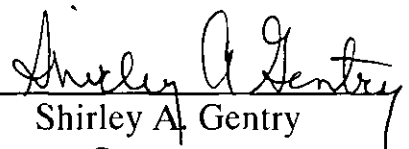


RESOLUTION NO. 20090924-007

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF AUSTIN:

Council repeals Resolution No. 20050428-011 and adopts a new plan entitled the City of Austin 2009 Utility Profile and Five Year Water Conservation Plan as shown in Exhibit A. The plan is a requirement of the Texas Commission on Environmental Quality.

ADOPTED: September 24, 2009 **ATTEST:**


Shirley A. Gentry
Secretary

Texas Commission on Environmental Quality



**UTILITY PROFILE & WATER CONSERVATION PLAN
REQUIREMENTS
FOR MUNICIPAL WATER USE BY PUBLIC WATER
SUPPLIERS**

This form is provided to assist entities in water conservation plan development for municipal water use by a retail public water supplier. Information from this form should be included within a water conservation plan for municipal use. If you need assistance in completing this form or in developing your plan, please contact the conservation staff of the Resource Protection Team in the Water Supply Division at (512) 239-4691.

Name of Entity: City of Austin Water Utility

Address & Zip: 625 East 10th Street, Austin Texas, 78701

Telephone Number: (512) 974-2199 **Fax:** (512) 974-6548

Form Completed By: Drema Gross

Title: Environmental Conservation Program Manager

Date: _____

Signature _____

Name and Phone Number of Person/Department responsible for implementing a water conservation program: Sonja Stefaniw, Manager, City of Austin Water Utility, Water Conservation Division (512) 974-2199

UTILITY PROFILE

I. POPULATION AND CUSTOMER DATA

A. Population and Service Area Data

1. Attach a copy of your service-area map and, if applicable, a copy of your Certificate of Convenience and Necessity (CCN).

The service-area map is attached in Appendix A and a copy of the CCN is attached in Appendix B.

2. Combined Water and Wastewater service area size (square miles):
310 Square Miles
3. Current population of service area: 853,844
4. Current population served:
 - a. water 853,844
 - b. wastewater 802,613
5. Population served by water utility for the previous five years:
6. Projected population for service area in the following decades:

Year	Population	Year	Population
<u>FY 03-04</u>	<u>786,594</u>	<u>2010</u>	<u>878,670</u>
<u>FY 04-05</u>	<u>799,966</u>	<u>2020</u>	<u>1,050,991</u>
<u>FY 05-06</u>	<u>815,085</u>	<u>2030</u>	<u>1,263,254</u>
<u>FY 06-07</u>	<u>834,647</u>	<u>2040</u>	<u>1,476,783</u>
<u>FY 07-08</u>	<u>853,844</u>	<u>2050</u>	<u>1,726,405</u>

7. List source/method for the calculation of current and projected population:

The AWU service area population is based on the City Demographer's estimate of the City's population and surrounding counties' populations. Every ten years AWU obtains Census data and refines population projections. In addition, AWU studies area growth using GIS to roughly estimate the population of surrounding areas. AWU validates projected population once the projection year has passed.

B. Active Connections

1. Current number of active connections. Check whether multi-family service is counted as Residential X or Commercial .

Treated water users:	Metered	Not-metered	Total
Residential	<u>191,589</u>	<u>0</u>	<u>191,589</u>
Commercial	<u>15,682</u>	<u>0</u>	<u>15,682</u>
Industrial	<u>26</u>	<u>0</u>	<u>26</u>

Note: Does not include wholesale connections.

2. List the net number of new connections per year for most recent three years:

Year	<u>2006</u>	<u>2007</u>	<u>2008</u>
Residential	<u>4,099</u>	<u>1,863</u>	<u>7,290</u>
Commercial	<u>339</u>	<u>205</u>	<u>265</u>
Industrial	<u>9</u>	<u>-2</u>	<u>-1</u>

Note: Does not include wholesale connections.

C. High Volume Customers

List annual water use for the five highest volume customers
(indicate if treated or raw water delivery)

	Customer	Use (1,000gal./yr.)	Treated/Raw Water
(1)	<u>Samsung Austin</u>	<u>1,943,845</u>	<u>Treated</u>
(2)	<u>Freescale</u>	<u>1,189,271</u>	<u>Treated</u>
(3)	<u>University of Texas</u>	<u>1,162,500</u>	<u>Treated</u>
(4)	<u>Spanion</u>	<u>995,085</u>	<u>Treated</u>
(5)	<u>State of Texas</u>	<u>711,162</u>	<u>Treated</u>

II. WATER USE DATA FOR SERVICE AREA

A. Water Accounting Data

1. Amount of water use for previous five years (in 1,000 gal.):
Please indicate: Treated Water

Year	<u>FY 03-04</u>	<u>FY 04-05</u>	<u>FY 05-06</u>	<u>FY 06-07</u>	<u>FY 07-08</u>
October	<u>4,377,090</u>	<u>4,145,261</u>	<u>5,044,900</u>	<u>4,291,783</u>	<u>4,580,057</u>
November	<u>3,770,339</u>	<u>3,425,369</u>	<u>4,520,868</u>	<u>4,068,552</u>	<u>4,027,172</u>
December	<u>3,839,863</u>	<u>3,459,156</u>	<u>4,174,038</u>	<u>3,511,736</u>	<u>3,565,762</u>
January	<u>3,582,452</u>	<u>3,408,558</u>	<u>4,158,680</u>	<u>3,385,841</u>	<u>3,535,509</u>
February	<u>3,175,841</u>	<u>2,989,760</u>	<u>3,201,782</u>	<u>3,163,019</u>	<u>3,421,797</u>
March	<u>3,450,391</u>	<u>3,425,783</u>	<u>3,945,189</u>	<u>3,742,767</u>	<u>3,652,460</u>
April	<u>3,483,289</u>	<u>3,815,680</u>	<u>4,350,867</u>	<u>3,605,829</u>	<u>3,835,339</u>
May	<u>3,969,146</u>	<u>4,338,513</u>	<u>4,724,760</u>	<u>3,753,871</u>	<u>4,289,538</u>
June	<u>3,951,836</u>	<u>5,219,920</u>	<u>5,106,119</u>	<u>3,768,874</u>	<u>5,640,758</u>
July	<u>4,756,321</u>	<u>5,658,271</u>	<u>5,611,205</u>	<u>3,641,717</u>	<u>5,629,338</u>
August	<u>5,241,667</u>	<u>5,561,588</u>	<u>6,760,972</u>	<u>4,599,587</u>	<u>5,462,338</u>
September	<u>4,870,728</u>	<u>5,926,066</u>	<u>5,003,212</u>	<u>4,334,081</u>	<u>5,418,360</u>
Total	<u>48,468,963</u>	<u>51,373,925</u>	<u>56,602,592</u>	<u>45,867,657</u>	<u>53,058,948</u>

Indicate how the above figures were determined (e.g., from a master meter located at the point of a diversion from the source or located at a point where raw water enters the treatment plant, or from water sales).

Data is based on a sum of the recorded metered pumpage of treated water from the water treatment plants into the treated water distribution system.

2. Amount of water (in 1,000 gallons) delivered (sold) as recorded by the following account types for the past five years.

Year	Residential	Commercial	Industrial	Wholesale	Other	Total Sold
<u>FY 03-04</u>	<u>23,376,688</u>	<u>11,637,468</u>	<u>3,014,786</u>	<u>3,263,455</u>	<u>123,191</u>	<u>41,415,588</u>
<u>FY 04-05</u>	<u>24,976,718</u>	<u>12,273,977</u>	<u>2,846,968</u>	<u>3,369,730</u>	<u>160,288</u>	<u>43,627,681</u>
<u>FY 05-06</u>	<u>28,491,438</u>	<u>13,953,609</u>	<u>2,707,015</u>	<u>4,122,806</u>	<u>239,671</u>	<u>49,274,868</u>
<u>FY 06-07</u>	<u>23,392,280</u>	<u>11,658,956</u>	<u>2,952,465</u>	<u>3,177,452</u>	<u>178,794</u>	<u>41,359,947</u>
<u>FY 07-08</u>	<u>27,185,710</u>	<u>12,660,145</u>	<u>3,101,301</u>	<u>3,771,863</u>	<u>255,324</u>	<u>46,974,343</u>

3. List previous five years records for water loss (the difference between water

diverted (or treated) and water delivered (or sold))

Year	Amount (gal.)	%
<u>FY 2005</u>	<u>6,775,948,382</u>	<u>14.2 CSIV</u>
<u>FY 2007</u>	<u>5,328,258,952</u>	<u>11.38 CSIV</u>
<u>FY 2008</u>	<u>6,617,858,663</u>	<u>12.22 CSIV</u>

Austin Water Utility conducted a water loss review and estimate for FY05 as required by Texas Water Development Board. AWU has since completed two subsequent reports, for FY07 and FY08. These water loss estimates follow current “bottom-up” methodology for a detailed and accurate picture of water loss. AWU has provided three years of water loss data for this report, because no detailed analyses were performed in FY04 or FY06. AWU is now conducting annual water loss evaluations, and will be able to report five full years of detailed water loss estimates for the next required utility profile and water conservation plan submission.

4. Municipal water use for previous five years:

Year	Service Population	Total Water Diverted or Pumped for Treatment (1,000 gal.)
<u>FY 03-04</u>	<u>786,594</u>	<u>48,468,963</u>
<u>FY 04-05</u>	<u>799,594</u>	<u>51,373,925</u>
<u>FY 05-06</u>	<u>815,085</u>	<u>56,602,592</u>
<u>FY 06-07</u>	<u>834,647</u>	<u>45,867,657</u>
<u>FY 07-08</u>	<u>853,844</u>	<u>53,058,948</u>

B. Projected Water Demands

Projected Average Day Savings from Water Conservation*

Year	Projected Population		Projected Pumpage without additional Conservation (MGD)		Projected Savings	Projected Pumpage with Conservation and Reuse (MGD)		Projected Gallons Per Capita Per Day (GPCD) with Conservation and Reuse (MGD)	
	Total (Retail + Wholesale)	Retail	Total	Retail Non-Industrial	Conservation and Reuse (MGD)	Total	Retail Non-Industrial	Total	Retail Non-Industrial
2009	862,342	818.34	156.84	136.5	9.87	146.97	126.66	170.43	154.78
2014	943,920	899,920	171.11	149	21.99	147.14	126.96	156	141.08
2019	1,032,337	988,337	186.57	162.4	29.73	154.86	132.68	149.95	134.24

* Note- Retail, Non-Industrial Projections do not include wholesale consumption or consumption by large industrial customers. Retail, Non-Industrial GPCD is calculated based on retail population; total pumpage includes population in wholesale districts.

Of the projected conservation and reuse savings, 3.68 MGD of the projected savings in 2009 is attributed to the expansion of AWU's reclaimed system through Capital Improvement Projects. Additional planned reclaimed expansions are expected to contribute 20.01 MGD of savings in 2014 and 27.75 in 2019. Reclaimed water projects specifically authorized through the 2007 Water Conservation Task Force recommendations are under construction, with projected savings of 1.98 MGD in 2014 and 2019.

III. WATER SUPPLY SYSTEM DATA

A. Water Supply Sources

List all current water supply sources and the amounts authorized with each:

Source

Surface Water: Colorado River – combination of water rights and firm water and firm water back-up contract with the Lower Colorado River Authority (LCRA).

Amount Authorized

325,000* AF/Yr

* Note: The current authorized supply is 325,000 AF/Yr based on 1999 water supply contract

with LCRA. In 2007, Austin entered into an agreement with LCRA for an additional 250,000 AF/Yr (total of 575,000 AF/Yr) to be planned, likely incrementally, for future use.

B. Treatment and Distribution System

1. Design daily capacity of system: 285 MGD
2. Storage Capacity: 167 MGD
3. If surface water, do you recycle filter backwash to the head of the plant?
Yes X No _____. If yes, approximately 1.85 MGD.
4. Please attach a description of the water system. Include the number of treatment plants, wells, and storage tanks. If possible, include a sketch of the system layout.
 - Two water treatment plants (a third WTP – Green WTP was decommissioned in September 2008)
 - Approximately 3,600 miles of water mains
 - Nine Major Pressure Zone
 - 35 Water Pumping Stations
 - 34 Water Storage Tanks

*See appendix C for sketch of system layout.

IV. WASTEWATER SYSTEM DATA

A. Wastewater System Data

1. Design capacity of wastewater treatment plant(s): 135 MGD
2. Walnut Creek Wastewater Treatment Plant
Is treated effluent used for irrigation on-site Yes, off-site Yes, plant washdown Yes, or chlorination/dechlorination Yes?
If yes, approximately 67,500,000 gallons per month or 2.25 MGD per day.

South Austin Regional (SAR) Wastewater Treatment Plant

Is treated effluent used for irrigation on-site Yes, off-site Yes, plant washdown Yes, or chlorination/dechlorination Yes?

If yes, approximately 180,000,000 gallons per month or 6 MGD per day.

Note: Hornsby Bend uses an additional 500,000 gallons per day of treated effluent from SAR. Also, Hornsby Bend does on-site irrigation but it is not treated effluent from the plants. This irrigation is from the on-site pond system at Hornsby Bend.

3. Briefly describe the wastewater system(s) of the area serviced by the water utility. Describe how treated wastewater is disposed of. Where applicable, identify treatment plant(s) with the TCEQ name and number, the operator, owner, and, if wastewater is discharged, the receiving stream. If possible, attach a sketch or map which locates the plant(s) and discharge points or disposal sites.

The City of Austin has two major wastewater treatment plants that provide wastewater treatment for almost 95% of our customers:

1. Walnut Creek Wastewater Treatment Plant (WWTP)
2. South Austin Regional (SAR) WWTP

Both Walnut Creek and SAR discharge most of their treated effluent to the Colorado River. Some of the treated effluent from these plants is used as reclaimed water for golf course irrigation, cooling tower and other industrial uses.

In addition to the two major plants, The City of Austin Water Utility has twelve small wastewater treatment plants that serve small areas in their vicinity. Together they serve the remaining 5% of our customers. Some of these plants discharge their treated effluent to a tributary of the Colorado River, while others irrigate golf courses and do not discharge to the surface waters.

The City of Austin is the owner of all these plants. AWU operates all the plants, except the Lost Creek Plant, which is operated by the Lost Creek MUD.

Appendix D shows the wastewater treatment plants permits, Appendix E shows a map of large wastewater treatment plants, and Appendix F is a map of small wastewater treatment plants.

B. Wastewater Data for Service Area

1. Percent of water service area served by wastewater system: 77.7%
2. Monthly volume of effluent discharged for previous three years (in 1,000 gallons):

Year	<u>2006</u>	<u>2007</u>	<u>2008</u>
------	-------------	-------------	-------------

January	<u>2,210,278</u>	<u>3,417,231</u>	<u>2,513,730</u>
February	<u>2,051,432</u>	<u>2,665,396</u>	<u>2,368,098</u>
March	<u>2,429,857</u>	<u>3,333,736</u>	<u>2,679,504</u>
April	<u>2,425,960</u>	<u>3,021,780</u>	<u>2,648,279</u>
May	<u>2,714,569</u>	<u>3,234,747</u>	<u>2,672,450</u>
June	<u>2,287,739</u>	<u>3,164,402</u>	<u>2,390,129</u>
July	<u>2,281,349</u>	<u>3,616,521</u>	<u>2,437,453</u>
August	<u>2,211,858</u>	<u>3,109,315</u>	<u>2,556,330</u>
September	<u>2,254,000</u>	<u>2,935,155</u>	<u>2,320,753</u>
October	<u>2,396,487</u>	<u>2,633,374</u>	<u>2,309,357</u>
November	<u>2,213,656</u>	<u>2,520,722</u>	<u>2,303,042</u>
December	<u>2,514,729</u>	<u>2,524,500</u>	<u>2,322,871</u>
Total	<u>27,992,000</u>	<u>36,177,000</u>	<u>29,522,000</u>

*Note – Above figures reflect effluent discharged, which is a smaller amount than effluent treated. Other treated effluent is used in plants or metered and sold as reclaimed water.

<p style="text-align: center;">WATER CONSERVATION PLAN FOR MUNICIPAL WATER USE BY AUSTIN WATER UTILITY</p>

Introduction

This utility profile and water conservation plan for municipal water use has been prepared by the Austin Water Utility to comply with Texas Administrative Code §288.1:7 regarding the development of water conservation plans. The objective of the utility profile is to convey to the Texas Commission on Environmental Quality (TCEQ) Austin Water Utility water and wastewater system information. The water conservation plan provides an overview of current water conservation initiatives and indicates areas for growth within the framework recommended by form TCEQ-10218.

In addition to this water conservation plan, the Austin Water Utility's Water Conservation Division references the Water Conservation Strategies Policy Document developed by the Water Conservation Task Force for the near-range planning of water conservation activities. A copy of the document is attached as Appendix G and a summary of the status of implementing each of the recommended solutions is attached as Appendix H.

