all drought restrictions, but some restrictions had been made permanent, including limitations on outdoor watering based on time of day. Some changes in those permanent restrictions were made by the City in November to be better prepared for future droughts. The temporary direct potable reuse project was taken out of operation in July 2015 to transition to an indirect reuse project. Also in 2015, Wichita Falls received a long range water supply plan report prepared by the planning and engineering firm Freese and Nichols, and the City began moving forward on some of the proposals recommended by that plan.

Fortunately, a priority recommendation in the plan was for an ongoing water conservation program to try to solidify some of gains in water use reduction made during the drought. It is too soon (early 2016) to determine what path Wichita Falls will take at this point. The City's 2014 WCP goal for 2019 was 165 GPCD, and its 2024 target was 160 GPCD. Wichita Falls should be able to meet or beat those goals with the imposition of reasonable ongoing limitations on outdoor landscape watering and other water conservation measures. There may be a tendency on the part of some customers to revert to old water use patterns in the absence of drought but some learned lessons may not be easily forgotten. Time will tell.

Appendix C

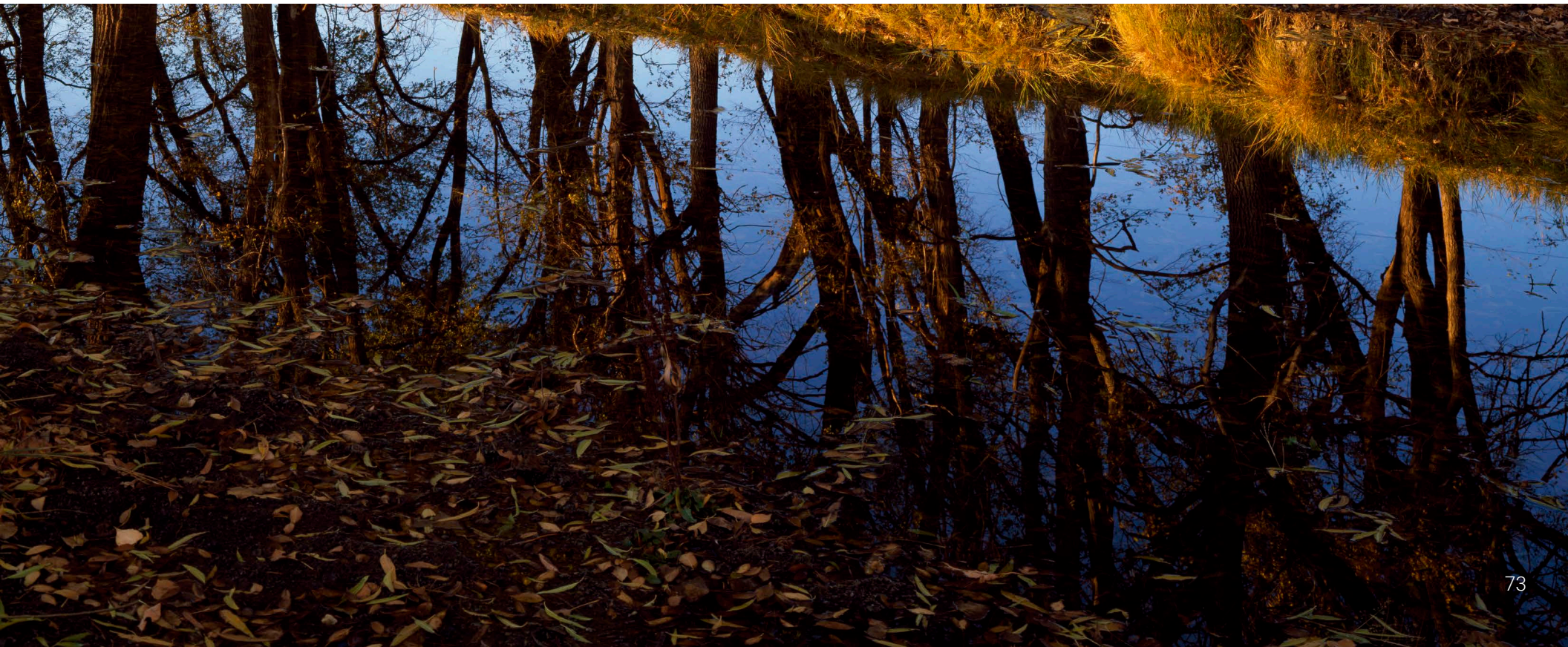
The following table shows the points assigned to each medium-size utility on each of the *ten* criteria used to compute the utility's overall score on water conservation efforts. A medium-size retail water utility is here defined as one that serves a population of at least 25,000 but less than 100,000. At the top of the table is the maximum number of points that could be assigned to a utility based on each of the ten criteria. *Total possible score for any medium-size utility is 100 points.*