1. Specific, Quantified 5 & 10-Year Targets

Projected Average Day Savings from Water Conservation *

Year	Projected Population		Projected Pumpage without additional Conservation (MGD)		Projected Savings	Projected Pumpage with Conservation and Reuse (MGD)		Projected Gallons Per Capita Per Day (GPCD) with Conservation and Reuse (MGD)	
	Total (Retail + Wholesale)	Retail	Total	Retail Non-Industrial	Conservation and Reuse (MGD)	Total	Retail Non-Industrial	Total	Retail Non-Industrial
2009	862,342	818.34	156.84	136.5	9.87	146.97	126.66	170.43	154.78
2014	943,920	899,920	171.11	149	21.99	147.14	126.96	156	141.08
2019	1,032,337	988,337	186.57	162.4	29.73	154.86	132.68	149.95	134.24

* Note- Retail, Non-Industrial Projections do not include wholesale consumption or consumption by large industrial customers. Retail, Non-Industrial GPCD is calculated based on retail population; total pumpage includes population in wholesale districts.

Of the projected conservation and reuse savings, 3.68 MGD of the projected savings in 2009 is attributed to the expansion of AWU's reclaimed system through Capital Improvement Projects. Additional planned reclaimed expansions are expected to contribute 20.01 MGD of savings in 2014 and 27.75 in 2019. Reclaimed water projects specifically authorized through the 2007 Water Conservation Task Force recommendations are under construction, with projected savings of 1.98 MGD in 2014 and 2019.

Water Loss Goals

Austin Water Utility is undertaking a comprehensive effort to reduce unaccounted-for water, and to improve the quality of data in water loss estimates. It is expected that water loss percentages will fluctuate annually with weather and demand conditions, and that some fluctuation will occur as a result of improved data collection. Austin Water Utility intends to reduce its percentage of lost water as follows:

<u>Year</u>	<u>% Total Loss (Real and Apparent)</u>
FY 2009	not more than 12.0%
FY 2014	not more than 11.5%
FY 2019	not more than 11.0%

2. Metering Devices

The meters that the Austin Water Utility installs are tested to measure the flow within a ± 5 percent accuracy range. Each Austin Water Utility meter of 1½ inch or larger is tested before installation, and 10 percent of the smaller meters are tested. Three inch or larger meters are tested routinely through a contract with a private firm. Small meters are replaced when a problem is suspected as replacement is more cost effective than repair for 1" and smaller meters.

3. Universal Metering

The Austin Water Utility universally meters all customers including municipal uses. Wholesale customers are metered at one or more master meter points, which are routinely tested as part of their contract with the City.

4. Unaccounted-For Water Use

According to an Audit Report on Water Loss released by the Office of the City Auditor, the Austin Water Utility has "taken a utility-wide approach to measure and manage water loss, with some positive results" and that the "City's water loss estimates for FY 07 were well within industry standards." In addition, the Utility has a Water Accountability Group which is charged with addressing the challenge of measuring water loss in the City.

5. Continuing Public Education & Information

The Austin Water Utility utilizes public education and community outreach as a means of encouraging community participation in the variety of programs water conservation has to offer, such as free irrigation audits, irrigation system upgrade rebates, toilet replacement rebates, free toilets, and rainwater harvesting rebates. Specific outreach opportunities include work with the local school district, advertising, newsletters, workshops, seminars, webpage, peak day management campaign, community events and participating in a regional Water IQ campaign.

Outreach to the Austin Independent School District (AISD)

The City of Austin and AISD have developed a water wise educational curriculum program. Originally designed for 5th grade students, the program was expanded to include 6th grade students beginning in 2003. The 5th grade Water in Our World curriculum includes information about water conservation, water source protection, and water treatment. Hands-on exercises and experiments allow the students to install water-conserving devices (such as water efficient showerheads, etc.) in their own homes and measure the conservation results. This teaches the students the value and impact of water-efficient devices. The 6th grade Down the Drain program introduces students to wastewater collection and treatment.

Water Conservation staff is also partnering with other City of Austin environmental programs to provide support to AISD. Currently, City of Austin staff is involved with AISD's Environmental Stewardship Envisioning Committee. This committee aims to coordinate the environmental stewardship efforts of AISD at all levels: curriculum, facilities, community, and school campuses.

Advertisements / Program Marketing

Advertising is used regularly to provide citizens information about water conservation practices and programs. Advertisements are regularly placed in local and neighborhood newspapers, on radio and television stations, on-line, area billboards, bus wraps, and area pump-toppers. The AWU participates with LCRA via a Memo of Understanding to utilize Enviromedia for shared media buys and to promote regional messaging.

Electronic Newsletters

In March 2004, the Water Conservation Division of Austin Water Utility began the *WaterWise Newsletter* to communicate more regularly with Utility customers and increase participation in water conservation initiatives. The newsletter is distributed electronically to a database of approximately 30,000 customers. Customer email addresses are collected from program applications and information requests. Visitors to the Austin Water Conservation website are encouraged to self-subscribe by providing an email address.

Water Conservation has increased presence in other newsletters as well. Participation has included both internal newsletters published within Austin Water Utility and the City of Austin and external publications such as homeowner's association newsletters.

Workshops, Presentations and Outreach Programs

Throughout the year, presentations on water conservation techniques and available City programs are given to a variety of interest groups. Water Conservation will participate in approximately 60 to 80 events and programs each year for area multi-family customers, commercial customers, homeowners associations, garden clubs, professional organizations, and other community groups. In 2009 a Water Conservation Speakers Bureau was developed and area groups may call to schedule a speaker.

WaterWise Irrigation Professionals Seminar

The City offers a one day and several evening seminars to licensed professional irrigators in the Austin area. The seminars provide continuing education credits toward license renewal along with information on water-efficient irrigation systems, City water conservation programs and regulations, and the mandatory watering schedule and watering hours. Other topics include electrical troubleshooting, irrigation auditing, and turfgrass water requirements.

Web Page

The City of Austin provides a wide range of water conservation information on its website, www.WaterWiseAustin.org. All water conservation programs offered by the City, including the various rebate, educational, incentive and irrigation system audit programs, are described on the web page. For customer convenience, program applications are also available on-line. Tips on how to reduce indoor and outdoor water use are provided for businesses as well as the general public. In order to enhance the amount and quality of information provided to the public, the City's web page also provides links to other web sites providing water conservation information.

Peak Day Management Campaign

In 2007, as part of recommendations from the City's Water Conservation Task Force (Appendix C), the City revised its water use management ordinance to include mandatory watering days for all City water customers. Year round restrictions are in place for commercial customers with residential restrictions in place every summer. The watering schedule is shown in Table 2. Education efforts are increased during the summer months when water use is highest. Messages urge citizens and businesses to comply with the

watering schedule and to avoid watering between 10 a.m. and 7 p.m. when evaporation rates are at their highest. The City produces magnets and stickers with the watering guidelines to assist citizens in following the recommended schedule. The schedule is heavily promoted on television and radio, through bus wraps and in print ads.

Table 2. City of Austin Watering Schedule

Customer Class	Outdoor Water Use Days	Effective
Commercial, Multifamily	Tuesday and/or Friday	Year-Round
Residential Odd-numbered address	Wednesday and/or Saturday	May 1 - September 30
Residential Even-numbered address	Thursday and/or Sunday	May 1 - September 30
Year-round: No watering with automatic irrigation systems between 10 a.m. and 7 p.m.		
May 1 - Sept 30: No watering between 10 a.m. and 7 p.m. except with hand-held hose.		

Water Waste Program

The City of Austin has a Water Waste program to follow up on reports of water waste by customers. Customers are told about the reported problem and offered assistance in repairing or rescheduling their irrigation system. Should they fail to remedy the water waste violation, there is a system in place in which citations are issued and monetary fines may be imposed at the Court's discretion. In August 2008 the Water Conservation Division partnered with the City's 3-1-1 information hotline to take water waste reports 24/7 and provide tracking assistance to callers. This has led to increased participation year round by the general public in reporting water waste.

Water Theft Education Program

In an effort to curb water loss, the Water Conservation Division is partnering with the Consumer Services Division on the Utility and the City's 3-1-1 department to implement a Water Theft Education program. Citizens will be encouraged to report water theft to 3-1-1. Outreach methods include hydrant hang tags, posters, and brochures to bring awareness to the campaign. Training and informational meetings will be held for both City staff and the construction development community. There will also be increased staff presence in the field to detect occurrences of water theft.

Water IQ

Austin Water Conservation is partnering with the LCRA and the City of Cedar Park on the "Water IQ" awareness program developed by the Texas Water Development Board. The program provides regional and localized resources to the public including information on the source of water and water conservation tips and programs. The program educates citizens about the source of their water supply. Outreach media includes community events, billboards, radio and television ads.

6. Non-Promotional Water Rate Structure

Single-Family Residential

The City implemented an increasing block rate structure for single-family residential water billing in 1994, as seen in Table 3.

Table 3: FY 2008-09 Single-family Residential Water Rates

Monthly Consumption	Charge per 1,000 gallons	
	Inside City	Outside City
0 - 2,000 gallons	\$0.98	\$0.98
2,001 - 9,000 gallons	\$2.59	\$2.59
9,001-15,000 gallons	\$4.75	\$4.75
Over 15,000 gallons	\$8.50	\$8.50

Multi-Family, Industrial/Commercial/Institutional (ICI) and Golf Courses

Water rates for Multi-family, ICI and Golf Course customers do not increase with the volume of water used. These non-residential rates account for seasonal differences in demand, setting an off-peak rate for November through June and a higher peak rate for July through October. These rates are illustrated in Table 4.

Table 4: FY 2008-09 Multi-family, Commercial, Industrial, and Golf Course Water Rates

Type of Customer	Charge per 1,000 gallons			
	Off Peak Rate		Peak Rate	
	<i>Inside City</i>	<i>Outside City</i>	<i>Inside City</i>	<i>Outside City</i>
Multi-family	\$3.54	\$3.58	\$3.88	\$3.92
Commercial	\$4.20	\$4.29	\$4.58	\$4.69
Large Volume / Industrial	\$3.93	N/A	\$4.28	N/A
Golf Courses	\$4.20	\$4.29	\$4.58	\$4.69

Wholesale Customers

Each wholesale customer has a separate rate, though the average rate is \$2.90 per 1,000 gallons.

7. Reservoir Systems Operations Plan

The Lower Colorado River Authority (LCRA) owns and operates the key water supply reservoirs in the region, Lakes Travis and Buchanan, which serve as the foundation to Austin's

firm water supply. LCRA operates these reservoirs in accordance with its Water Management Plan. The plan governs operation of lakes Travis and Buchanan and is reviewed periodically to keep pace with growing water demands and improved information. The internet link to the LCRA's *Water Management Plan for the Lower Colorado River Basin (Effective September 20, 1989 Including Amendments Through March 1, 1999)* is:

http://www.lcra.org/library/media/public/docs/1999_WMP.pdf

Note that both Lake Austin and Lady Bird Lake, also on the lower Colorado River, are owned by the City of Austin and are operated as constant level pass-through pools.

8. Enforcement Procedure & Plan Adoption

The Water Conservation Plan is expected to be reviewed by Austin City Council on September 24, 2009. Once reviewed and approved the following statement will be included in the Plan:

Authority to implement this plan is granted by the Austin City Council. Austin City Council approved the Utility Profile and Water Conservation Plan on September 24, 2009.

9. Coordination with the Regional Water Planning Group(s)

The service area of the Austin Water Utility is located within the Region K Planning Group. Austin Water Utility has provided a copy of this utility profile and water conservation plan to the Region K Planning Group.

10. Additional Requirements:

A. Program for Leak Detection, Repair, and Water Loss Accounting

Leak Detection and Repair

The Austin Water Utility performs leak detection and contracts for leak detection services to locate subsurface leaks in the water distribution system. Reported leaks are located using sounding equipment. Once located, the required repair information is entered into the City's Hansen database for tracking through the repair phase.

Water Loss Accounting

The Austin Water Utility's Water Loss Audit Report follows the Texas Water Development Board's (TWDB) recommendation that utilities should measure water loss as an important part of their water conservation measures and activities. The audit provides a reliable baseline measurement of water loss within the Austin Water Utility distribution system for FY07. The baseline will be used to identify and track the success of efforts used to minimize water loss. The audit also offers recommendations that will improve the accuracy, quality, and availability of information for Austin Water Utility to use in its planning processes.

Austin Water Utility has made progress in implementing many of the recommendations set forth in the Water Loss Audit document. An "Action Summary" is included in the report with each of the recommendations listed separately. Several recommendations have been implemented and

proposed implementation dates and status have been listed for the remaining items. A copy of the Action Summary is included as Appendix I.

Water Accountability Committee

AWU has created an internal committee that is responsible for improving accountability and implementing annual water loss audits. Water loss audits are required only once every five years by the Texas Water Development Board (TWDB). Total system water loss for AWU, defined as total pumpage minus authorized consumption, was calculated to be 11.38% for FY2007. This figure represents a slight percentage increase from reported FY05 numbers due to an increase in the accuracy of the data collection and the calculation methods used; however, the TWDB cautions against using percentages as a comparative measure between cities due to differences in infrastructure and reporting methods. The Infrastructure Leakage Index, or ILI, is a measure recommended by the American Water Works Association to compare water loss against the best performance that can be expected from a particular water system. A system at optimum performance would score a 1, and the AWWA recommends an ILI of under 3 as the optimal target range. For FY07, AWU's performance was calculated as an ILI of 2.619, putting it in the optimal range for a utility its size.

B. Record Management System

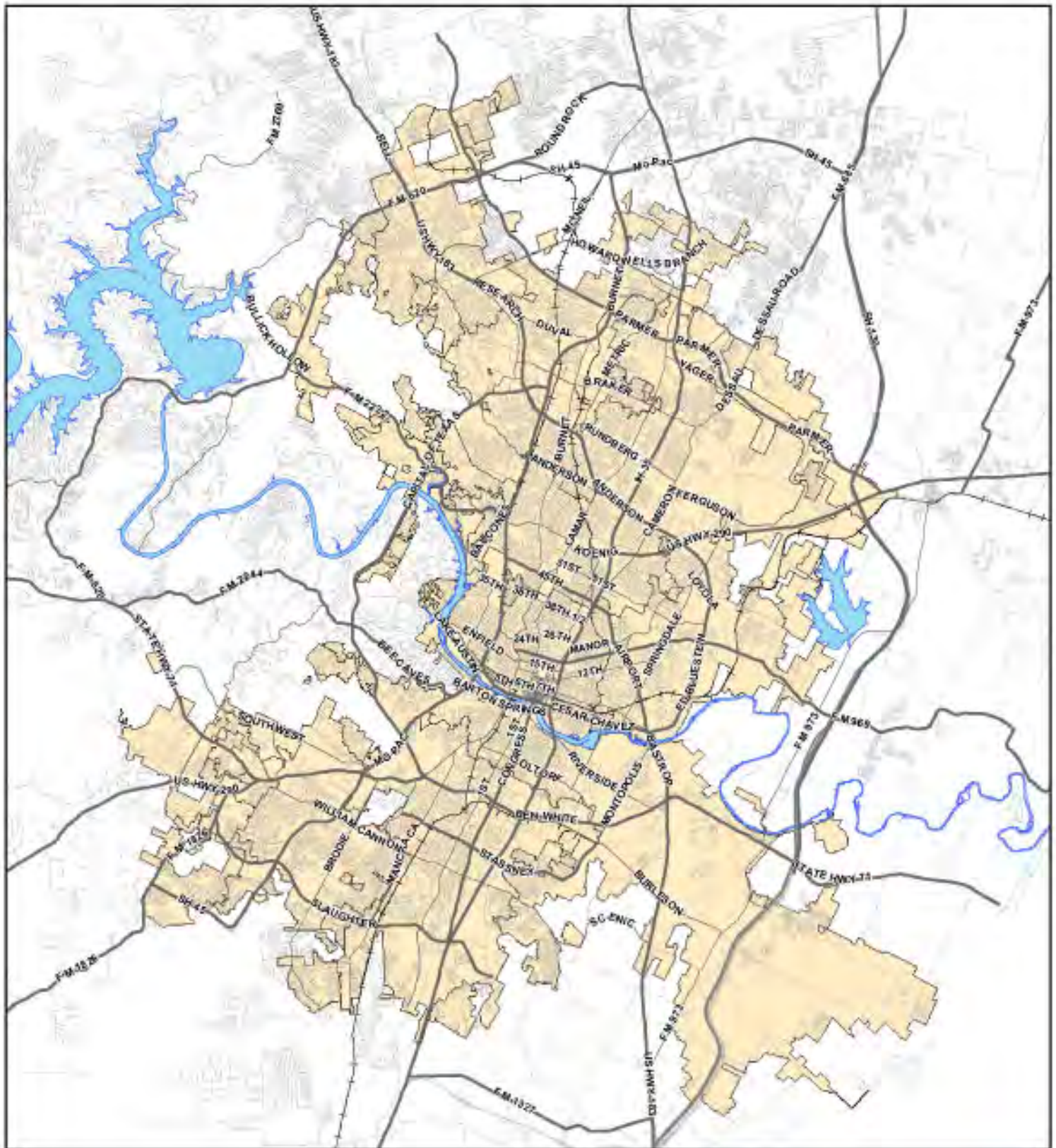
Daily water pumping records are maintained at the treatment facilities. The City maintains records of water distribution and sales through a central billing system which segregates water sales into Single-family Residential, Multi-family, Commercial, Large Volume Industrial, Public and Institutional, and Golf Course user classes which are then charged different rates for water and wastewater services. The Customer Information System (CIS) provides a central location for water billing information.


A separate database, Hansen, serves as the database for record asset management and tracking work orders and service requests. Hansen interfaces with GIS information to allow mapping of utility distribution lines, hydrants and meters, and to geographically track service requests.

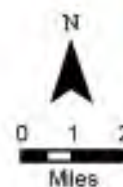
11. Plan Review and Update

A plan review and update will be completed by May 30, 2014.

Appendix A
Service Area Map



 Retail Water Service Area 2009



City of Austin
Austin Water Utility

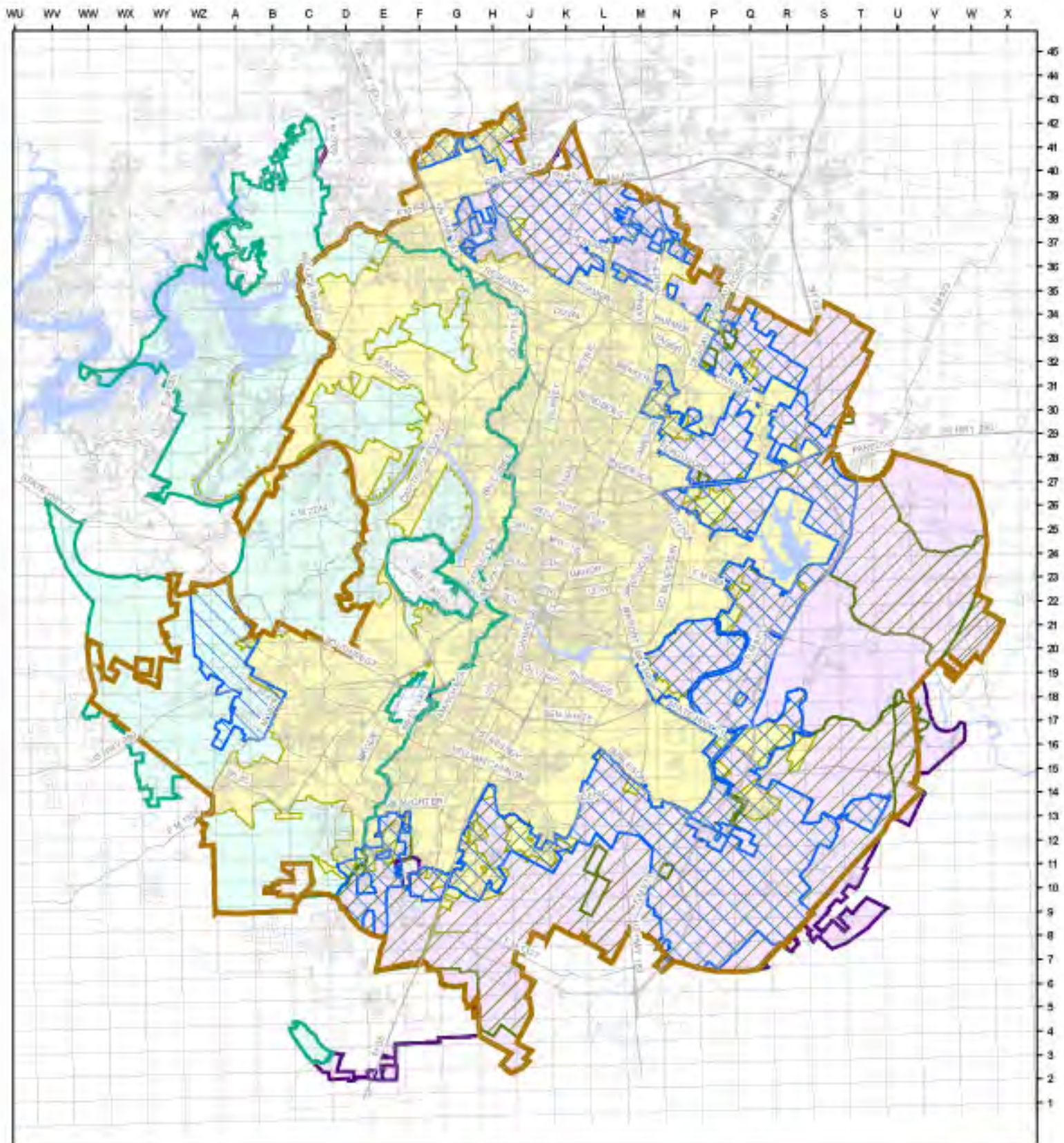









May 2009

**Retail Water
Service Area**

Produced by GIS Services

Appendix B
Certificate of Convenience and Necessity Area Map



-  Austin Water CCN
-  Austin Wastewater CCN
-  Desired Development Zone
-  Drinking Water Protection Zone
-  Impact Fee & Service Area Boundary
-  Full-purpose City Limit
-  Austin Water & Wastewater CCNs

0 1.25 2.5 5
Miles



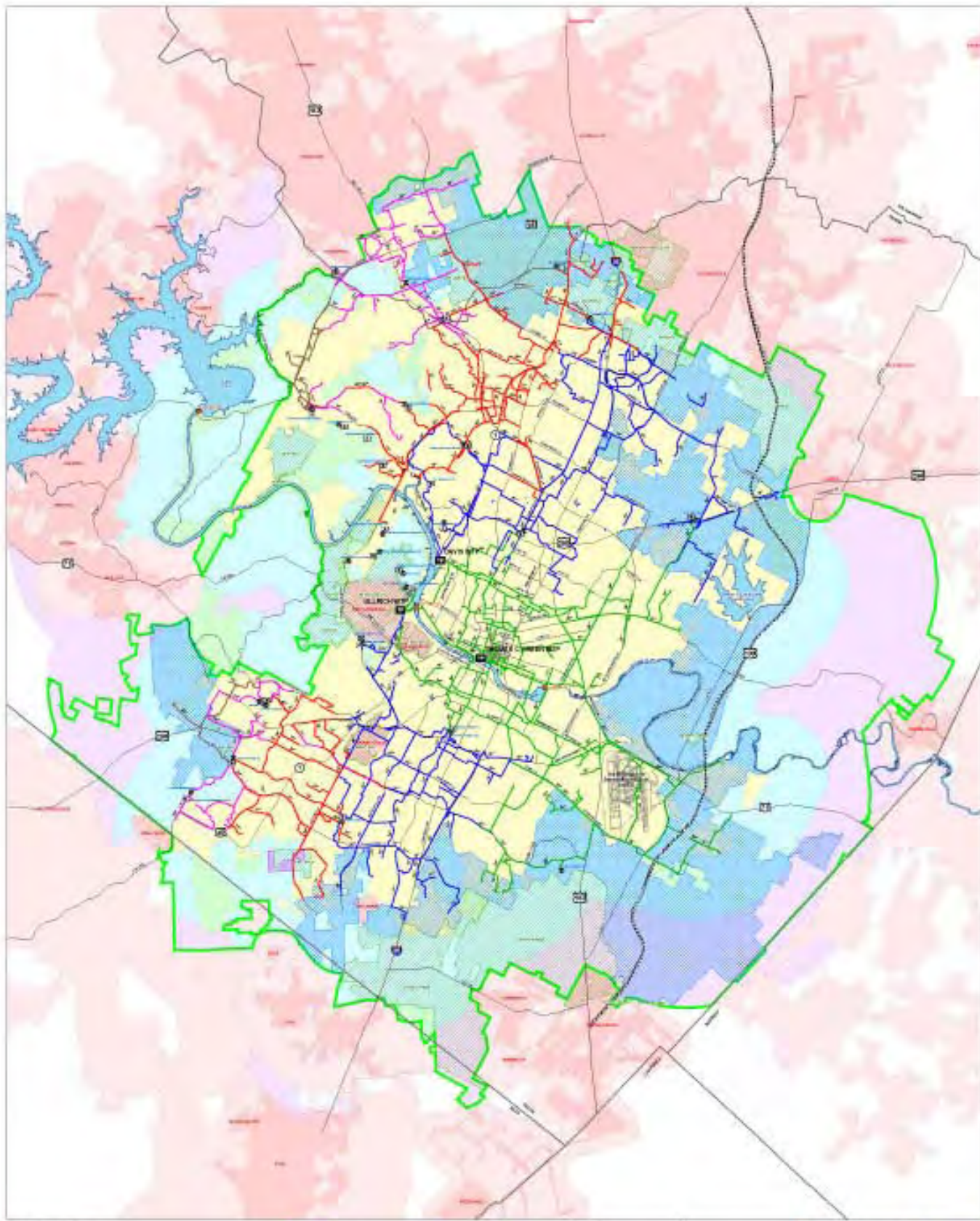
City of Austin
Austin Water Utility



June 2009

City of Austin Water & Wastewater CCN

Appendix C
Sketch of System Layout



Map Key & Data:

—— City of Austin Boundary	—— Interstate Highway (I-35, I-10, I-17)	—— Major Road (Loop 1, Loop 2, Loop 3)	■ Major Water Facility	■ Minor Water Facility	 City Center
—— Lake Travis	—— Lake Austin	—— Colorado River	■ Lake Travis	■ Lake Austin	■ Colorado River
—— Lake Travis	—— Lake Austin	—— Colorado River	■ Lake Travis	■ Lake Austin	■ Colorado River

City of Austin
Austin Water Utility
July 2008

Major Water Facilities Reference Map

Revised by: J. L. Smith

Appendix D
Wastewater Treatment Plant Permits

City of Austin
Austin Water Utility
Wastewater Treatment Plants and Permits

1. Walnut Creek Wastewater Treatment Plant, TPDES Permit No. WQ0010543011, 75 MGD (annual average), 10/15/2 (monthly average) and 5/5/2 (annual average) to the Colorado River
2. South Austin Regional Wastewater Treatment Plant, TPDES Permit No. WQ0010543012, 75 MGD(annual average), 10/15/2 (monthly average) and 5/5/2 (annual average) to the Colorado River
3. Wild Horse Ranch Wastewater Treatment Plant, TPDES Permit No. WQ0010543013, 0.75 MGD, 5/5/2/1 to a tributary of Gilleland Creek
4. Whisper Valley Wastewater Treatment Plant, TPDES permit No. WQ0010543014 (inactive, plant not constructed yet); contemplated discharge of 3 MGD (annual average), 5/5/2/1 to Gilleland Creek
5. Garfield Wastewater Treatment Plant, TPDES Permit No. WQ0014036001 (inactive, plant not constructed yet), contemplated discharge of 0.99 MGD 5/5/2/1 to Dry Creek
6. Harris Branch Wastewater Treatment Plant, TPDES Permit No. WQ0013318001, 0.4 MGD, 5/5/2/1 to Harris Branch
7. Thoroughbred Farms Wastewater Treatment Plant, TPDES Permit No. WQ0014459001, 0.065 MGD, 20/20 to Dry Creek
8. Dessau Wastewater Treatment Plant, TPDES Permit No. WQ0012971001, 0.5 MGD, 10/15/3 to a tributary of Harris Branch
9. Anderson Mill Wastewater Treatment Plant, TPDES Permit No. WQ0011459001, 1.3 MGD, 7/15/3 to Lake Creek
10. Davenport Water Reclamation Plant, TCEQ Permit No. WQ0012363001, no discharge, irrigation of golf course, 0.386 MGD, 10/15
11. Balcones Water Reclamation Plant, TCEQ Permit No. WQ0011363001, no discharge, irrigation of golf course, 0.292 MGD/10
12. Pickfair Water Reclamation Plant, TCEQ Permit No. WQ0012929001, no discharge, irrigation of golf course, 0.181 MGD, 20/20
13. Onion Creek Water Reclamation Plant, TCEQ Permit No. WQ0011467001, no discharge, irrigation of golf course, 0.345 MGD, 20/20
14. Lost Creek Water Reclamation Plant, TCEQ Permit No. WQ0011319001, no discharge, irrigation of golf course, 0.42 MGD, 10/15
15. Hornsby Bend Biosolids Management Plant, TCEQ Permit No. WQ0003823000, central biosolids treatment plant, no discharge

Plants 1 through 9 are permitted to discharge to a stream. Plants 10 through 14 are not permitted to discharge to the waters of the state.

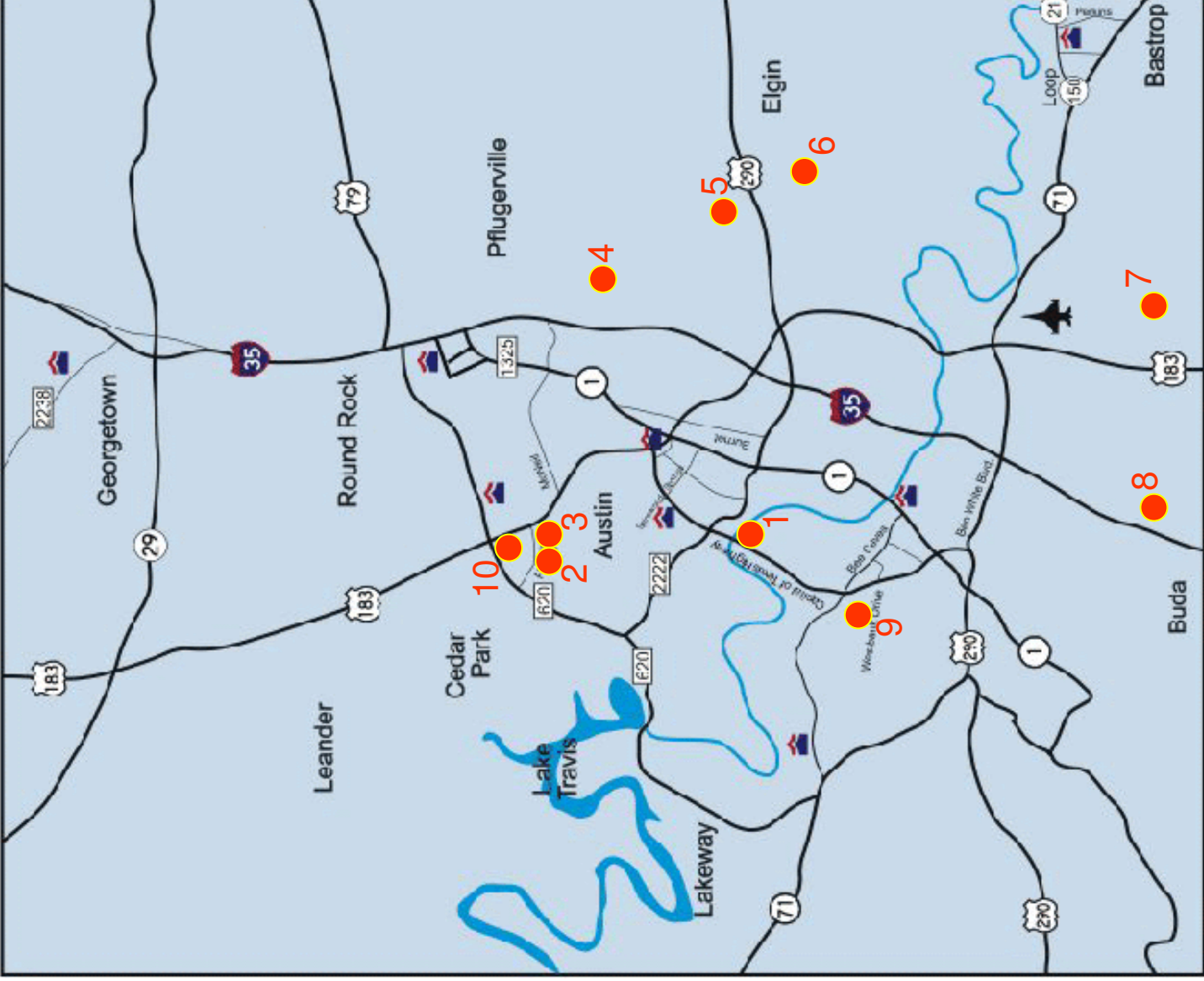
Permitted flows are expressed as monthly averages unless specified otherwise. Effluent quality is expressed as monthly average (unless otherwise specified) and written after the permitted average flow in the following order: 5-day Carbonaceous Biochemical Oxygen Demand (CBOD₅)/Total Suspended Solids (TSS)/Ammonia-Nitrogen (NH₃-N)/Total Phosphorus (TP), when applicable. For Davenport, Balcones, Pickfair, Onion Creek, Lost Creek and Thoroughbred Farms, the effluent limit is on 5-Day Biochemical Oxygen Demand (BOD₅), and not on CBOD₅.