TEXAS WATER CONSERVATION SCORECARD: MEDIUM-SIZE UTILITIES (POPULATION BETWEEN 25,000 AND 100,000)												
UTILITY NAME	POPULATION	1. Water Conservation Plan Submitted	2. Annual Report Submitted	3. Water Audit Report Submitted	4. Total Percent Water Loss	5. WCP and/or Conservation Info Accessible Online	6. Achieved 5-year Conservation Goal Set in the 2009 WCP	7. Set a Strong Conservation Goal in the 2014 WCP	8. BMPs Implemented	9. Outdoor Watering Schedule	10. Conservation Pricing Signal	TOTAL SCORE (out of 100)
		5 POINTS	5 POINTS	5 POINTS	15 POINTS	5 POINTS	10 POINTS	15 POINTS	10 POINTS	15 POINTS	15 POINTS	
Agua SUD	39,747	5	5	5	5	5	0	15	2	0	10	52
City of Allen	84,300	5	5	5	10	5	10	5	8	10	10	73
Aqua WSC	58,836	5	5	5	0	3	10	10	2	5	5	50
City of Baytown	81,117	5	5	5	0	5	0	10	2	0	15	47
City of Bedford	49,950	5	5	5	10	5	10	0	2	5	10	57
Bethesda WSC	29,709	5	5	5	15	3	0	10	0	5	10	58
City of Big Spring	27,282	5	5	5	10	5	10	15	0	0	10	65
City of Bryan	76,201	5	5	5	15	5	10	10	2	0	10	67
City of Burleson	38,022	5	5	5	10	5	10	10	4	10	10	74
City of Cedar Hill	46,300	5	5	5	5	5	10	5	2	5	15	62
City of Cedar Park	56,829	5	5	5	0	5	10	5	10	0	15	60
Clear Lake City Water Authority	75,045	5	5	5	10	3	10	0	0	0	10	48
City of Cleburne	30,300	5	5	5	5	0	0	15	4	0	10	49
City of College Station	91,009	5	5	5	10	5	5	5	8	5	10	63
City of Conroe	47,705	5	5	5	5	3	10	5	4	5	15	62
City of Coppell	39,750	5	0	5	10	5	0	15	0	0	10	50
City of Copperas Cove	29,956	5	5	5	5	5	10	10	4	0	10	59
City of Corsicana	25,100	5	0	5	0	3	0	0	0	0	10	23
Dallas County WCID 6	29,118	5	5	5	10	0	10	0	2	0	0	37
City of Deer Park	36,777	0	5	0	0	0	0	0	2	0	15	22
Del Rio Utilities Commission	35,591	5	5	0	0	5	10	0	0	0	15	40
City of Denison	31,266	5	5	5	15	5	10	0	2	0	10	57