Appendix E
Map of Large Wastewater Treatment Plants

Appendix F
Map of Small Wastewater Treatment Plants

Wastewater Treatment Plants

- # 10. Anderson Mill



Appendix G
Water Conservation Strategies Policy Document
Water Conservation Task Force

**WATER CONSERVATION STRATEGIES POLICY DOCUMENT
WATER CONSERVATION TASK FORCE
AUSTIN, TEXAS**

Prepared by: Water Conservation Division of the Austin Water Utility

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Austin Water Utility Wholesale Customer Information**

BACKGROUND

City Council Resolution Establishing the Water Conservation Task Force

The City Council passed Resolution #20060824-061 on August 24, 2006 that:

- Set a goal of reducing peak day water use by 1% per year for 10 years and,
- Created a Water Conservation Task Force with a goal drafting a policy document consisting of strategies and implementation plans for new water conservation initiatives to meet this goal for City Council consideration within 90 days. The policy document is to be used in drafting necessary amendments to the city code and technical manuals, as well as for budgetary considerations
- Named the members of the Task Force
 - Mayor Will Wynn,
 - Councilmember Leffingwell
 - Councilmember Sheryl Cole
 - Environmental Board Member Dave Anderson
 - Planning Commission Member Chris Riley
 - Resource Management Commission Member Chris Herbert
 - Water and Wastewater Commission Member Michael Warner

On September 28, 2006, Council extended the time for the Task Force to report back to the Council from 90 to 120 days (Resolution #20060928-071).

Water Conservation Task Force Process

At the first Task Force meeting, the general process that the Task Force agreed on was as follows:

- The task force will review relevant research, hold discussions with staff, take input from stakeholder groups and individuals, hold public meetings and work sessions, and ultimately produce the policy document.
- The task force will announce and broadly publicize meeting schedules in order to maximize public education and participation. The task force will provide an opportunity for public testimony at each public meeting.
- In addition to public meetings, the task force would need several work sessions to receive briefings and analysis from AWU staff

The Task Force adopted the following schedule to meet the 120 day timeframe.

Meeting 1: September 29, 2006 – Organizational Meeting and Overview

- Receive staff reports on suggested conservation strategies
- Adopt timetable for meeting task force milestones
- Public testimony

Meeting 2: October 13, 2006 – Indoor Strategies

- Receive staff reports on conservation strategies relating to plumbing fixtures, metering, cooling towers, etc.
- Invited Testimony
- Public Testimony

Meeting 3: October 27, 2006 – Indoor Strategies

- Deliberation and initial adoption of strategies
- Public Testimony

Meeting 4: November 3, 2006– Landscape Irrigation Strategies

- Receive staff reports on conservation strategies relating to irrigation system efficiency, landscape design, watering schedules, rainwater collection, etc.
- Invited Testimony
- Public Testimony

Meeting 5: November 17, 2006 – Landscape Irrigation Strategies

- Deliberation and initial adoption of strategies
- Public Testimony

Meeting 6: December 8, 2006 – City and Utility Strategies

- Receive staff reports on leak repair, water reuse program, rate structures, public education, etc.
- Invited Testimony
- Public Testimony

Meeting 7: December 15, 2006 – City and Utility Strategies

- Deliberation and initial adoption of strategies
- Public Testimony

Final Meeting: Scheduled for January 12, 2007

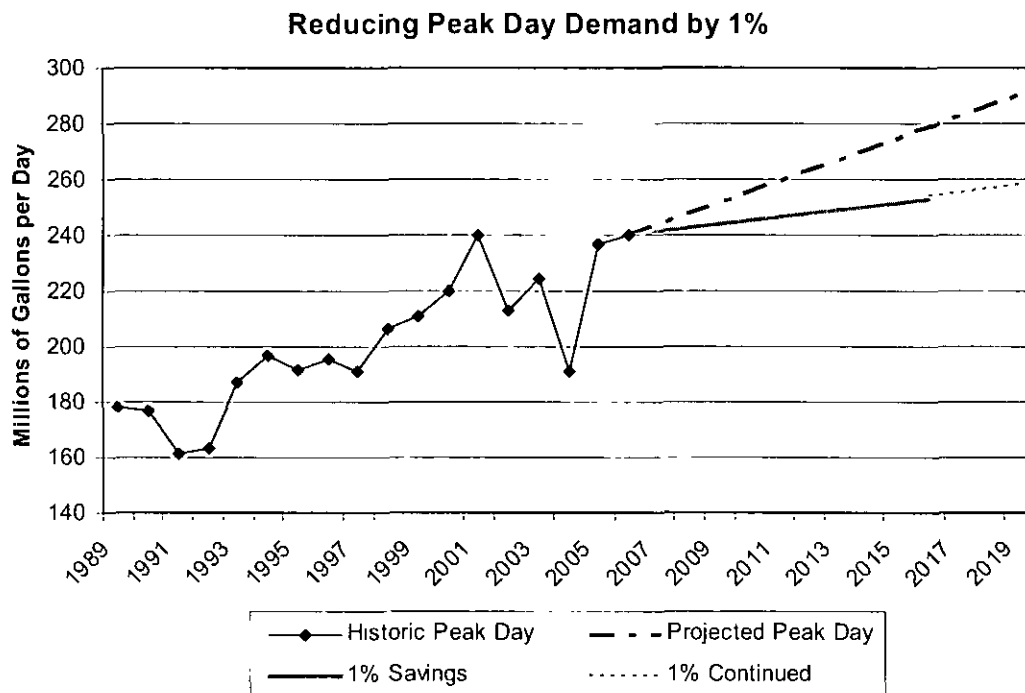
- Public Testimony
- Deliberation and Final Adoption of Strategies

Peak Day Water Use and Future Water Plant Expansions

The need for additional water plant treatment capacity is, in large part, determined by amount of water projected to be demanded by customers during the peak usage days of the year. Since during the peak usage days of the summer approximately 50 percent of water use is for irrigation, there is a substantial opportunity to reduce peak day projected demand in the future, thereby delaying the need for additional water plant capacity.

Other programs such as reducing system water loss, substituting reclaimed water for potable water, and decreasing indoor usage can also have a significant impact on peak day water usage

The graph below shows the projected increase in peak day water use based on current trends and the dotted line indicates the trend if the Task Force goal of reducing peak day water use by 1 percent per year for 10 years is achieved.



Environmental Benefits of Conservation

Water conservation brings a host of environmental benefits as well. When water is conserved, energy needs for treatment and pumping are reduced, which translates into better air quality. Sound landscaping and irrigation practices help water quality by reducing runoff and the need for lawn-care chemicals. Water efficiency keeps more water in the Colorado River and lakes, thus helping to support riparian and estuarine habitats.

Projected Peak Day Savings from the Water Conservation Task Force Recommendations

The estimated peak day savings from the Task Force recommendations is 32.65 million gallons per day (MGD). These savings numbers have been reviewed and confirmed by the City Auditor's Office. While the 32.65 MGD projected savings is higher than the Task Force goal of achieving 25 MGD, there is a degree of uncertainty in achieving all of the projected savings. Therefore, it would be prudent to implement all the programs as recommended by the Task Force in order to assure that the 25 MGD goal of the Task Force is achieved.

Decreasing Peak Day Water Use Extends Austin's Water Supply

Austin is fortunate to have a dependable long-term water supply through water rights from the Colorado River and its 1999 Water Supply Agreement with the Lower Colorado River Authority (LCRA). During the discussions leading up to the 1999 Agreement, the City Council set a goal to make the quantity of water supply being contracted for last through at least the year 2050 through aggressive conservation and reclaimed water program. The programs that the Water Conservation Task Force recommended, if adopted

and implemented with the 17 FTEs in additional staff and other funding requirements shown below, will also have an impact on achieving the extension of Austin's water supply until 2050.

Financial Impacts of Water Conservation Task Force Recommendations

The recommendations as adopted on first reading by the Task Force would require additional funding approximately \$1,889,500 for annual operating expenses including 17 FTEs, \$6,766,000 in rebate funding over ten years; \$250,000 in capital expenditures over ten years; and \$13,500,000 in accelerated Capital Improvement Project (CIP) expenditures.

Reclaimed Water System

Austin's Water Reclamation Initiative is dedicated to.

- Conserving the drinking water supply,
- Protecting the environment,
- Providing inexpensive non-potable water for irrigation, cooling, and manufacturing.

Reclaimed water is created by reusing treated wastewater effluent that is normally discharged to the Colorado River. It is captured prior to discharge, stored in tanks, and then pumped to customers. Reclaimed water helps the citizens of Austin conserve their water supply for use into the future. It is a cost-effective way to improve the City's ability to provide water for non-drinking water purposes and will be available even during times of drought.

The Austin Water Utility has provided reclaimed water for irrigation since 1974. The reclaimed water program conserved approximately 1.1 billion gallons of water in 2006, a fraction of its potential of 8.5 billion gallons. The main reclaimed water system consists of two storage tanks, three pump stations, and 20 miles of transmission main. There are four smaller package plants that serve isolated golf courses customers. Intended uses for the reclaimed water are irrigation, cooling tower makeup, and manufacturing.

Now that the Sand Hill Energy Center and the Mueller Median strips have been brought on-line, the City is engaged in engineering design to provide reclaimed water to the Robert Mueller Airport redevelopment and the University of Texas, the Austin-Bergstrom International Airport, and the Onion Creek Soccer Complex. The City of Austin is also constructing infrastructure improvements to supplement its existing system near the Bergstrom International Airport.

Summary of Proposed Strategies

PS #	Description	Applicability	Average year City cost	10-year savings (MGD)	FTEs	Cost per gallon saved	Page #
Indoor Water Conservation Strategies							
IN-1	Require all plumbing fixtures to perform at current plumbing code volumes.	All customers	\$542,500	2.10	2.0	\$2.77	8
IN-2	Require the use of submeters to bill for water in multi-family properties.	New and some existing multi-family and mixed-use properties.	\$30,000	0.40	0.5	\$0.48	10
IN-3	Make changes to Plumbing Code to prohibit inefficient fixtures.	All customers	\$30,000	0.94	0.5	\$0.32	11
IN-4	Establish efficiency requirements for cooling tower management.	Commercial properties with cooling towers.	\$15,000	0.95	0.25	\$0.16	12
IN-5	Establish water consumption limits for car wash facilities and equipment.	Commercial car wash facilities	\$15,000	0.15	0.25	\$1.00	13
IN-6	Establish efficiency standards for commercial clothes washers.	Commercial laundry facilities	\$15,000	0.43	0.25	\$0.35	14
Outdoor Water Conservation Strategies							
OU-1	Expand Water Use Management Ordinance.	All customers	\$187,500	6.16	3.0	\$0.30	15
OU-2	Require new residential irrigation systems to meet design standards and permitting requirements.	Residential customers	\$245,000	1.32	4.0	\$1.86	16
OU-3	Create additional design requirements for commercial irrigation systems and landscape design.	Commercial and multi-family customers	\$120,000	0.74	2.0	\$1.62	18
OU-4	Establish soil-depth requirements for new residential landscapes.	Volume home builders	\$125,000	0.44	2.0	\$2.84	19

PS #	Description	Applicability	Average year City cost	10-year savings (MGD)	FTEs	Cost per gallon saved	Page #
OU-5	Require homebuilders to offer a WaterWise landscape option.	Volume home builders	\$15,000	0.21	0.25	\$0.71	20
OU-6	Require regular analyses of automatic irrigation systems.	All properties over 1 acre	\$132,000	1.47	2.0	\$0.90	21
OU-7	Expand free irrigation audit program for high-volume water users.	Commercial, multi-family; high-volume residential properties	\$137,500	0.63	0	\$2.18	22
City and Utility Water Conservation Strategies							
CI-1	Ensure funding for leak detection contract	Austin Water Utility	\$100,000	4.8	0	\$0.21	23
CI-2	Assure CIP funding for reclaimed water projects.	Austin Water Utility	\$2,500,000*	5.95	0	\$2.10	24
CI-3	Adjust Utility water rates to encourage conservation	All customers	\$0	5.0	0	\$0	25
CI-4	Require conservation by wholesale customers.	Wholesale customers	\$0	TBD	0	TBD	26
CI-5	Explore alternative water sources	Commercial customers	TBD	TBD	TBD	TBD	27
CI-6	Increase water efficiency in City facilities	City departments	\$0	0.37	0	\$0	28
CI-7	Reduce excessive water use due to high pressure	Residential customers	\$30,000	0.29	0	\$1.07	29
CI-8	Establish program to alert customers to potential leaks during winter months.	Residential customers	\$0	0.31	0	\$0	30
CI-9	Expand public education program.	All customers	\$725,000	N/A	0	N/A	31
CI-10	Create Citizens' Advisory Group on Water Conservation	City of Austin	\$0	N/A	0	N/A	32

*CIP costs of \$2,500,000 a year for five-year period

All costs are estimates in 2007 dollars.

PROPOSED STRATEGIES

INDOOR WATER CONSERVATION

Proposed Code Amendments

IN-1	Require all plumbing fixtures to perform at current plumbing code volumes.
Applies to:	Commercial and Multi-family customers; Single-family residential properties up for sale
Implementation Method:	Revisions to City Code, Chapter 6-4

Despite plumbing code changes addressing new fixtures and incentive programs for retrofits, many inefficient plumbing fixtures still exist in Austin. Water savings from fixture retrofits are very reliable, since they require only hardware replacements, not behavioral changes.

1. All plumbing fixtures, including toilets, showerheads, and faucets, in multi-family and commercial properties must perform at or below current plumbing code volumes by December 31, 2011 or upon sale of the property, whichever comes first. Properties will have to certify that they have retrofitted their fixtures. The retrofit will not apply to a property that has replaced all of its toilets under the City's programs, a property that was built after January 1, 1993, a property that can certify through inspection by a licensed plumber or City inspector that all toilets, showerheads, and faucets on the property meet the plumbing code specifications, a property where the replacement of fixtures would pose a threat to public health, or a property that has applied for and received a variance due to it being an existing structure that has been identified by a local, state, or federal government entity as an historical site and a historically accurate water-conserving plumbing fixture is not available.
2. All plumbing fixtures, including toilets, showerheads, and faucets, in single-family properties must perform at or below current plumbing code volumes at the time of sale. At that time, owners must certify that their properties have fixtures that comply with the current plumbing code. The retrofit will not apply to a property that has replaced all of its toilets under the City's programs, a property that was built after January 1, 1993, a property that before the sale can certify through inspection by a licensed plumber or City inspector that all toilets, showerheads, and faucets on the property meet the plumbing code specifications, a property where the replacement of fixtures would pose a threat to public health, or a property that has applied for and received a variance due to it being an existing structure that has been identified by a local, state, or federal government entity as an historical site and a historically accurate water-conserving plumbing fixture is not available.
 - a. Certificates of Compliance can be applied for at any time, and will be issued after an inspection. Once a property is classified as compliant, it will be entered into a Water Conservation database and is not subject to any further inspections. It is recommended that Certificate be obtained prior to listing properties for sale.
 - b. Upon posting of a completion bond with Water Conservation, responsibility for obtaining a Certificate of Compliance may be transferred to the buyer to accommodate remodeling.

Additional FTEs:	2, to inspect and issue Certificates of Compliance
Additional Cost:	\$120,000 for personnel costs each year
	\$25,000 for the cost of one vehicle
	\$4,200,297 for toilet rebates before effective dates
Contract/Commodity Cost:	\$0

Peak-Day Savings:	2.10 MGD over 10 years
Cost per gallon saved:	\$2.77

IN-2	Require the use of submeters or utility meters to bill for water.
Applies to:	All new and some existing mixed-use and multi-family properties.
Implementation Method:	

According to a 2004 joint study by EPA, multi-family associations and water utilities, customers in multi-family properties reduce water use by 15% when billed directly for the water they use. Tenants who pay for their water use through allocated bills or homeowners' associations do not reduce their water use. While new multi-family properties are required to be plumbed for and to install submeters, they are not required to use submetering to bill tenants for water.

All new multifamily properties, other than condominiums, must bill each tenant for their individual water use through City meters or privately-owned submeters. Tax credit properties built between the implementation date of this policy and January 1, 2008, will have until December 31, 2016 to bill for water using either individual City meters or submeters. Properties with centralized hot water systems and are above a height to be proposed by staff (such as those over 3 stories) are exempt. The Task Force did not recommend requiring that condominiums be required to bill using submeters or utility meters, but did recommend that condominiums do so. Mixed use and multiple use properties must bill each tenant for water using either individual City meters or submeters.

Where multiple duplexes, triplexes or fourplexes are constructed on a single commercial lot, individual City meters must be installed for each unit, as is currently required when there is a single structure on a lot.

Establish a City of Austin equipment specification for submeter installations.

Additional FTEs:	0.5, to monitor program and ensure compliance
Additional Cost:	\$30,000 for personnel costs each year
Contract/Commodity Cost:	\$0
Peak-Day Savings:	0.40 MGD over 10 years
Cost per gallon saved:	\$0.48

IN-3	Prohibit inefficient fixtures.
Applies to:	New commercial construction
Implementation Method:	Revisions to plumbing code

Inefficient equipment is still being sold and installed in Austin establishments, creating a missed opportunity for water savings.

The following will apply to new construction and renovations.

1. Liquid ring surgical/dental vacuum pumps are prohibited.
2. Steam boilers must have conductivity controllers.
3. Urinals must have a maximum flush volume of 0.5 gallons per flush (gpf).
4. Commercial dishwashers must use no more than 0.9 gallons per rack or 180 gallons per hour.
5. Garbage grinders are prohibited in restaurants and cafeterias.

Additional FTEs:	0.5, to ensure compliance
Additional Cost (per year):	\$30,000 for personnel costs each year
Contract/Commodity Cost:	\$0
Peak-Day Savings:	0.94 MGD over 10 years
Cost per gallon saved:	\$0.32

IN-4	Establish efficiency requirements for cooling tower management.
Applies to:	All customers
Implementation Method:	Ordinance

Cooling towers are a contributor to peak-day water use, yet many are poorly operated. Technology can improve operation, or make it easier for operators to run cooling towers efficiently. Additionally, AC condensate is not always being captured and reused although it is suitable for cooling towers or for landscape irrigation.

1. Cooling towers permitted after the effective date of this requirement must have:
 - a. makeup and blowdown meters,
 - b. conductivity controllers,
 - c. overflow alarms,
 - d. drift eliminators, and
 - e. a minimum of 5 cycles of concentration.
2. Existing cooling towers must install items 1a. through 1e. by December 31, 2010.
3. Rebates will continue to be available to encourage the use of reverse osmosis (RO) technology to increase cycles of concentration where RO reject water can be used for irrigation.
4. New large commercial properties must drain condensate from any air conditioning systems to a common drain for beneficial reuse.

Additional FTEs:	0.25, to ensure compliance
Additional Cost:	\$15,000 for personnel costs each year
Contract/Commodity Cost:	\$0
Peak-Day Savings:	0.95 MGD over 10 years
Cost per gallon saved:	\$0.16

IN-5	Establish water consumption limits for car wash facilities and equipment.
Applies to:	Commercial car wash facilities
Implementation Method:	Permitting process

New and existing car washes are required to comply with the following efficiency standards:

1. Conveyor washes are limited to 40 gallons/car or less.
2. In-bay washes are limited to 55 gallons/car or less.
3. Large vehicle (bus or large truck) washes are limited to 75 gallons/vehicle or less.
4. Hand wand nozzles must use 3 gallons per minute or less.

Additional FTEs:	0.25, to ensure compliance
Additional Cost:	\$15,000 for personnel costs each year
Contract/Commodity Cost:	\$0
Peak-Day Savings:	0.15 MGD over 10 years
Cost per gallon saved:	\$1.00

IN-6	Establish efficiency standards for commercial clothes washers.
Applies to:	Commercial laundry facilities
Implementation Method:	Ordinance

While Department of Energy standards exist for residential clothes washers (single load soft-mount machines), there are no state or federal efficiency standards for hard-mount clothes washers or multi-load soft-mount washers.

1. New clothes washers, with the exception of single-load soft mount machines, must have a water factor no greater than 8.0.
2. All coin-operated commercial laundry equipment must have a water factor no greater than 8.0 by 2011.

Additional FTEs:	0.25, to ensure compliance
Additional Cost:	\$15,000 for personnel costs each year
Contract/Commodity Cost:	\$0
Peak-Day Savings:	0.43 MGD over 10 years
Cost per gallon saved:	\$0.35

OUTDOOR WATER CONSERVATION STRATEGIES

OU-1	Expand Water Use Management Ordinance to limit frequency, timing and method of outdoor watering.
Applies to:	All customers
Implementation Method:	Revisions to City Code, Chapter 6-4

Outdoor water use drives peak day use for the City of Austin. Irrigation accounts for more than 50% of Austin's peak-day water use, and for approximately 35% of annual water use. The City's current Water Use Management Ordinance provides for potential fines of \$500 per violation for properties found wasting water (operating sprinkler systems improperly or with broken heads), or for commercial or multi-family properties watering between the hours of 10am and 7pm between May 1st and September 30th. However, the current ordinance does not restrict properties from over watering, nor does it provide sufficient restrictions on daytime watering, when more water is lost to evaporation and wind. Additionally, the ordinance needs greater enforcement of existing penalties.

The following provisions will be added to expand the current Water Use Management Ordinance:

1. Permanent Water Use Restrictions (§ 6-4-63)
 - a. Limit commercial and multifamily properties to 2 designated watering days a week
 - b. Automatic irrigation systems may not be operated between 10 a.m. and 7 p.m.
 - c. Require rain shut-off devices on both new and existing commercial and multifamily automatic irrigation systems that must be operational at all times and set to turn off the system after 1/8 inch of rainfall.
2. Water Conservation Stage One Regulations (§ 6-4-64), effective May 1st to September 30th
 - a. Limit residential properties with automatic irrigation systems to 2 designated watering days a week.
 - b. Outdoor watering, except with a hand-held hose or hand-held bucket, is prohibited between 10am and 7pm.
3. The use of timers on hose-end sprinklers will continue to be promoted.

Additional FTEs:	3 for enforcement
Additional Cost:	\$180,000 for personnel costs each year
	\$75,000 for the cost of 3 vehicles
Contract/Commodity Cost:	\$0
Peak-Day Savings:	6.16 MGD over 10 years
Cost per gallon saved:	\$0.30

OU-2	Require new residential irrigation systems to meet design standards and permitting requirements.
Applies to:	Residential customers
Implementation Method:	Ordinance

Although Texas is one of the only states to license irrigators, there is still a lack of regulation, oversight and enforcement in residential irrigation system design and installation. Inefficient system design can result in water loss of 20 to 50%.

1. Anyone installing a new irrigation system at a residential property must obtain a permit prior to installation. Irrigation systems shall be designed with:
 - a. valves and circuits separated based on water use (hydro-zoned);
 - b. sprinkler heads spaced for head-to-head coverage, or heads spaced according to manufacturer's recommendations and adjusted for prevailing winds;
 - c. a benchmark distribution uniformity percentage of 0.6 or higher,
 - d. no run-off, with no direct over spray onto non-irrigated areas;
 - e. pop-up spray heads and rotors set back at least 6 inches from impervious surfaces;
 - f. no spray irrigation included on areas less than 6 feet in width;
 - g. an approved rain shut-off device set to shut off after 1/8" of rainfall
 - h. a master valve;
 - i. pressure regulation components installed where dynamic pressure exceeds manufacturer's recommended operating range (30-60 psi); and
 - j. a City-approved controller capable of dual or multiple programming, with at least several start times for each irrigation program, a water budgeting feature and programmable to irrigate with a frequency of every one to ten days.
2. Installers must present the owner with, and make available to the City of Austin, a water budget that specifies:
 - a. estimated monthly water use in gallons per application;
 - b. total irrigated area in square feet;
 - c. precipitation rates for each valve circuit,
 - d. monthly irrigation schedule for the plant establishment period (first three months);
 - e. recommended yearly watering schedule, including seasonal adjustments;
 - f. location of emergency irrigation system shut-off valve, and
 - g. the distribution uniformity percentage for the system.
3. Irrigation systems are subject to a final City inspection prior to operation. Staff will continue developing requirements for post-installation documentation.

Additional FTEs:	4, to evaluate designs, issue permits, and perform post installation inspections
Additional Cost:	\$240,000 for personnel costs each year \$50,000 for the cost of 2 vehicles
Contract/Commodity Cost:	\$0

Peak-Day Savings:	1.32 MGD over 10 years
Cost per gallon saved:	\$1.86

OU-3	Create additional design requirements for commercial irrigation systems and landscapes.
Applies to:	Commercial and multi-family customers
Implementation Method:	Revisions to City Code

Although there is a permitting process for automatic irrigation systems on commercial properties, new systems have the potential to waste a significant amount of water.

In addition to existing permitting and design requirements,

1. New commercial and multi-family irrigation systems must be designed so that.
 - a. the system has zero runoff;
 - b. the sprinkler arc does not pass across a paved area;
 - c. the system does not include spray irrigation on areas less than 6 feet wide (such as medians, buffer strips, and parking lot islands);
 - d. pop-up spray heads and rotors are set back at least 6 inches from impervious surfaces;
 - e. the irrigation system has a master valve;
 - f. the irrigation system must have a City approved weather based controller;
 - g. the system meets a minimum distribution uniformity of 0.6.
2. Prior to final inspection, installers must develop an as-built design plan and water budget.

For commercial landscapes, require:

1. a minimum depth of 8" of soil meeting City specifications under all new landscaping; and
2. turfgrasses included in the landscape to meet dormancy requirements.

Additional FTEs:	2, to evaluate designs and issue permits
Additional Cost:	\$120,000 for personnel costs each year
Contract/Commodity Cost:	\$0
Peak-Day Savings:	0.74 MGD over 10 years
Cost per gallon saved:	\$1.62

OU-4	Establish soil-depth requirements for new landscapes.
Applies to:	Home builders
Implementation Method:	Revisions to City Code

Native soil depth in Austin is insufficient to support the types of landscape aesthetics homeowners desire, resulting in excessive irrigation. Grasses which are inappropriate for the Austin climate and rainfall pattern continue to be installed in new residential landscape areas, requiring frequent irrigation in the summer months.

1. New homes must have a minimum depth of 6" of soil meeting City specifications.
 - a. A site with 6 inches of existing soil does not need to add any soil.
2. New turf installations must meet dormancy requirements.

Additional FTEs:	2, to work with home builders and inspect sites
Additional Cost:	\$120,000 for personnel costs each year \$50,000 for the cost of 2 vehicles
Contract/Commodity Cost:	\$0
Peak-Day Savings:	0.44 MGD over 10 years
Cost per gallon saved:	\$2.84

OU-5	Require homebuilders to offer a WaterWise landscape option.
Applies to:	Home builders
Implementation Method:	Legal Dept. is reviewing appropriate implementation method

Prospective homebuyers are not often presented with low-water use landscape options.

1. Homebuilders must offer a WaterWise landscape option in any series of landscape options offered to prospective home buyers. The WaterWise landscape option must:
 - a. be comprised of plants from the City of Austin preferred plant list or other plants with similar drought-tolerant characteristics; and
 - b. have no more than 50% of the landscape area covered in turfgrass.
 - c. turfgrasses must meet dormancy requirements.
2. To support this effort, Water Conservation and Watershed Protection will create a single City of Austin preferred plant list.

Additional FTEs:	0.25, to work with home builders
Additional Cost:	\$15,000 for personnel costs each year
Contract/Commodity Cost:	\$0
Peak-Day Savings:	0.21 MGD over 10 years
Cost per gallon saved:	\$0.71

OU-6	Require regular analysis of automatic irrigation systems.
Applies to:	All non-residential properties over 1 acre
Implementation Method:	Revisions to City Code, Chapter 6-4

Large properties with automatic irrigation systems often over-water, especially when irrigation maintenance contracts do not provide for analysis and repair of system inefficiencies or inform property owners and managers of projected water use amounts.

1. Commercial, multi-family, and municipal properties over 1 acre with automatic irrigation systems must submit an irrigation analysis to the Austin Water Utility once every three years according to a staggered schedule.
2. Commercial or multi-family properties that have irrigation meters and use more than 125 percent of the evapotranspiration rate for irrigation must also have an irrigation analysis once every three years.
3. Analyses must be:
 - a. performed by licensed irrigators and show the irrigator's license number on the report;
 - b. submitted to the Austin Water Utility by May 1st of the year it is due; and
 - c. signed by the property manager or owner.

Additional FTEs:	2, to evaluate and track irrigation
Additional Cost:	\$120,000 for personnel costs each year
	\$12,000 for annual marketing
Contract/Commodity Costs:	\$0
Peak-Day Savings:	1.47 MGD over 10 years
Cost per gallon saved:	\$0.90

OU-7	Require water audits for high-volume residential customers.
Applies to:	Residential customers with regular use over 35,000 gallons per month
Implementation Method:	Revisions to City Code, Chapter 6-4

Many residential customers are unaware about how much water their landscape requires and could benefit from irrigation audits.

1. Residential properties with automatic irrigation systems and that exceed 35,000 gallons per month at least once in each of two consecutive calendar years and are under the same ownership for that period are required to have an irrigation analysis once every three years.
2. Analyses must be:
 - d. performed by licensed irrigators and show the irrigator's license number on the report;
 - e. submitted to the Austin Water Utility by May 1st of the year it is due; and
 - f. signed by the property manager or owner.

Residential properties with automatic irrigation systems and with over 25,000 gallons per month will be eligible for irrigation analyses.

Additional FTEs:	2, to perform audits, as well as evaluate and track irrigation analyses
Additional Cost:	\$120,000 for personnel costs each year \$50,000 for the cost of 2 vehicles \$12,500 for annual marketing
Contract/Commodity Costs:	\$0
Peak-Day Savings:	0.63 MGD over 10 years
Cost per gallon saved:	\$2.18

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CITY AND UTILITY WATER CONSERVATION STRATEGIES

CI-1	Ensure funding for leak detection contract.
Applies to:	Austin Water Utility
Implementation Method:	Council resolution

Water loss could be improved with substantial system benefits. The Austin Water Utility does not currently have a comprehensive leak detection program, so underground leaks that do not surface continue to contribute to overall water loss.

1. Continue annual funding for the Leak Detection Contract approved by Council on October 19, 2006, which includes examining 600 linear miles of pipe, initially focusing on cast iron pipe, to find leaks that have not yet surfaced.
2. Support the Utility's ongoing efforts to repair leaks in a shorter time frame.

Additional FTEs:	0
Additional Cost:	\$0
Contract/Commodity Cost:	\$100,000 contract annually
Peak-Day Savings:	4.8 MGD over 10 years
Cost per gallon saved:	\$0.21

CI-2	Assure CIP funding for reclaimed water projects.
Applies to:	Austin Water Utility
Implementation Method:	Council resolution

To expand the reclaimed water program, a number of large-volume customers need to be converted from potable to reclaimed water, which in turn requires that transmission main extensions are built to bring reclaimed water to these customers.

1. Approve funding for the following projects, which will be started in 2007 and completed by 2011, as part of the Utility's Capital Improvement Plan:
 - a. UT Transmission Main – 13,000 feet of 24" main along Red River (4.0 MGD)
 - b. ABIA Transmission Main – 6,100 feet of 12" main from Hornsby Bend to Bergstrom Airport (0.6 MGD)
 - c. Smith Road Extension – 10,000 feet of 8" and 12" main (0.5 MGD)
 - d. Main to the Roy G. Guerrero Colorado River Park – 16,000 feet of 24" main (1.0 MGD)
 - e. 24" Rehabilitation (0 MGD, but necessary for the main to Guerrero Park and Smith Road Extension)
 - f. 12" Rehabilitation (0.1 MGD)
 - g. 183 Rehabilitation (0 MGD, but necessary for the Smith Road Extension)
2. Require new commercial and municipal customers with access to reclaimed water to use it for irrigation, cooling, and other non-potable uses, with exemptions for health, public safety, and capacity availability.

Additional FTEs:	0
Additional Cost:	\$2,500,000 CIP costs each year for 5 years
Contract/Commodity Cost:	\$0
Peak-Day Savings:	5.95 MGD over 10 years
Cost per gallon saved:	\$2.10

CI-3	Adjust Utility water rates and modify Utility bills to encourage conservation.
Applies to:	All customers
Implementation Method:	Cost of service study and changes to the rate structure

The Utility's current water rate structure does not provide adequate conservation price signals for high use residential customers, irrigation accounts, or commercial and multi-family customers. Additionally, many customers do not know what level of water use is appropriate for their needs.

The Utility will:

1. Establish a residential fifth tier for use above 25,000 gallons per month.
2. Conduct a cost of service study to evaluate strategies to reduce water demand by at least 5 MGD, including:
 - a. the level at which to set the fifth tier for residential customers;
 - b. establishing commercial irrigation rates comparable to highest residential tiers;
 - c. water budgeting rates for commercial customers; and
 - d. conservation rate structures for wholesale customers.

It is anticipated that a fifth tier and changes to irrigation rates would be added immediately under the existing billing system. More complex rate changes would not take effect until a new billing system is in place that can accommodate the changes.

The Utility will:

1. Add graphs of historical and current water use to customer bills.
2. Require the new billing system to have:
 - a. water budget capabilities;
 - b. the ability to include additional conservation information; and
 - c. the ability to notify customers when consumption increases dramatically.

Additional FTEs:	0
Additional Cost:	\$0
Contract/Commodity Cost:	\$0
Peak-Day Savings:	5.0 MGD over 10 years
Cost per gallon saved:	\$0

CI-4	Require conservation by wholesale customers.
Applies to:	Wholesale customers
Implementation Method:	Contracts

Wholesale customers who receive water generated by Austin Water Utility are not participating equally in conservation efforts.

1. Follow-up on contracts that require water conservation measures to be implemented.
2. Request customers whose contracts don't require conservation to implement conservation measures.
3. Require any new, amended, or renewed contracts contain conservation measures comparable to what the City has in place.

Additional FTEs:	0
Additional Cost:	\$0
Contract/Commodity Cost:	\$0
Peak-Day Savings:	TBD
Cost per gallon saved:	\$0

CI-5	Explore alternative water sources.
Applies to:	Commercial customers
Implementation Method:	To Be Determined

Stormwater regulations are not optimized for beneficial reuse of stormwater for irrigation, prohibiting storage longer than 72 hours in some cases. Most stormwater ponds are not required to re-irrigate, and as a result water is discharged directly to waterways or to unmaintained land areas that do not need supplemental irrigation.

1. Water Conservation and Watershed Protection staff will meet to explore other opportunities for stormwater reuse and other alternative water sources and report back to Council.
2. Water Conservation and Watershed Protection staff will explore the adoption of design standards for rainwater harvesting systems.