TEXAS WATER CONSERVATION SCORECARD: MEDIUM-SIZE UTILITIES (POPULATION BETWEEN 25,000 AND 100,000)												
UTILITY NAME	POPULATION	1. Water Conservation Plan Submitted 5 POINTS	2. Annual Report Submitted 5 POINTS	3. Water Audit Report Submitted 5 POINTS	4. Total Percent Water Loss 15 POINTS	5. WCP and/or Conservation Info Accessible Online 5 POINTS	6. Achieved 5-year Conservation Goal Set in the 2009 WCP 10 POINTS	7. Set a Strong Conservation Goal in the 2014 WCP 15 POINTS	8. BMPs Implemented 10 POINTS	9. Outdoor Watering Schedule 15 POINTS	10. Conservation Pricing Signal 15 POINTS	TOTAL SCORE (out of 100)
City of Desoto	49,210	5	5	5	0	3	10	5	2	0	15	50
City of Duncanville	38,524	5	5	5	5	5	10	10	2	5	15	67
City of Eagle Pass	45,168	5	5	5	10	5	10	0	2	0	15	57
City of Edinburg	69,702	5	5	5	15	3	0	15	4	0	15	67
City of Euless	51,200	5	5	5	5	5	10	0	6	5	15	61
City of Farmers Branch	31,100	5	5	5	5	3	10	5	6	0	15	59
Town of Flower Mound	60,000	5	5	5	10	5	10	15	2	0	0	57
Fort Bend County WCID 2	37,770	5	5	5	10	5	0	5	0	0	15	50
City of Friendswood	35,805	5	5	5	10	3	10	10	2	0	15	65
City of Galveston	54,466	0	0	0	0	5	0	0	0	0	15	20
Galveston County WCID 1	29,727	5	5	5	15	3	0	15	4	0	15	67
City of Georgetown	51,076	5	5	5	0	5	0	15	6	0	5	46
City of Grapevine	50,514	5	5	5	15	3	0	15	0	5	15	68
Green Valley SUD	26,892	5	5	5	5	3	10	15	4	0	10	62
City of Greenville	25,557	5	5	5	15	5	10	10	2	0	15	72
City of Haltom City	42,409	5	0	5	5	5	0	15	0	10	15	60
City of Harker Heights	26,694	5	5	5	10	5	10	15	2	0	10	67
Harlingen Water Works System	79,000	5	5	5	5	3	10	0	2	0	15	50
Horizon Regional MUD	25,115	0	0	0	0	5	0	0	0	0	15	20
City of Huntsville	38,548	5	5	5	15	0	0	5	2	0	15	52
City of Hurst	37,337	5	5	5	15	5	10	5	2	10	15	77
Johnson County SUD	43,386	5	0	5	10	5	0	0	0	0	10	35
City of Keller	40,000	5	5	5	15	5	10	5	0	5	15	70
City of Kingsville	25,257	0	0	0	0	0	0	0	0	0	10	10
City of La Porte	34,608	5	5	5	0	0	0	15	4	0	15	49
City of Lake Jackson	26,849	5	5	5	0	3	0	10	4	0	15	47
City of Lancaster	36,600	5	5	5	15	3	10	10	2	5	10	70
City of League City	68,504	5	5	5	10	3	10	15	6	0	15	74
City of Leander	27,987	0	5	5	5	3	10	0	4	0	10	42
City of Lewisville	95,250	5	5	5	15	5	10	15	0	10	10	80

TEXAS WATER CONSERVATION SCORECARD: MEDIUM-SIZE UTILITIES (POPULATION BETWEEN 25,000 AND 100,000)												
UTILITY NAME	POPULATION	1. Water Conservation Plan Submitted 5 POINTS	2. Annual Report Submitted 5 POINTS	3. Water Audit Report Submitted 5 POINTS	4. Total Percent Water Loss 15 POINTS	5. WCP and/or Conservation Info Accessible Online 5 POINTS	6. Achieved 5-year Conservation Goal Set in the 2009 WCP 10 POINTS	7. Set a Strong Conservation Goal in the 2014 WCP 15 POINTS	8. BMPs Implemented 10 POINTS	9. Outdoor Watering Schedule 15 POINTS	10. Conservation Pricing Signal 15 POINTS	TOTAL SCORE (out of 100)
Town of Little Elm East	27,306	5	5	5	5	5	10	0	2	5	15	57
City of Longview	80,455	5	5	5	15	0	0	0	2	0	15	47
Lower Valley Water District	42,747	0	0	0	0	0	0	0	0	0	15	15
City of Lufkin	34,594	5	5	5	0	3	10	5	0	0	15	48
City of Mansfield	56,368	5	5	0	0	5	0	0	2	5	15	37
City of Mission	45,408	5	5	5	5	0	0	5	2	0	10	37
Montgomery County MUD 47	25,253	5	5	0	0	3	10	10	4	10	15	62
City of Nacogdoches	32,205	5	5	0	0	0	0	10	4	0	15	39
New Braunfels Utilities	57,740	5	5	5	0	5	10	10	10	5	10	65
City of North Richland Hills	66,400	5	5	5	10	3	0	15	2	10	15	70
City of Paris	30,975	5	5	5	15	5	0	0	4	0	15	54
City of Pharr	61,360	5	5	5	10	3	10	15	0	0	10	63
City of Port Arthur	56,694	5	5	0	0	5	0	15	2	0	15	47
Rockett SUD	41,325	5	5	5	0	3	10	5	2	0	10	45
City of Rockport	28,458	0	5	5	10	3	10	0	4	0	10	47
City of Rockwall	35,348	5	5	5	10	3	10	5	4	5	10	62
City of Rosenberg	31,843	5	5	5	15	5	10	15	0	0	15	75
City of Rowlett	54,500	5	5	5	5	3	10	0	2	10	10	55
City of San Angelo	91,880	5	5	5	15	5	10	15	6	0	15	81
City of San Benito	26,000	5	5	5	0	0	10	15	4	0	10	54
City of San Juan	30,000	5	5	5	0	5	0	15	0	0	10	45
City of San Marcos	57,155	5	5	5	10	5	10	15	10	5	15	85
City of Schertz	39,477	5	5	5	15	5	0	10	4	5	10	64
City of Seguin	25,120	5	5	5	10	5	0	15	6	5	5	61
Sharyland WSC	47,901	5	5	5	15	3	0	5	2	0	10	50
City of Sherman	38,047	5	5	5	5	3	0	15	4	0	10	52
Southern Utilities	57,027	5	0	0	0	0	0	0	0	0	10	15
City of Southlake	27,152	5	5	5	15	5	0	5	4	10	10	64
City of Sugar Land	79,732	5	5	5	10	5	10	5	4	0	10	59