Additional FTEs:	TBD
Additional Cost:	TBD
Contract/Commodity Cost:	TBD
Peak-Day Savings:	TBD
Cost per gallon saved:	TBD

CI-6	Increase water-efficiency in City facilities.
Applies to:	All City facilities
Implementation Method:	Council Resolution to set the policy. Performance contract to implement retrofits.

Citizens look to the City to lead by example in conserving water, especially in visible areas like parks and City facilities. Additionally, there is a lack of accountability for water use by youth athletic organizations, since the City currently pays for the water used to irrigate athletic fields.

1. It is recommended that the City:
 - a. require water conservation elements as part of the LEED certification program for new City facilities;
 - b. require all athletic fields to pay for water above a pre-determined water budget; and
 - c. follow through with water efficiency recommendations from the current performance contract. These improvements include cooling tower operations, completing the retrofit of plumbing fixtures, and installing weather-based controllers under Parks Department management on athletic fields (39 athletic field properties).

Additional FTEs:	0
Additional Cost:	\$0
Contract/Commodity Cost:	\$0
Peak-Day Savings:	0.37 MGD over 10 years
Cost per gallon saved:	\$0

CI-7	Reduce excessive water use due to high pressure.
Applies to:	Residential properties with high pressure
Implementation Method:	Plumbing code amendments, incentive program

High water pressure leads to higher water use and a faster deterioration of appliances and fixtures. Current plumbing code requires a pressure reduction valve (PRV) if the pressure exceeds 80 pounds per square inch (psi). However, approximately 13% of new residential water meters are installed in areas of Austin where pressure is between 65 and 80 psi. There are approximately 30,000 residential properties with pressure over 80 psi.

1. Change plumbing code to require pressure reduction valves (PRVs) on new residential properties with pressure above 65 psi, and
2. Offer a rebate for installing PRVs at existing properties with pressure over 80 psi.
 - a. The amount of and qualifications for rebates will be determined based on a survey of average installation costs and expected water savings.

Additional FTEs:	0
Additional Cost:	\$30,000 per year for rebates
Contract/Commodity Cost:	\$0
Peak- Day Savings:	0.29 MGD over 10 years
Cost per gallon saved:	\$1.07

CI-8	Establish program to alert customers to potential leaks during winter.
Applies to:	All customers
Implementation Method:	Outreach program through direct mail

High winter water use typically signifies one of two things: A customer is continuing to irrigate during the winter, or there is a water leak on the property. Customers who do not carefully read their utility bills may be unaware of the high usage or the possibility of a leak.

1. Contact customers with high winter water use to alert them to the possibility of a leak.

Additional FTEs:	0
Additional Cost:	\$0
Contract/Commodity Cost:	\$0
Peak-Day Savings:	0.31 MGD over 10 years
Cost per gallon saved:	\$0

CI-9	Create comprehensive public education program to promote incentive programs and alert public to new requirements.
Applies to:	All customers
Implementation Method:	Outreach program

Previous marketing efforts have been individual campaigns designed to increase participation in specific programs. Collateral materials, advertisements, and other marketing documents have varied in look and tone. While these often accomplish participation goals, they do not give the impression of a unified City-wide effort to conserve water.

As a result, Water Conservation will implement a marketing strategy designed to build the Water Conservation "brand." This will include a gradual shift to a uniform look and tone to collateral materials, electronic marketing and other forms of advertising.

The advertising campaign will be used to direct customers to water conservation programs, increase awareness of changes to water use regulations, promote the importance of water conservation, and to assist customers in reducing their water use.

This campaign will supplement existing outreach efforts, including the joint LCRA/COA Water IQ campaign, utility bill inserts, the www.WaterWiseAustin.org website, elementary education programs, program-specific direct mailing, and the WaterWise e-newsletter.

Additional FTEs:	0
Additional Cost:	\$0
Contract/Commodity Cost:	\$725,000
Peak-Day Savings:	N/A drives participation in other programs with associated savings
Cost per gallon saved:	N/A

CI-10	Create Citizens' Advisory Group on Water Conservation
Applies to:	City of Austin
Implementation Method:	Citizen group established by City Council

Staff is directed to write guidelines for a Citizen's Advisory Group that will include large users, experts in the field of water conservation and other advisors as Council deems appropriate.

This group will:

- Meet quarterly to review water conservation efforts and results;
- Recommend changes or adjustments to water conservation policies and strategies; and
- Present reports and findings to the Resource Management Commission on a regular basis.

Additional FTEs:	0
Additional Cost:	\$0
Contract/Commodity Cost:	\$0
Peak-Day Savings:	N/A
Cost per gallon saved:	N/A

Yearly Peak Day Savings in Millions of Gallons per Day

Strategy	Indoor Measures	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
IN-1	Single family retrofit on resale	0.00	0.22	0.35	0.45	0.54	0.61	0.67	0.71	0.73	0.73
IN-1	Multi family toilet retrofit	0.18	0.34	0.48	0.63	0.79	0.79	0.79	0.79	0.79	0.79
IN-1	ICI toilet retrofit	0.11	0.21	0.32	0.44	0.58	0.58	0.58	0.58	0.58	0.58
IN-2	Submetering	0.00	0.00	0.06	0.10	0.15	0.20	0.25	0.30	0.35	0.40
IN-3	Plumbing code changes	0.00	0.00	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
IN-4	Cooling towers	0.00	0.47	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
IN-5	Car washes	0.00	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
IN-6	Commercial clothes washers	0.00	0.00	0.10	0.20	0.30	0.40	0.41	0.41	0.42	0.43
	Subtotal	0.28	1.39	3.35	3.86	4.39	4.62	4.73	4.83	4.90	4.96

Outdoor Measures

OU-1	Enhanced water use management	0.00	2.67	5.43	5.53	5.63	5.73	5.83	5.94	6.05	6.16
OU-2	Residential irrigation standards	0.13	0.25	0.37	0.50	0.63	0.77	0.90	1.04	1.18	1.32
OU-3	Commercial irrigation standards	0.07	0.14	0.21	0.28	0.36	0.43	0.51	0.58	0.66	0.74
OU-4	Residential landscape ordinance	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.36	0.41	0.44
OU-5	WaterWise landscape option	0.00	0.04	0.06	0.08	0.10	0.12	0.15	0.17	0.19	0.21
OU-6	Annual irrigation analysis	0.45	0.91	1.37	1.39	1.40	1.42	1.43	1.44	1.46	1.47
OU-7	Enhanced irrigation audit program	0.21	0.42	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63
	Subtotal	0.86	4.47	8.18	8.56	8.95	9.35	9.75	10.16	10.58	10.97

City & Utility Measures

CI-1	Reducing water loss	0.00	1.20	2.40	3.60	4.80	4.80	4.80	4.80	4.80	4.80
CI-2	Reclaimed water use	0.00	0.00	0.00	2.30	5.10	5.85	5.95	5.95	5.95	5.95
CI-3	Utility water rates	0.00	0.96	1.94	1.94	2.94	5.00	5.00	5.00	5.00	5.00
CI-6	City facility conservation	0.00	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37
CI-7	Pressure reduction program	0.03	0.06	0.09	0.12	0.15	0.18	0.21	0.25	0.28	0.29
CI-8	Winter leak detection	0.00	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31
CI-9	Enhanced public education program	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Subtotal	0.03	2.90	5.11	8.64	13.67	16.51	16.64	16.68	16.71	16.72

Total Peak Day Savings

(in millions of gallons per day)

1.17	8.77	16.65	21.06	27.02	30.48	31.13	31.66	32.19	32.65
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RECOMMENDATIONS, IN ORDER OF SAVINGS	Peak Day Savings (MGD)	FTEs	Average Year City Cost	Total Cost per Gallon
Enhanced Water Use Management	6.16	3	\$187,500	\$0.30
Reclaimed Water Use	5.95	--	\$1,250,000	\$2.10
Utility Water Rates	5	--	\$0	\$0
Reducing Water Loss	4.8	--	\$100,000	\$0.21
Mandatory Toilet Retrofit	2.10	2	\$542,530	\$2.77
Annual Irrigation System Analyses	1.47	2	\$132,000	\$0.90
Residential Irrigation Standards	1.32	4	\$245,000	\$1.86
Cooling Towers	0.95	0.25	\$15,000	\$0.16
Plumbing Code Changes	0.94	0.5	\$30,000	\$0.32
Commercial Irrigation Standards	0.74	2	\$120,000	\$1.62
Enhanced Irrigation Audit Program	0.63	2	\$137,500	\$2.18
Residential Landscape Ordinance	0.44	2	\$125,000	\$2.84
Commercial Clothes Washers	0.43	0.25	\$15,000	\$0.35
Submetering	0.40	0.5	\$30,000	\$0.48
City Facility Conservation	0.37	--	\$0	\$0
Winter Leak Detection Program	0.31	--	\$0	\$0
Pressure Reduction Program	0.29	--	\$30,000	\$1.07
WaterWise Landscape Option	0.21	0.25	\$15,000	\$0.71
Car Washes	0.15	0.25	\$15,000	\$0.99
Enhanced Public Education	n/a	--	\$725,000	--
TOTALS	32.65	19	\$3,714,530*	

APPENDIX A

GLOSSARY

As used in this document, the following terms shall have the following meanings:

As-built design plan: A corrected or redrawn plan showing the actual scaled location of all major components of the system and other information the owner might require.

Automatic irrigation controller: A device that automatically activates and deactivates an irrigation system at times selected by the operator.

Automatic irrigation system: A system with fixed pipes and emitters or heads that apply water to landscape plants or turfgrass automatically or when activated.

Blowdown meter: A meter that tracks the amount of water discharged from a cooling tower system.

Concentration: Re-circulated water that has elevated levels of total dissolved solids as compared to the original make up water.

Conductivity controller: A device used to measure the conductivity of total dissolved solids in the water of a cooling system and control the discharge of water in order to maintain efficiency.

Conveyor car wash: A type of car wash where the car moves on a conveyor belt through the a series of archways that house the cleaning equipment. There are two basic technologies for the wash cycle, friction or frictionless. The friction conveyor uses brushes or other material or curtains made of strips of cloth, while the frictionless conveyor uses high-pressure nozzles for a touchless wash.

Cooling tower: An open water recirculation device that uses fans or natural draft to draw or force air to contact and cool water through the evaporative process.

Distribution uniformity (DU): The measure of the uniformity of applied irrigation water over an area expressed, as a percentage

Dynamic pressure: Working or operating pressure at a point within the irrigation system, expressed in pounds per square inch (psi).

Evapotranspiration rate (ET): Combination of water transpired from vegetation and evaporated from the soil and plant surfaces due to heat, humidity and wind. Commonly referred to as the amount of water needed to keep a plant healthy, expressed in inches.

Head-to-head coverage: Designing a sprinkler system so that water from one sprinkler head should spray far enough to meet the next sprinkler head, resulting in overlap.

Hydrozone: Grouping of plants with similar water (and environmental) requirements for irrigating with one or more common station/zone valves.

Hand wand nozzle: tool used in car washes that dispenses water and cleanser at varying amounts and pressures.

Hard-mount clothes washer: A commercial clothes washer that is bolted to the floor. There are no current federal efficiency standards for these machines.

Impervious surface: Patios, pathways and other areas where firm footing is desired, constructed in such a way that does not allow water to penetrate the around. Examples include but are not limited to concrete slab patios, sidewalks and driveways, asphalt streets or pavers set with mortar.

In-bay car wash: A type of car wash where the driver pulls into the bay and parks the car. The vehicle remains stationary while a machine moves back and forth over the vehicle to clean it, instead of the vehicle moving through the tunnel. Professional in-bay car washes use nylon brushes or other material, soft cloth strips, or touchless automatic washers.

Individual meter: A water meter owned and installed by the City that measures the water consumption inside a dwelling unit or business establishment for the purpose of charging the tenants for their consumption.

Irrigation system analysis: A zone-by-zone analysis of an irrigation system that, at a minimum, includes a review of the following elements:

- (1) design appropriateness for current landscape requirements,
- (2) type of irrigation heads,
- (3) precipitation rates expressed in inches per hour and gallons per hour (Drip)

Irrigation submeters: Metering technology which allows a customer to monitor their irrigation water use through an accessible read-out device outside of the meter box.

Irrigation water budget: Volume of irrigation water, expressed in gallons, required to maintain a functional, healthy landscape with the minimum amount of water. This should also reflect seasonal recommendations for scheduling.

LEEDs certification program: The Leadership in Energy and Environmental Design (LEEDs) rating system is the nationally accepted benchmark for the design, construction, and operation of high performance green building.

Liquid ring vacuum pump: a type of pump that has an impeller with blades attached to a center hub, located in a cylindrical body, but off-set from the center and uses water to form the seal for the vacuum. It is used to create a vacuum for any of a variety of purposes, including but not limited to medical, dental and industrial applications.

Make-up meter: A meter that measures the amount of water entering a cooling tower system.

Master valve: An automatic valve that is installed at the point where the irrigation system connects to the water supply past the backflow preventer. The purpose of the master valve is to shut off the water to the irrigation system when none of the zone valves are operating. One of the main benefits of having a master valve is if a main line develops a leak, or a valve doesn't close, the master valve will act as a back-up to shut off the water.

Precipitation rate: Rate at which a sprinkler system applies irrigation water in inches per hour.

Pressure reduction valve: A valve that reduces the water pressure to a maximum preset level downstream of the valve.

Rain shut-off device: A device designed to stop the flow of water to an automatic irrigation system when sufficient rainfall has been detected.

Reclaimed water: Domestic or municipal wastewater which has been treated to a quality suitable for a beneficial use in accordance with applicable law.

Reverse osmosis technology: A process used to purify concentrated solutions of dissolved minerals and salts by forcing water through a semipermeable membrane under high pressure, leaving the dissolved salts and other solutes behind on the surface of the membrane.

Rotor heads: irrigation heads that rotate slowly sending out one or more streams of water to cover areas larger than spray heads.

Run-off: Portion of irrigation water that leaves the target area, primarily due to slope, the precipitation rate exceeding the absorption rate, or irrigation water hitting an impermeable area.

Soft-mount clothes washer: A clothes washer that is not bolted to the floor.

Spray heads: Two main types of irrigation spray heads, pop-up heads and shrub heads, function by discharging a fine, uniform spray of water into the air. Pop-up spray heads are spring-loaded that retract when water pressure is absent; when installed properly they are flush with the ground. Shrub heads are spray heads that are installed on a stationary, rigid riser, which extends out of the ground high enough so the head can function properly.

Submeter: A water meter privately owned and installed that measures the water consumption inside a dwelling unit or business establishment for the purpose of charging the tenants for their consumption.

Turfgrass: Grasses that are adapted to regular mowing and traffic through management.

Turfgrass Dormancy: The ability of turfgrass to survive without water for a period of sixty consecutive days during the months of May through September. Turfgrass with dormancy capabilities approved for use are set forth in a City of Austin approved low water use plant list. The approved low water use plant list, as may be amended from time to time, shall be available from the City of Austin.

Water budget rates: For irrigation only meters, the rate structure would be an individual allocation rate structure based on landscape watering requirements.

Water-factor: The number of gallons per cycle per cubic foot that a clothes washer uses. The lower the water factor, the more efficient the washer is.

WaterWise landscape: A landscape consisting of a maximum of 50% turfgrass, with the remaining percentage of landscape comprised of low water use plants and/or pervious hardscape. The approved low water use plant list, as may be amended from time to time, shall be available from the City of Austin.

Weather-based irrigation controller: an irrigation controller that utilizes prevailing weather conditions, current and historic evapotranspiration, soil moisture levels, and other relevant factors to adapt water applications to meet the actual needs of plants.

APPENDIX B

COMPARISON TO OTHER MAJOR TEXAS CITIES' WATER CONSERVATION EFFORTS

		Austin Water Utility (AWU)	San Antonio Water System (SAWS)	El Paso Water Utility (EPWU)	Dallas Water Utilities (DWU)
Utility Practices	System Water Audit and Water Loss	For AWU, water loss is estimated annually, and a committee has been formed to enhance water accountability efforts. A leak detection contract was put in place in 2007 to survey 600 miles of the distribution system.	SAWS has an active leak detection program in place. The Capital Improvement Plan has a goal of 2% annual replacement of existing mains so the whole system can be replaced every 50 years.	EPWU has an active leak detection program which includes the use of permalogs to detect leaks.	DWU has a leak detection and repair program in place to help control unaccounted-for water. Reducing water loss and waste is part of the DWU Water Conservation Five-Year Strategic Plan.
	Water Conservation Pricing	AWU implemented an increasing block rate structure for single-family residential water billing in 1994. Seasonal rates take effect in the summer.	SAWS implemented an increasing block rate structure for single-family residential water billing. Seasonal rates take effect in the summer.	EPWU adopted an inverted block water rate structure for all customers. Each block is based on a multiple of the customers' average winter water consumption.	DWU's water ordinance includes conservation water rates for residential and commercial customers. If residential customers use more than 15,000 gallons per month, they have to pay a surcharge on the amount according to the new ordinance.
	Prohibition on Wasting Water	An ordinance prohibits water waste anytime of the year for all City of Austin water customers, and prohibits watering during 10am and 7pm for commercial customers from May through September. Drought restrictions limit water use based on demand and treatment capacity.	An ordinance contains year-round restrictions that do not allow for landscape watering between 10am and 8pm or any type of water waste. Drought restrictions limit water use based on specific levels of the Edwards Aquifer.	An ordinance contains year-round restrictions on certain water uses and prohibits water waste. The ordinance limits watering to 3 times per week and prohibits watering between 10am and 6pm from April through September.	An ordinance prohibits water waste anytime of the year for all Dallas water customers and prohibits watering between the hours of 10am and 6pm for all customers in the summer. Also prohibits watering during a rain event.
Rebates & Incentive Programs	Residential Ultra Low Flow Toilet (ULFT) Replacement Program	AWU offers a free toilet program and a rebate program for homes constructed prior to 1992 to replace up to three large capacity toilets with ULFT or High Efficiency Technology (HET) models.	SAWS offers a free toilet program and a rebate program for homes older than 1992 to replace up to two large capacity toilets with ULFT or HET models. SAWS recruits non-profit groups to help boost participation in the program.	EPWU rebates 75% of the purchase of a ULFT (up to a maximum of \$50) after installation of the new toilet.	DWU has a pilot toilet replacement program targeting low income and senior citizens.
	Showerheads and Faucet Aerator Distribution	AWU offers free low-flow showerheads and faucet aerators to all customers.	SAWS offers free low-flow showerheads and faucet aerators to all customers.	EPWU offers free low-flow showerheads to all customers.	DWU does not have a showerhead or aerator distribution program.

	Residential Clothes Washer Incentive Program	AWU offers a \$100 rebate in conjunction with Austin Energy and Texas Gas Service towards the purchase of efficient clothes washers classified as a Tier 2 or better model by the Consortium for Energy Efficiency.	SAWS offers a \$100 rebate for the purchase of an approved high efficiency washing machine, classified as a Tier 2 or better model by the Consortium for Energy Efficiency.	EPWU offers \$200 on the purchase and installation of a water- and energy-efficient clothes washer.	DWU does not offer a rebate for clothes washers.
	Conservation Programs for Industrial, Commercial, & Institutional (ICI) Accounts	AWU offers toilet replacement options, rebates for high efficiency washing machines, and rebates for the installation of new equipment that conserves water or the redesign of a manufacturing process that conserves water. AWU offers free pre-rinse spray valve replacements and restaurant water audits.	SAWS offers toilet replacement options, restaurant certification, cooling tower audits, and rebates for high efficiency washing machines. Large-scale retrofits allow large water users to apply on a case-by-case basis for a rebate for installation of water conserving equipment. SAWS also has requirements and/or restrictions for cooling towers, ice machines, condensate collection lines, vacuum systems, commercial dining facilities, and vehicle wash facilities.	EPWU offers \$300 for the replacement of evaporative cooling systems with a central refrigerated air conditioning system.	DWU is currently looking to start an ICI grant program, focusing on higher use ICI customers and will include grants as an incentive for installation of both indoor and outdoor water conservation measures. DWU is also looking to implement a toilet replacement for ICI customers in 2008.
	Public Information	Advertisements, bill stuffers, an electronic newsletter, workshops, presentations, tours, radio commercials, videos and other publications throughout the year.	Speaking events, regular newspaper columns and broadcasts, bill stuffers, public information events, workshops, special events, public service announcements, and information packets.	Community education, television and radio commercials, videos, conservation kit giveaways, brochures and literature.	Advertisements, bill stuffers, 5K run sponsorship, billboards, presentations, and exhibits at fairs and events. Multimedia public awareness campaign to educate about irrigation and the new ordinance.
Public Outreach	School Education	AWU runs three education programs that target kindergarten to 4th graders, 5th graders, and 6th graders separately.	SAWS' H2O University provides classroom curriculum and activities for teachers and students in Pre-K through high school.	EPWU has a school outreach program, games available through EPWU's website, an essay contest, and a Drinking Water Week poster contest.	DWU has textbook covers with conservation messages, poster contests, regional science fair, curriculum aids, and classroom presentations.
	Wholesale Agency Assistance Programs	The AWU wholesale customers are encouraged to comply with all conservation measures and are eligible for most AWU conservation programs (including toilet and washer rebates, rainbarrel sales, irrigation audits and rebates).	Although they only account for less than 1% of the total pumpage, the SAWS wholesale customers are encouraged to reduce leaks, stabilize pressure, and comply with conservation measures.	The EPWU wholesale customers are encouraged to comply with all conservation measures.	For DWU, wholesale sales account for nearly 40% of the total pumpage. Contracts between the DWU and wholesale customers require the customer to develop a conservation plan which incorporates loss-reduction measures and demand management practices.

	Water Use Surveys for Single-Family and Multi-Family Customers	AWU offers free multi-family and commercial audits that provide evaluations of all aspects of the customers' water consumption and make recommendations to lower their usage.	SAWS offers free residential water audits where trained auditors check customers' toilets, faucets, and spigots for any leaks. The auditor will also recommend effective ways to conserve and, if needed provide them with low-flow shower heads and aerators.	EPWU does not offer water use surveys.	DWU has the Minor Repair/Fixture Replacement Program, which targets low-income households to help reduce their water use.
Outdoor Programs	Landscape Irrigation Conservation and Incentives	AWU offers free irrigation audits to residential and commercial customers. There are also rebates for making design improvements and equipment upgrades. AWU also trains licensed irrigators on issues such as proper water use, ET, hydro-zone design, and landscape auditing. AWU also provides ET calculations to the highest residential water users to educate them on the correct amount they should be watering.	SAWS offers free irrigation audits to residential and commercial customers. There are also rebates for making design improvements and equipment upgrades. Rain sensor retrofits are required on all systems. SAWS's Seasonal Irrigation Program (SIP) is a free information service for customers who want expert advice on how to water their lawns according to the ET rate. Commercial customers 5 acres or more are required to submit an annual irrigation analysis to the department All new irrigation systems must adhere to design standards and soil depth requirements.	EPWU does not offer irrigation incentives or have requirements in place outside of their water waste ordinance.	DWU does not offer irrigation incentives or have requirements in place outside of their water waste ordinance. DWU previously rebated on the installation of rain shut-off devices and freeze sensors until they became a requirement for all operable irrigation systems in 2005.
	Water Wise Landscape Design and Conversion Programs	AWU offers rebates for Water Wise trees, bushes, and shrubs for high water use customers using 20,000 gallons per month during the summer. The Conservation Department has partnered to form the Green Garden Division that provides information to homeowners and recognizes waterwise landscapes.	SAWS has a Watersaver Landscape Rebate that gives money back for the replacement of existing landscapes to drought tolerant plants, with a maximum of 50% grass. Higher rebates are given to customers who preserve native landscape during construction or who didn't install a permanent irrigation system. Homebuilders must offer a xeriscape option to homebuyers and at least one model home must be landscaped according to a xeriscape design.	EPWU offers residential and commercial customers \$1.00 per square foot for conversion of grass areas to "environmentally sensitive and water conserving landscapes."	DWU promotes water conservation landscapes with exhibits, brochures, and xeriscape seminars, a xeriscape demonstration garden and annual xeriscape landscape recognition awards, as well as a tour of homes.

	Water Reuse	AWU has provided reclaimed water directly for golf course irrigation since 1974. All but one City owned golf course use raw or reuse water to irrigate. Austin currently uses approximately 3 MGD of reclaimed water (about 3% of its wastewater received at its wastewater treatment plants) and has plans for a reuse system expansion to provide for 5.95 MGD of additional supply.	SAWS Recycled Water Program aims to reduce demand by providing 35,000 ac-ft/yr of reclaimed water to golf courses and other ICI customers. SAWS currently has contracts for 19,000 ac-ft/yr, with about 12,600 ac-ft/yr online.	EPWU has been providing reclaimed water since 1963, currently providing more than 4 MGD directly for irrigation of golf courses, city parks, school grounds, and apartment landscapes and for industrial uses such as cooling tower makeup water. El Paso also has an indirect water reclamation program with 577 million gallons being returned to the Hueco Bolson Aquifer.	DWU completed its first direct reuse project in 2004 to provide irrigation water to a city-owned golf course. The Recycled Water Implementation Plan calls for providing reclaimed water to meet a peak day demand of 18.25 MGD by 2010. The plan also projects indirect reuse to be 120 MGD.
Alternative Water Use	Rainwater Harvesting and Condensate Reuse	AWU rebates rainwater harvesting systems for commercial as well as residential properties. AWU offers a rebate on newly purchased rainbarrels, in addition to selling them directly to AWU customers at a discounted price.	SAWS requires new commercial buildings installing air conditioning systems to have a single and independent condensate wastewater line to collect condensate wastewater to provide for future utilization as (i) process water and cooling tower make-up and/or (ii) landscape irrigation water.	EPWU does not have rainwater harvesting or condensate reuse programs.	DWU does not have rainwater harvesting or condensate reuse programs.

APPENDIX C

AUSTIN WATER UTILITY WHOLESALE CUSTOMER INFORMATION

Wholesale Customer	Contract Execution Date	Contract Expiration Date	Fiscal Year 2006 Usage	Water Conservation Programs Similar to Austin	Water Conservation Peak Management Ordinance/ Resolution	Water Conservation General Comments	Non-Compliance of Water Conservation Penalties
Anderson Mill MUD (Williamson County MUD No. 1)	June 19, 1977	December 31, 2008	573,009,900	n/a	n/a	n/a	n/a
Creedmoor-Maha WSC	November 30, 1965	November 30, 2011	51,412,000	n/a	n/a	n/a	n/a
High Valley WSC	June 25, 1992	June 25, 2017	7,179,000			Customer agrees to impose on its customers and enforce all voluntary and mandatory conservation and use restrictions imposed by the City on its own customers.	
Lost Creek MUD	July 7, 1977	July 7, 2007	344,400,000	n/a	n/a	n/a	n/a
Manor, City of	February 2, 2001	February 20, 2026	19,590,000	n/a	Requires adoption of City Water Conservation Ordinance	n/a	
Manville WSC	January 24, 2002	January 24, 2027	94,810,000	n/a	Requires adoption of City Water Conservation Ordinance	n/a	25% Surcharge
Marsha WSC	April 23, 1992	April 23, 2017	9,902,000	n/a	n/a	Customer agrees to impose on its customers and enforce all voluntary and mandatory conservation and use restrictions imposed by the City on its own customers.	
Mid-Tex	April 14, 2000	April 14, 2030	0	n/a	Requires adoption of City Water Conservation Ordinance	n/a	25% Surcharge

Nighthawk WSC (Garden Valley)	December 23, 1991	December 23, 2016	11,249,600	n/a	n/a	Customer agrees to impose on its customers and enforce all voluntary and mandatory conservation and use restrictions imposed by the City on its own customers.	
North Austin MUD #1	January 30, 1984	January 30, 2024	450,445,600	n/a	n/a	n/a	n/a
Northtown MUD	January 6, 1986	January 6, 2026	189,548,300	n/a	n/a	n/a	n/a
Pflugerville, City of	January 30, 2003	December 31, 2007	10,964,700	n/a	n/a	Pflugerville agrees to impose on its customers when receiving Austin water all voluntary and mandatory conservation and use restrictions imposed by Austin on its own customers, provided Pflugerville will not be required to impose more stringent controls than Austin imposes on its own citizens.	
Rivercrest Water Systems, Inc. (AquaSource Utility, Inc.)	January 11, 2001	October 26, 2031	109,753,400	n/a	Requires adoption of State Drought Contingency Plan	n/a	25% Surcharge
Riverplace MUD (Emergency Water Only)	May 29, 2001	May 29, 2016	0	n/a	n/a	During emergency service, Customer agrees to impose on its customers and enforce, at a minimum, all voluntary and mandatory conservation and use restrictions imposed by the City on its own customers.	
Rollingwood, City of	February 3, 2000	February 3, 2030	142,596,500	Requires adoption of City Water Conservation Program	Requires adoption of City Water Conservation Ordinance	n/a	

San Leanna, Village of (Emergency Water Service)	July 1, 2002	November 2, 2014	0	n/a	n/a	During emergency service, Customer agrees to impose on its customers and enforce, at a minimum, all voluntary and mandatory conservation and use restrictions imposed by the City on its own customers during such an emergency event.	
San Leanna, Village of (Future Wholesale Water Service)	November 2, 2004	November 2, 2039	0	n/a	Requires adoption of City Water Conservation Ordinance	n/a	
Shady Hollow MUD	November 7, 1980	November 7, 2020	313,591,300	n/a	n/a	n/a	n/a
Sunset Valley, City of	October 2, 1987	Until terminated by mutual agreement or at the option of either party with 180 days written notice	103,307,400	n/a	n/a	Sunset Valley agrees to impose on its customers all voluntary and mandatory conservation and use restrictions imposed by Austin on its own customers, provided Sunset Valley will not be required to impose more stringent controls than Austin imposes on its own citizens.	
Travis County Water District #10	August 30, 1990	August 30, 2020	1,079,202,900	n/a	n/a	The District agrees to impose on its customers and enforce all voluntary and mandatory conservation and use restrictions imposed by the City on its own customers.	
Wells Branch MUD (North Austin Growth Corridor MUD #1)	April 13, 1991	April 13, 2021	562,886,500	n/a	n/a	n/a	n/a
Windermere Utility	April 12, 2002	April 12, 2022	48,386,000	n/a	Requires adoption of City Water Conservation Ordinance	n/a	

Appendix H
May 2009 Status of Water Conservation Task Force Recommendations

Status of Water Conservation Task Force Recommendations

PS #	Description	Applicability	Status
Indoor Water Conservation Strategies			
IN-1	Require all plumbing fixtures to perform at current plumbing code volumes.	All customers	Postponed due to the Council's decisions to not pursue a point of sale energy audit. Proposals for an alternative approach are in development. The Utility has increased focus on toilet replacement incentives with increased marketing for the free toilet program and a pending proposal for the direct-installation of efficient toilets in multifamily properties.
IN-2	Require the use of submeters to bill for water in multi-family properties.	New and some existing multi-family and mixed-use properties	Ordinance No. 20071018-086, October 18, 2007, Part 3 §25-2-153 (<i>Local Amendments to the Plumbing Code</i>) amended to add the following section: § 612.0. Requirements for the installation of submeters were included in local amendments to the plumbing code. However, the revisions did not include a requirement that properties use submeters for billing. Staff is currently investigating and determining if submetered properties bill customers for actual water use.
IN-3	Make changes to Plumbing Code to prohibit inefficient fixtures.	All customers	Ordinance No. 20071018-086, October 18, 2007, Part 3 §25-2-153 (<i>Local Amendments to the Plumbing Code</i>) amended to add the following sections: §1312.1.2, §411.3.1, §615.0. Became effective in January 2008. Prohibits liquid ring surgical/dental vacuum pumps and sets standards for urinals. Commercial garbage disposal unit installations are prohibited in restaurants and cafeterias.
IN-4	Establish efficiency requirements for cooling tower management.	Commercial properties with cooling towers	Ordinance No. 20071018-086, October 18, 2007, Part 3 §25-2-153 (<i>Local Amendments to the Plumbing Code</i>) amended to add the following section: § 613.0. Became effective in January 2008. Requires new cooling towers to have water efficiency features.
IN-5	Establish water consumption limits for car wash facilities and equipment.	Commercial car wash facilities	Ordinance No. 20071018-086, October 18, 2007, Part 3 §25-2-153 (<i>Local Amendments to the Plumbing Code</i>) is amended to add the following section: § 1011.2.2. Became effective in January 2008. Limits water use for in-bay car washes.
IN-6	Establish efficiency standards for commercial clothes washers.	Commercial laundry facilities	Revisions to City Code will be requested in the Fall 2009.
Outdoor Water Conservation Strategies			
OU-1	Expand Water Use Management Ordinance.	All customers	Ordinance No. 20070809-002, August 9, 2007 amended Water Use Management Ordinance. Became effective October 1, 2007. Limits watering to two days per week year-round for commercial and multifamily customers and from May through September for residential customers. It prohibits daytime watering and water waste, and sets forth

			progressive restrictions to respond to increased demand or decreased supply. Water use trends show a high level of compliance, and peak day use for 2008 was lower than expected given the hot, dry weather conditions. Preliminary analysis indicates that water savings exceeded the 6.16 mgd (over 10 years) projected in the task force recommendations.
OU-2	Require new residential irrigation systems to meet design standards and permitting requirements.	Residential customers	Ordinance No. 20071018-086, October 18, 2007, Part 3 §25-2-153 (<i>Local Amendments to the Plumbing Code</i>) amended to add the following section: 614.2. Became effective in January 2008. Requires water saving features in residential irrigation systems.
OU-3	Create additional design requirements for commercial irrigation systems and landscape design.	Commercial and multi-family customers	Ordinance No. 20071018-086, October 18, 2007, Part 3 §25-2-153 (<i>Local Amendments to the Plumbing Code</i>) is amended to add the following section: 614.1 Became effective in January 2008. Requires water saving features in commercial irrigation systems.
OU-4	Establish soil-depth requirements for new residential landscapes.	Volume home builders	Water Conservation is researching soil-depth information.
OU-5	Require homebuilders to offer a WaterWise landscape option.	Volume home builders	Draft ordinance request expected in Fall 2009.
OU-6	Require regular analyses of automatic irrigation systems.	All properties over 1 acre	Mandatory irrigation audit requirements have been put on hold. The outcome of this year's legislative session that may affect irrigation design requirements.
OU-7	Expand free irrigation audit program for high-volume water users.	Commercial, multi-family; high-volume residential properties	Two additional irrigators were hired in the spring of 2008; the number of irrigation audits conducted in the first two quarters of FY09 was more than three times the number conducted during the same months in FY08 – 318 audits from October to March FY09 as compared to only 95 the year before.