TEXAS WATER CONSERVATION SCORECARD: MEDIUM-SIZE UTILITIES (POPULATION BETWEEN 25,000 AND 100,000)												
UTILITY NAME	POPULATION	1. Water Conservation Plan Submitted 5 POINTS	2. Annual Report Submitted 5 POINTS	3. Water Audit Report Submitted 5 POINTS	4. Total Percent Water Loss 15 POINTS	5. WCP and/or Conservation Info Accessible Online 5 POINTS	6. Achieved 5-year Conservation Goal Set in the 2009 WCP 10 POINTS	7. Set a Strong Conservation Goal in the 2014 WCP 15 POINTS	8. BMPs Implemented 10 POINTS	9. Outdoor Watering Schedule 15 POINTS	10. Conservation Pricing Signal 15 POINTS	TOTAL SCORE (out of 100)
City of Temple	66,102	5	5	5	0	3	10	15	2	0	15	60
City of Texarkana	39,678	5	5	5	5	0	0	5	2	0	15	42
City of Texas City	46,510	5	5	0	0	0	10	10	2	0	10	42
City of The Colony	40,100	5	0	5	0	3	0	15	0	0	10	38
Travis County WCID 17	30,531	5	5	5	10	5	0	10	6	0	15	61
City of Victoria	66,339	5	5	5	15	5	0	5	2	0	10	52
City of Waxahachie	28,000	5	5	5	5	5	0	5	2	0	15	47
City of Weatherford	25,250	5	5	5	5	5	0	10	2	10	10	57
City of Weslaco	32,092	5	5	5	0	5	10	0	2	0	10	42
City of Wylie	39,000	5	5	0	0	5	10	15	0	0	15	55



Appendix D

The following table shows the points assigned to each small utility on each of the *six* criteria used to compute the utility's overall score on water conservation efforts. A small retail water utility is here defined as one that has at least 3300 connections but serves a population of less than 25,000. At the top of the table is the maximum number of points that could be assigned to a small utility based on each of the six criteria. ***Total possible score for any small utility is 55 points.***

TEXAS WATER CONSERVATION SCORECARD: SMALL-SIZE UTILITIES (POPULATION BELOW 25,000)								
UTILITY NAME	POPULATION	1. Water Conservation Plan Submitted 5 POINTS	2. Annual Report Submitted 5 POINTS	3. Water Audit Report Submitted 5 POINTS	4. Total Percent Water Loss 15 POINTS	8. BMPs Implemented 10 POINTS	10. Conservation Pricing Signal 15 POINTS	TOTAL SCORE (out of 55)
Acton MUD	20,400	5	5	5	10	2	10	37
Town of Addison	14,050	5	5	5	15	2	10	42
City of Alamo	14,800	5	5	5	5	2	5	27
City of Alice	19,685	5	5	5	0	2	10	27
City of Alvin	22,109	0	0	0	0	0	15	15
City of Andrews	11,088	5	5	5	0	0	10	25
City of Angleton	18,130	5	0	5	0	0	15	25
City of Aransas Pass	11,478	0	5	5	0	0	15	25
City of Athens	12,710	5	0	5	10	0	10	30
City of Azle	14,115	5	5	5	10	0	10	35
City of Bastrop	8,836	0	0	5	0	0	10	15
City of Bay City	20,258	0	5	5	0	2	10	22
City of Beeville	16,266	5	5	0	0	2	10	22
City of Bellaire	22,458	5	5	0	0	4	15	29
City of Bellmead	10,104	0	0	5	0	0	10	15
City of Belton	18,675	5	5	5	0	4	15	34
Benbrook Water Authority	21,360	5	5	5	0	4	15	34
Benton City WSC	13,452	5	0	5	5	0	15	30
City of Boerne	13,485	5	5	5	10	4	5	34
City of Bonham	10,538	5	5	5	10	2	10	37
Borger Municipal Water System	14,203	5	5	5	15	2	10	42
City of Brenham	14,237	5	5	0	0	2	15	27
City of Bridge City	10,332	5	5	0	0	2	15	27
Bridgestone MUD	16,557	5	5	5	10	2	10	37

TEXAS WATER CONSERVATION SCORECARD: SMALL-SIZE UTILITIES (POPULATION BELOW 25,000)								
UTILITY NAME	POPULATION	1. Water Conservation Plan Submitted 5 POINTS	2. Annual Report Submitted 5 POINTS	3. Water Audit Report Submitted 5 POINTS	4. Total Percent Water Loss 15 POINTS	8. BMPs Implemented 10 POINTS	10. Conservation Pricing Signal 15 POINTS	TOTAL SCORE (out of 55)
Brookesmith Special Utility District	8,937	5	5	5	0	2	10	27
City of Brownfield	9,488	5	5	5	15	2	10	42
City of Brownwood	19,137	5	5	5	10	4	10	39
Brushy Creek MUD	14,871	5	5	5	5	2	10	32
City of Burkburnett	10,927	0	0	0	0	0	15	15
Canyon Municipal Water System	13,300	5	5	5	5	0	10	30
City of Carthage	6,779	5	5	0	0	0	15	25
Cash SUD	16,528	5	5	5	0	4	10	29
Chisholm Trail SUD	18,639	5	5	5	10	2	10	37
Clear Brook City MUD	16,278	0	0	0	0	0	5	5
City of Clute	10,790	5	5	5	10	4	10	39
CLWSC Canyon Lake Shores	12,047	5	5	5	15	2	10	42
CLWSC Triple Peak Plant	15,949	5	5	5	0	2	10	27
CNP Utility District	14,643	5	5	5	15	0	0	30
City of Colleyville	22,600	5	5	5	15	2	15	47
City of Converse	23,208	5	5	5	10	0	10	35
City of Crowley	13,233	5	5	5	10	4	15	44
Crystal Clear WSC	13,560	5	5	5	0	2	10	27
Cypress Springs SUD Plant 1 And NE Plant	10,446	5	5	5	5	2	10	32
Dalhart Municipal Water System	7,930	5	0	5	5	0	15	30
City of Donna	15,000	0	0	0	0	0	15	15
City of Dumas	14,500	5	5	5	5	2	15	37
East Central SUD	14,643	5	0	5	15	0	10	35
City of El Campo	13,200	5	5	5	10	2	15	42
City of Ennis	18,513	5	5	5	0	0	10	25
Town of Fairview	9,100	0	0	0	0	0	10	10
City of Forest Hill	12,387	5	0	0	0	0	15	20
City of Forney	14,988	5	5	5	15	0	15	45
Fort Bend County MUD 23	11,673	5	5	5	15	0	5	35
Fort Bend County MUD 25	11,268	5	5	5	10	2	10	37

TEXAS WATER CONSERVATION SCORECARD: SMALL-SIZE UTILITIES (POPULATION BELOW 25,000)								
UTILITY NAME	POPULATION	1. Water Conservation Plan Submitted 5 POINTS	2. Annual Report Submitted 5 POINTS	3. Water Audit Report Submitted 5 POINTS	4. Total Percent Water Loss 15 POINTS	8. BMPs Implemented 10 POINTS	10. Conservation Pricing Signal 15 POINTS	TOTAL SCORE (out of 55)
City of Fort Stockton	8,283	0	0	0	0	0	15	15
City of Fredericksburg	13,881	5	5	5	15	4	15	49
City of Freeport	15,129	0	0	0	0	0	15	15
City of Gainesville	16,250	5	5	5	10	2	10	37
City of Galena Park	10,592	5	5	5	5	2	15	37
City of Glenn Heights	12,100	0	0	5	0	0	10	15
Goforth SUD	13,152	5	5	5	15	4	10	44
City of Graham	8,900	5	5	5	5	2	10	32
City of Granbury	11,750	5	5	0	0	6	15	31
City of Groves	14,299	5	5	5	0	2	15	32
Harris County FWSD 51	19,671	5	0	0	0	0	15	20
Harris County FWSD 61	19,305	5	0	0	0	0	15	20
Harris County MUD 102	10,230	5	5	5	15	2	15	47
Harris County MUD 120	12,156	5	5	5	10	2	5	32
Harris County MUD 200 Cranbrook	13,485	5	5	0	0	2	0	12
Harris County MUD 26	10,566	5	5	5	5	0	10	30
Harris County MUD 368	9,906	5	5	5	15	0	10	40
Harris County MUD 53	15,912	5	0	0	0	0	15	20
Harris County MUD 55 Heritage Park	13,095	5	5	0	0	2	5	17
Harris County MUD 71	10,497	5	5	5	10	2	5	32
Harris County MUD 81	11,106	5	5	5	15	0	10	40
Harris County Utility District 6	11,094	5	5	5	15	2	0	32
Harris County WCID 109	10,599	5	5	5	15	2	0	32
City of Henderson	13,712	0	0	0	0	0	10	10
City of Hereford	15,500	0	0	0	0	0	15	15
City of Hewitt	15,000	0	0	0	0	0	10	10
City of Hidalgo	12,200	5	0	5	15	0	5	30
City of Highland Park	8,650	5	5	5	15	4	10	44
City of Highland Village	15,948	5	5	0	0	4	5	19
City of Horseshoe Bay	7,445	5	5	0	0	4	15	29
City of Humble	14,579	5	5	5	15	2	10	42