City and Utility Water Conservation Strategies

CI-1	Ensure funding for leak detection contract	Austin Water Utility	Leak detection contract is in place.
CI-2	Assure CIP funding for reclaimed water projects.	Austin Water Utility	In FY08 the Reclaimed Water Program provided 1.63 billion gallons to its customers. Key projects like the 51 st Street Elevated Storage Tank and the 51 st Street Transmission Main are well on their way to completion. The UT Transmission Main is out for bid and expected to be completed in early 2011. The Reclaimed Program is on target to meet the projected savings noted in the task force report (peak day savings increase of 5.95 mgd in ten years).
CI-3	Adjust Utility water rates to encourage conservation.	All customers	AWU has completed the Cost of Service study to evaluate possible changes to water rates; however, implementation of a new rate structure has been delayed due to current economic conditions and the limitations of the current billing system.
CI-4	Require conservation by wholesale	Wholesale customers	Conservation management has been meeting with wholesale customers and has offered assistance in

	customers.		developing water conservation programming.
CI-5	Explore alternative water sources	Commercial customers	Water Conservation staff are currently researching successes and challenges of gray water reuse programs throughout the country. This research, along with consultant recommendations from a new Alan Plummer study (which will be looking at average day savings estimates) will be used to form a recommendation on exploring alternative water sources.
CI-6	Increase water efficiency in City facilities.	City departments	Conservation is working with City departments to ensure compliance with the mandatory watering schedule. In addition, Conservation is working with the Climate Protection Team to establish City-wide departmental water conservation goals.
CI-7	Reduce excessive water use due to high pressure.	Residential customers	Ordinance No. 20071018-086, October 18, 2007, Part 3 §25-2-153 (<i>Local Amendments to the Plumbing Code</i>) amended to add the following section: § 608.2. Plumbing code revisions mandated a maximum pressure of 65 psi in new construction. The Water Conservation Division now offers a \$100 incentive for existing customers to reduce high pressure.
CI-8	Establish program to alert customers to potential leaks during winter months.	Residential customers	Conservation has hired a Research Analyst, Senior, who will begin to analyze system data for high winter-users. Customers will be alerted once findings are complete.
CI-9	Expand public education program.	All customers	The high degree of compliance with the watering schedule can be attributed, in part, to the extensive marketing efforts conducted in the summer of 2008. Marketing and advertising efforts will continue this summer, as will Austin's participation in the WaterIQ regional partnership with the LCRA and the Division's increased active marketing efforts and presence at community outreach events.
CI-10	Create Citizens' Advisory Group on Water Conservation	City of Austin	Resolution No. 20071206-007, December 6, 2007, passed to establish The Citizens Water Conservation Implementation Task Force. The Task Force meets at least quarterly. The Task Force will terminate on December 6, 2010.
Other Water Conservation Programs			
	HELP Program	Low-income AWU customers	HELP will provide free water-saving plumbing repairs for low-income AWU customers in single-family homes and duplexes. The program will reduce utility bills for low-income residents and prevent unnecessary water loss.
	Direct Install Toilet Program	Multifamily Developments	This program will remove barriers to toilet replacement for a market segment with historically low participation in AWU programs by providing high-quality, high-efficiency toilets and qualified installation at no cost to multifamily properties. Council is expected to vote on a contract for this program on 07/23/09.
	Online Water Audit Tool	All AWU Customers	AWU is preparing a scope of work for an online water audit tool that will help customers analyze

			their water use, identify conservation opportunities and take action to save water, energy and money. The information collected will allow AWU to focus water conservation programs to more precisely meet customer needs.
	Enhanced Water Theft Prevention	AWU	Water Conservation is sharing staff and marketing resources with AWU's Consumer Services Division to evaluate the prevalence of and prevent water theft.

Appendix I Water Loss Action Plan

ACTION PLAN
Water Loss Calculation Process Audit – AU08110

Rec. #	Recommendation Text	Proposed Strategies for Implementation	Status of Strategies	Responsible Person/Phone Number	Proposed Implementation Date
1	In order to improve the validity of data, develop more cost effective ways to further reduce actual water losses, and to continually address water loss issues, the AWU Department Director should produce an annual Water Loss Calculation and analyze the results in order to develop strategies aimed at reducing the level of unreported leaks.	Concur. The Water Accountability Group has been restructured into an executive-level Steering Committee and three subcommittees that meet more frequently to address specific areas of water accountability. The Water Audit Subcommittee will meet quarterly to supply and evaluate information gathered for annual water loss calculations, recommend ways to improve data collection, and summarize and report results to the Steering Committee. The Steering Committee will guide the Leak Detection and Response Subcommittee and the	Implemented	Environmental Affairs and Conservation Assistant Director Daryl Slusher, 972-0218	Implemented

			Metering and Billing Subcommittee in analyzing the results of these annual water loss calculations and developing strategies to reduce unaccounted-for water.			
2	In order to improve the process followed to produce the Water Loss Calculation, the AWU Department Director should follow the updated guidelines provided by TWDB, and use the calculation component reliability matrix to ensure that its process and the data gathered is as detailed and accurate as possible.	In order to improve the process followed to produce the Water Loss Calculation, the AWU Department Director should follow the updated guidelines provided by TWDB, and use the calculation component reliability matrix to ensure that its process and the data gathered is as detailed and accurate as possible.	Concur. AWU will continue to follow the most current TWDB methodology for future water loss calculations and will use the reliability matrix to identify and prioritize areas where data collection can be improved.	Implemented	Environmental Affairs and Conservation Assistant Director Daryl Slusher, 972-0218	Implemented
3	In order to ensure that the <i>System Input Volume</i> is as accurate as possible, the AWU Department Director should ensure that the meter testing program	Concur. Current TCEQ rules and regulations for public water system require annual testing of meters; AWU is in compliance with that requirement. Meters are	Concur. Current TCEQ rules and regulations for public water system require annual testing of meters; AWU is in compliance with that requirement. Meters are	Implemented	Pumping and Treatment Division Manager, Rick Coronado 972-0510	Implemented

	continues with annual testing and recalibration of production flow meters.	tested and recalibrated every 6 or 12 months in accordance with the manufacturer's specifications for each meter, with additional testing in the event of a suspected discrepancy.			
4	In order to ensure that the <i>System Input Volume</i> is as accurate as possible, the AWU Department Director should first determine if using the SCADA system would yield reliable results, in the event that the Utility chooses to use the SCADA system before fully automating the process of reporting the amount of water produced.	Concur. AWU has developed preliminary SCADA reporting tools that will be verified against field information. SCADA system upgrades will include a reporting system that minimizes data entry errors.	Underway	Pumping and Treatment Division Manager, Rick Coronado 972-0510	5/1/2009
5	In order to ensure that all components of water loss calculations are accurate, the AWU Department Director should work with Austin Energy to ensure that	Concur. AWU will work with AE to ensure reliable reports are incorporated into the new billing system.	Planned	Consumer Services Division Manager Alice Flora, 972-0041	3/31/2011

	the new Customer Billing System will provide consumption and billing reports that the Utility can rely upon to produce the calculation.			Austin Energy Project Manager David Orr, 322-6040	
6	In order to ensure that annual inspections are performed for each of the private fire hydrants within their jurisdiction, the AWU Department Director should coordinate with AFD to ensure that: a process is created to properly identify responsible parties for all private fire hydrants; the responsible parties are notified of the requirements for annual testing; and, water used during inspection and maintenance activities is properly accounted for.	Concur. AWU will coordinate with AFD to better track and ensure compliance with the annual inspection requirements for private hydrants.	Planned	Pipeline Operations Assistant Director George Calhoun, 972-0256	9/30/2010
7	To ensure that AFD is aware of which hydrants have not been inspected	Concur. AWU will work with AFD to determine the best method of	Planned	Pipeline Operations Assistant	9/30/2010

	recent so that they can properly protect the public, the AWU Department Director should ensure that annual testing reports are compiled in a central database and that the GIS system is properly updated with current data on the hydrant status.	sharing testing data.		Director George Calhoun, 972-0256	
8	To properly measure and analyze the water used by other City departments, the AWU Department Director should perform an analysis to ensure that water meters are installed at all sites from which other City departments draw water, and that accounts are set up on the CIS to ensure that the quantities are correctly accounted for.	Concur. AWU will work with other City departments to analyze water use and install meters where feasible. AWU Consumer Services Division will continue its process for monitoring CIS account setup.	Underway	Consumer Services Division Manager Alice Flora, 972-0041 Environmental Affairs and Conservation Assistant Director Daryl Slusher, 972-0218	9/30/2009
9	To ensure that as much of the unmetered water	Concur. The Water Audit Subcommittee will	Planned	Environmental Affairs and	12/31/2009

	as possible is properly accounted for, the AWU Department Director should work with other City departments to standardize the procedures for estimated and reporting unmetered water, and that personnel within other City departments are properly educated in those procedures.	evaluate the data collected from each department and work with those departments to improve reporting methods and document standard procedures. The Metering and Billing subcommittee will assist in identifying situations where metering would be appropriate and cost-effective.		Conservation Assistant Director Daryl Slusher, 972-0218	
10	In order to conserve water used by City departments, the City Manager should establish an inter-departmental task force to monitor and analyze water use and create strategies for conserving as much water as possible.	The Austin Water Utility will facilitate a quarterly meeting with the representatives from City departments to monitor and analyze water use and create strategies for conserving water as well as addressing the coordination of responses to water leaks.	Planned	City Manager	9/30/2009
11	In order to quantify the amount of water lost through theft, the AWU Department Director	Concur. Austin Water Utility will undertake a study to determine the prevalence of theft in the	Planned	Consumer Services Division Manager Alice	9/30/09 for implementation of the theft study; 6/30/09

	should undertake a study to determine how prevalent theft is throughout the distribution system, and start an education process for city employees and citizens to report suspicious activity.	distribution system. Consumer Services Division has coordinated with Watershed Protection and Public Works inspectors to report instances of theft for the past few years. CSD will continue this effort and plans to expand awareness through preconstruction meetings, posters at the TAPS offices and the Water Conservation electronic newsletter.		Flora, 972-0041	for implementation of education campaign
12	In order to reduce the amount of theft from the distribution system, especially from fire hydrants in outlying areas, the AWU Department Director should ensure that the WAG works with APD to develop a program to respond and investigate occurrences of water	Concur. AWU currently has a program to investigate water theft and has the authority to levee fines when deemed necessary. AWU had 830 instances of water theft in the previous fiscal year and levied \$136,000 in fines. Prior discussions with APD have been complicated by the need	Underway	Pipeline Operations Assistant Director George Calhoun, 972-0256 Consumer Services Division Manager Alice	To be determined based on result of theft study.

	theft.	to witness theft in progress in order to pursue charges. However, following the results of the water theft study AWU will revisit a possible partnership with APD.		Flora, 972-0041	
13	In order to ensure that as much of the water used by contractors as possible is accounted for, the AWU Department Director should ensure that policies governing the use of water from hydrants by non-City-owned vehicles are developed and implemented. Additionally, AWU should develop a program to educate contractors to ensure compliance with those policies.	Concur. AWU will create a group of stakeholders from appropriate City departments and the private sector. The stakeholders group will review current policies and recommend improvements and additional requirements to ensure water use accountability. In addition, the group will work with AWU's Public Information Office to develop an education plan.	Planned	Pipeline Operations Assistant Director George Calhoun, 972-0256 Consumer Services Division Manager Alice Flora, 972-0041	To be determined based on result of theft study.
14	In order to ensure that as much of the water used by contractors from	Concur. AWU will review current procedures for accounting for water	Planned	Consumer Services Division	Ongoing, as construction loop meters are

	hydrants as possible is properly accounted for and billed, the AWU Department Director should ensure that an analysis is performed of the procedures in place and that research is performed to determine if new processes exist to meet this goal. One possible method would be to compare construction permits to temporary-use billings to determine if large amounts of water are being taken without metering and billing.	drawn from hydrants and will research other methods of accounting for hydrant water use. AWU will analyze the correlation between electric construction loop meters and water metering at construction sites. Further analyses will be undertaken to the extent that they are cost-effective for the utility.		Manager Alice Flora, 972-0041	set up as requested.
15	In order to most reliably estimate the accuracy of small residential meters and establish a starting point for the small meter reliability rating, the AWU Department Director should direct a reliability test be completed on a statistically valid random	Concur. AWU is currently establishing a methodology for selecting meters and defining the scope of the accuracy testing to generate a baseline for system-wide small meter accuracy.	Underway	Asset Management and Business Processes Division Manager Donn Lorbieski, 972-1006	6/30/2009

16	sample of small meters. In order to determine the extent to which there are any data discrepancies in the water billing data caused by data handling errors, AWU should partner with Austin Energy to perform an analysis of the processes followed within the CIS and throughout the customer billing program.	Concur. Both utilities will be reviewing existing processes as part of the CIS replacement project, which is scheduled to be presented to Council in early summer 2009. The proposed web based system contains more checks and balances than CIS to reduce data handling errors.	Underway	Consumer Services Division Manager Alice Flora, 972-0041 Austin Energy Project Manager David Orr, 322-6040	3/31/2011
17	In order to properly account for all water used, whether a customer is billed or not, the AWU Department Director should ensure that a standard conversion process for billing adjustment data from dollars to gallons is added to the BAR production process.	Concur. AWU will modify the existing BAS (billing adjustment system) report to include usage in gallons.	Planned	Consumer Services Division Manager Alice Flora, 972-0041	4/30/2009
18	In order to reduce the amount of water lost through leaks and	Concur. AWU has prioritized the Field Operations Division in its	Underway	Field Operations Division	Ongoing

	breaks, the AWU Department Director should ensure that maintenance and upkeep functions are a high-priority throughout the Utility.	Lean process improvement efforts and increased funding for proactive subsurface leak detection. Additionally, AWU has created a Distribution System Engineering Division responsible for coordinating system maintenance planning, leak detection, CIP project implementation, rehabilitation and replacement project implementation, and trenchless rehabilitation of the water distribution pipelines and transmission mains.		Manager Robert Hinojosa, 972-1112 Distribution System Engineering Division Manager, Mark Dollins 972-0171	
19	In order to reduce the amount of water lost through leaks and breaks, the AWU Department Director should ensure that strategies to reduce response and repair responses are identified and implemented.	Concur. AWU has implemented or begun implementation of several strategies to reduce response and repair time for water leaks. These strategies include redirecting non-leak activities to other work groups, issuing field	Underway	Field Operations Division Manager Robert Hinojosa, 972-1112	Ongoing, as new procedures are identified

		laptops to crew leaders, facilitating self-approval of right of way management permits, developing a service contract for non-core water distribution work orders, and developing trucking contracts for spoils disposal. In addition, the installation of automatic vehicle locators on all water distribution work vehicles will assist in redirecting the vehicles to active priority water leaks. AWU will continue to explore innovative methods to further reduce water lost to line leaks and breaks.			
20	In order to improve response times for leak repair, the City Manager should appoint a task force with representatives from all involved departments to come up with solutions to the problems that	The Austin Water Utility will facilitate a quarterly meeting with representatives from all involved departments to better coordinate responses to water leaks.	Planned	City Manager	9/30/2009

	AWU faces while coordinating with other City departments and outside entities when responding to water leaks.				
21	In order to properly estimate the amount of water lost at each break or leak, the AWU Department Director should ensure that a standard procedure for determining that the most accurate source of water pressure is at the point of a leak/break is identified, and that this methodology is used for all water loss calculations.	Concur. All field operations staff have been instructed to use the pressure calculated in the GIS Hotlinks system when calculating the amount of water lost due to breaks or leaks.	Implemented	Field Operations Division Manager Robert Hinojosa, 972-1112	Implemented
22	In order to properly account for as much of the water lost from overflows of reservoirs as possible, the AWU Department Director should ensure that the Pumping and Distribution Division	Concur. AWU has developed a process to track overflow events and is testing a methodology for calculating overflow volume using visual inspection and SCADA historical trending.	Underway	Pumping and Treatment Division Manager, Rick Coronado 972-0510	5/1/2009

	manager establishes procedures and a tracking process to properly account for all water lost through overflows.				
23	To facilitate a better Utility-wide approach to water loss reduction, identify as much of the <i>Unreported Loss</i> water as possible, and determine cost to address all identified leaks, the AWU Department Director should ensure that leak detection programs are continued with the goal of testing the entire distribution system regularly.	Concur. AWU is in the second phase of a small diameter leak detection program and plans to implement a condition assessment for large diameter transmission mains in FY10. AWU will evaluate the results of these leak detection efforts to determine goals for regular testing of the entire distribution system and determine a cost-effective, utility-wide approach to reduce water loss.	Underway	Distribution System Engineering Division Manager, Mark Dollins 972-0171	Ongoing

Status of strategies: planned, underway, or implemented.