TEXAS WATER CONSERVATION SCORECARD: SMALL-SIZE UTILITIES (POPULATION BELOW 25,000)								
UTILITY NAME	POPULATION	1. Water Conservation Plan Submitted 5 POINTS	2. Annual Report Submitted 5 POINTS	3. Water Audit Report Submitted 5 POINTS	4. Total Percent Water Loss 15 POINTS	8. BMPs Implemented 10 POINTS	10. Conservation Pricing Signal 15 POINTS	TOTAL SCORE (out of 55)
City of Hutto	10,170	5	5	5	10	2	10	37
City of Ingleside	9,800	5	0	5	10	0	10	30
Jackrabbit Road PUD	7,299	5	0	0	0	0	15	20
City of Jacksonville	14,582	5	5	0	0	2	10	22
City of Jasper	12,426	5	5	0	0	2	5	17
City of Jersey Village	7,252	5	5	5	5	2	15	37
Jonah Water SUD	13,749	5	5	5	0	0	5	20
City of Katy	15,380	5	0	5	10	0	15	35
Kempner WSC	15,750	5	5	5	0	2	5	22
City of Kerrville	21,552	5	0	5	15	0	15	40
City of Kilgore	12,975	5	5	5	0	4	10	29
City of Kyle	22,317	5	5	5	0	6	10	31
City of La Marque	14,509	5	5	0	0	4	15	29
Laguna Madre Water District	15,939	5	5	0	0	0	0	10
Lake Cities Municipal Utility Authority	12,698	0	0	0	0	0	10	10
Lakeway MUD	12,033	5	0	0	0	0	10	15
Lamar County Water Supply District	22,017	5	5	5	0	2	10	27
City of Lamesa	9,422	5	5	0	0	2	15	27
Lee County WSC	10,608	5	5	0	0	6	10	26
City of Levelland	14,278	5	5	5	5	2	10	32
City of Livingston	12,726	5	5	0	0	0	10	20
City of Lockhart	13,089	5	5	5	5	2	10	32
Lumberton MUD	24,054	5	5	0	0	2	10	22
City of Mabank	11,337	5	5	5	5	6	10	36
Manville WSC	22,908	5	5	5	5	0	10	30
City of Marshall	24,087	5	5	5	0	0	15	30
City of Mercedes	15,700	5	0	5	5	0	10	25
City of Midlothian	13,800	5	5	5	15	2	10	42
City of Mineral Wells	17,350	5	5	5	0	2	15	32
Montgomery County MUD 46	15,953	5	5	0	0	4	15	29
Montgomery County MUD 60	10,077	5	5	0	0	4	15	29

TEXAS WATER CONSERVATION SCORECARD: SMALL-SIZE UTILITIES (POPULATION BELOW 25,000)								
UTILITY NAME	POPULATION	1. Water Conservation Plan Submitted 5 POINTS	2. Annual Report Submitted 5 POINTS	3. Water Audit Report Submitted 5 POINTS	4. Total Percent Water Loss 15 POINTS	8. BMPs Implemented 10 POINTS	10. Conservation Pricing Signal 15 POINTS	TOTAL SCORE (out of 55)
Montgomery County MUD 7	11,726	5	0	0	0	0	15	20
City of Mount Pleasant	15,564	5	5	5	5	2	10	32
Mountain Peak SUD	10,143	5	5	5	0	4	10	29
City of Murphy	17,708	5	5	5	0	4	10	29
Mustang SUD	11,007	5	5	0	0	2	10	22
City of Nederland	18,661	5	5	5	0	2	15	32
New Caney MUD	10,341	5	5	5	10	8	15	48
Northwest Harris County MUD 5	11,835	5	5	5	10	0	10	35
Northwest Park MUD	17,418	5	5	5	10	2	10	37
Nueces County WCID 3	14,082	0	0	0	0	0	10	10
City of Orange	19,944	5	5	0	0	2	10	22
Orange County WCID 1	16,224	5	5	5	0	2	10	27
City of Palestine	18,712	5	5	5	0	2	15	32
City of Pampa	17,887	5	5	5	15	4	10	44
Pecan Grove MUD	15,045	5	5	5	5	2	10	32
City of Pecos	12,480	5	0	5	5	0	10	25
Perryton Municipal Water System	8,008	5	5	5	0	2	15	32
City of Pflugerville	20,520	5	5	5	0	6	10	31
Plainview Municipal Water System	24,379	0	5	5	0	2	5	17
City of Pleasanton	10,610	5	5	5	10	0	10	35
City of Port Lavaca	11,489	5	5	5	5	2	15	37
City of Port Neches	13,040	5	5	5	5	0	15	35
Porter SUD	15,720	5	0	5	10	0	10	30
City of Portland	19,042	5	5	5	15	2	10	42
Quail Valley Utility District	13,056	5	5	5	10	2	10	37
Rayford Road MUD	10,929	5	5	5	10	0	10	35
Remington MUD 1	13,092	0	5	5	10	0	15	35
City of Richmond	13,317	5	5	0	0	4	10	24
City of Rio Grande City	18,666	5	5	0	0	0	15	25
City of Robinson	10,344	5	5	5	10	2	10	37
City of Roma	17,839	5	5	5	0	0	15	30
City of Royse City	10,630	5	0	0	0	0	15	20

TEXAS WATER CONSERVATION SCORECARD: SMALL-SIZE UTILITIES (POPULATION BELOW 25,000)								
UTILITY NAME	POPULATION	1. Water Conservation Plan Submitted 5 POINTS	2. Annual Report Submitted 5 POINTS	3. Water Audit Report Submitted 5 POINTS	4. Total Percent Water Loss 15 POINTS	8. BMPs Implemented 10 POINTS	10. Conservation Pricing Signal 15 POINTS	TOTAL SCORE (out of 55)
S S WSC	13,053	5	5	5	15	4	10	44
City of Sachse	19,100	5	5	5	5	2	10	32
City of Saginaw	19,500	5	5	5	5	2	15	37
Sardis Lone Elm WSC	11,700	5	5	5	0	4	10	29
City of Seabrook	13,659	5	5	5	10	0	10	35
City of Snyder	10,565	5	5	5	5	0	10	30
City of South Houston	13,311	5	5	5	0	0	10	25
Southern Montgomery County MUD	13,272	5	5	5	5	2	0	22
Springs Hill WSC	19,884	5	5	5	15	2	10	42
City of Stephenville	17,480	5	5	5	5	2	10	32
City of Sulphur Springs	15,449	5	5	5	15	2	15	47
City of Sweetwater	12,148	5	5	5	0	4	15	34
City of Taylor	18,509	5	5	5	0	2	10	27
City of Terrell	17,985	5	5	5	0	4	15	34
Timberlane Utility District	14,979	5	0	5	10	0	10	30
City of Tomball	9,089	5	5	5	5	2	10	32
City of Universal City	20,105	5	5	5	15	6	10	46
City of University Park	23,500	5	5	0	0	4	15	29
City of Uvalde	15,751	5	5	0	0	4	15	29
City of Vernon	12,500	5	5	5	15	2	10	42
Walnut Creek SUD	17,559	5	5	5	0	0	10	25
City of Watauga	24,843	5	5	5	10	4	5	34
Wellborn SUD	11,989	5	5	5	10	4	10	39
Wells Branch MUD 1	20,727	5	5	5	15	8	15	53
West Cedar Creek MUD	22,299	0	0	0	0	0	10	10
West Travis County Regional WS	16,342	5	0	0	0	0	10	15
City of West University Place	14,800	0	0	5	15	0	15	35
City of Wharton	11,223	5	5	0	0	2	10	22
City of White Settlement	16,100	0	0	0	0	0	15	15
Windermere Community	19,418	5	5	5	15	2	10	42
City of Woodway	8,733	5	5	5	5	2	10	32
Zapata County Waterworks SWTP	12,054	5	5	5	15	2	10	42

Appendix E

APPENDIX E – Summary of Selected State Statutory Requirements on Water Conservation Planning and Reporting

Excerpted from Guidance and Methodology for Reporting on Water Conservation and Water Use – developed by Texas Water Development Board and Texas Commission on Environmental Quality in consultation with Water Conservation Advisory Council (December 2012) - [Note: an additional statutory requirement enacted by the Texas Legislature in 2013 after publication of this guidance document is shown below in blue.]:

Chapter 1: Texas Water Development Board Required Documents and Reports for Conservation and Water Use

The following documents and reports are required by statute and/or Texas Water Development Board rules to be submitted to the Board.

WATER CONSERVATION PLAN
Texas Water Code: 13.146; 17.125(b); 17.277(b)
Texas Administrative Code: 31 Texas Administrative Code Chapter 363, Subchapter A, Rule 363.15
Who is required to submit:

- Entities applying for Board financial assistance greater than $500,000
- Entities with 3,300 connections or greater
- A non-irrigation surface water right greater than 1,000 acre-feet/year
- An irrigation surface water right greater than 10,000 acre-feet/year

Report goes to: All required plans should be submitted to the Board.
When to submit: Submit a water conservation plan along with the utility profile once every five years or whenever a revision to the plan is needed.
Purpose and Function: The purpose of a water conservation plan is to establish a strategy or combination of strategies for reducing the volume of water withdrawn from a water supply source, for reducing the loss or waste of water, for maintaining or improving the efficiency in the use of water, and for increasing the recycling and reuse of water. The water conservation plan contains the utility profile which is the foundation of water conservation plan development and ensures that important information and data are considered when establishing targets and goals. The plan should establish a schedule for achieving 5- and 10-year targets and goals for water use and water loss and a method for tracking progress in meeting the targets and goals.

UTILITY PROFILE
Texas Administrative Code: 31 Texas Administrative Code Chapter 363, Subchapter A, Rule 363.15(b)(1)(A)
Who is required to submit:

- Entities applying for Board financial assistance greater than $500,000
- Entities with 3,300 connections or greater

Report goes to: All required utility profiles should be submitted to the Board.
When to submit: Submit a utility profile along with the water conservation plan once every five years or when a plan is revised as necessary.
Purpose and Function: The utility profile is the foundation of water conservation plan development and ensures that important information and data be considered when establishing 5- and 10-year targets and goals for water use and water loss.

WATER CONSERVATION PLAN ANNUAL REPORT
Texas Water Code: 16.402(b)
Texas Administrative Code: 31 Texas Administrative Code Chapter 363, Subchapter A, Rule 363.15

Who is required to submit: Entities currently required to have a water conservation plan on file with the Board or the Commission are required to submit a conservation plan annual report.

Report goes to: The water conservation plan annual report should be submitted to the Board.

When to submit: The water conservation plan annual report should be submitted every year by May 1.

Purpose and Function: The purpose of a conservation plan annual report is for a utility to internally collect and track key water use and water loss data as well as measure and evaluate their conservation program and activities. The water conservation plan annual report shall detail progress toward implementing each of the minimum requirements in the water conservation plan. As the report form is completed, an entity should review their water conservation plan to see if they are making progress towards meeting stated goals.

WATER LOSS AUDIT

Texas Water Code: 16.0121
Texas Administrative Code: 31 Texas Administrative Code Chapter 358, Subchapter B, Rule 358.6

Who is required to submit: All retail public utilities providing potable water are required to submit a water loss audit once every five years.

Report goes to: The water loss audit should be submitted to the Board.

When to submit: Water loss audits should be submitted once every five years by May 1. The next due date is May 1, 2016. **Note: Any public utility that receives financial assistance from the Board in an amount greater than $500,000 is required to submit a water loss audit annually by May 1**. Any retail public utility with greater than 3300 connections providing potable water is required to submit a water loss audit annually.

Purpose and Function: The purpose of a water loss audit is to enable an entity to identify significant losses in their system. This allows the entity to determine long-term infrastructure needs and save money by establishing an efficient repair and maintenance program. Water loss audits conserve the state's water resources by reducing water losses from the systems of drinking water utilities.

For more information regarding the Water Conservation Plan, the Water Conservation Annual Report, and the Water Loss Audit, please contact the Board's Water Conservation Division at 512-463-7988 or wcpteam@twdb.texas.gov.

Texas Living Waters Project

www.texaswaterconservationscorecard.org
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