

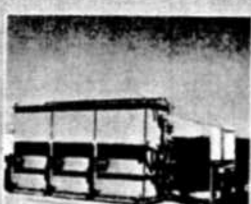
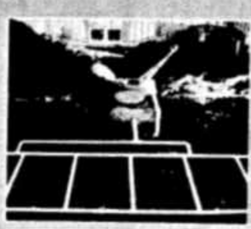
Water and Wastewater Facilities Plan for the Portion of Hays County, Texas West of the IH-35 Corridor





Prepared for :

Hays County Commissioners Court
and Other Sponsoring Entities
with the support of the
Texas Water Development Board

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WATER AND WASTEWATER FACILTIES PLAN FOR THE PORTION OF HAYS COUNTY WEST OF THE IH-35 CORRIDOR

Prepared for:

County of Hays, Texas
City of Dripping Springs
Dripping Springs Water Supply Corporation
Barton Springs/Edwards Aquifer Conservation District
Guadalupe-Blanco River Authority
City of Hays
Hays Trinity Groundwater Conservation District
Lower Colorado River Authority
City of Wimberley
Wimberley Water Supply Corporation
City of Woodcreek
Aqua Texas, Inc.

With the Support of:

Texas Water Development Board
(Regional Planning Grant No. 0804830842)

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WATER AND WASTEWATER FACILTIES PLAN
FOR THE PORTION OF HAYS COUNTY
WEST OF THE IH-35 CORRIDOR

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List of Acronyms Used

BSEACD	Barton Springs/Edwards Aquifer Conservation District
CLWSC	Canyon Lake Water Service Company
DSWSC	Dripping Springs Water Supply Corporation
DFC	Desired Future Condition (of change in groundwater level)
EAA	Edwards Aquifer Authority
GBRA	Guadalupe-Blanco River Authority
HTGCD	Hays Trinity Groundwater Conservation District
IH-35	Interstate Highway 35
LCRA	Lower Colorado River Authority
LUE	Living Unit Equivalent (1 LUE = one standard residential connection)
MAG	Managed Available Groundwater (available for permitting)
OSSF	On-Site Sewage Facilities
RWPG	Regional Water Planning Group
SARA	San Antonio River Authority
TCEQ	Texas Commission on Environmental Quality
TWDB	Texas Water Development Board
WUG	Water User Group
WWSC	Wimberley Water Supply Corporation

List of Abbreviations Used

ac-ft or ac-ft/yr	acre-foot (one acre that is one foot deep in water) or acre-feet per year
cf or cfs	cubic fee or cubic feet per second
gals or gpcd	gallons or gallons per capita (per person) daily
kgal or $/kgal	thousand gallons or dollars per thousand gallons
mg, mg/yr or mgd	million gallons, million gallons per year, or million gallons daily

List of Short-hand Terms Used

Aqua	Aqua Texas Utilities, Inc.
Austin	City of Austin
Barton-Edwards	Barton Springs subdivision of the Edwards Aquifer
Buda	City of Buda
Dripping Springs	City of Dripping Springs
Edwards	San Antonio subdivision of the Edwards Aquifer
Kyle	City of Kyle
Region L	South Central Texas Regional Water Planning Group
Region K	Lower Colorado Regional Water Planning Group
San Marcos	City of San Marcos
Trinity	Trinity Aquifer group
Wimberley	City of Wimberley
Woodcreek	City of Woodcreek

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WATER AND WASTEWATER FACILTIES PLAN FOR THE PORTION OF HAYS COUNTY WEST OF THE IH-35 CORRIDOR

Executive Summary

Until 1960, population growth in Hays County was rather stagnant. Between 1960 and 1980, growth began to accelerate. Then, the population began to boom with high growth rates averaging from 4 to 5 percent annually from 1980-2010. In the last 30 years, Hays County population increased almost four-fold from 40,594 in 1980 to a recent 2009 Census estimate of almost 156,000 people, making it one of the fastest growing counties in the United States. While growth has noticeably slowed in the past two years due to depressed economic and real estate activity, the tremendous growth to date has increasingly impacted limited existing water supplies in the parts of the County west of IH-35. In this area, rapid growth, periodic severe drought conditions, and limited alternative water supply options have noticeably impacted available groundwater supplies, which eventually brought about regulation of non-domestic groundwater pumping of the Trinity and Edwards aquifers, as well as provision of new surface water supplies into northwestern Hays County.

Over a several year period, there are typically a number of different water-related planning studies being developed or updated at about the same time, including efforts by statewide; multi-county regional; county, water authority or district regional; and more local municipal or private utility entities. This Hays County Water and Wastewater Facilities Plan study is being conducted under the TWDB's regional planning grant program. In developing a more detailed facilities plan for Hays County, it should consider planning information and management recommendations developed in the broader State-funded regional water plans. However, the regional water plans do not closely assess the needs of the unincorporated areas of counties. In the areas west of IH-35 in Hays County, the growth in the suburban and rural areas is a major issue placing considerable pressure on very limited local water resources.

Given the worsening water supply situation and the multiple municipal, regulatory districts, public and private water suppliers, and a plethora of individual on-site systems, Hays County government made application in 2008 to the Texas Water Development Board (TWDB) for a regional planning grant to study the situation and examine water and wastewater management options, infrastructure needs, and policy alternatives. The matching-funds grant was awarded, and in January 2009, HDR Engineering, Inc. was contracted to conduct this planning study. The scope of this study includes a closer look at the unincorporated and incorporated areas, a more detailed look at water infrastructure needs beyond the broader water supply planning of the regional water management plans, potential wastewater needs of the study area, and possible policy actions that may facilitate the provision of adequate water and wastewater utility service and help protect environmental resources.

Similar to the challenging growth experienced by Hays County, this study also faced challenging water planning and regulatory issues which have complicated its progress, including commencing this study nine years since the last Census and mid-way through the broader regional water planning efforts, the new statutory-driven derivation of groundwater water availability numbers, more unsure surface and groundwater permitting environments, and various water entities rethinking their regulatory and service roles. While progress has been made on these issues, questionable findings, pending efforts, and entities unsure of direction still provide for considerable uncertainty going forward. Because of these dynamics, this is typical of why water plans in Texas are updated frequently, and why this Plan should be updated in the future.

This Plan accessed residential electric connections data from the regional electric service provider as the key planning basis for this study. Knowing both the location and date of installation of the connections allowed us to compile and subdivide this information into many component areas of interest in the study, including for the entire study area and by river basin, regional water planning area, groundwater district, municipality, certificated service area, and platted subdivision. Using Census information on household size and the residential electric connections data, current population estimates were developed. Historic trends in electric connections were used as the basis for forecasting a High Case scenario of study area population. Lesser medium range growth and no action scenario forecasts were also developed. Using estimates and forecasts of per capita (per person) water use and wastewater return flows, current utility service demands were estimated, and future demands were forecast for the three growth scenarios. Additional future service needs were identified and compared to existing permit or contract constraints. This then led to the identification of unmet facility needs. Then, a series of water and wastewater management measures were evaluated and recommended actions were identified to address future service needs. The need for continued or new policies to help facilitate the implementation of these recommendations was also evaluated.

Planning for water supply must be pragmatic, while at the same time providing for innovation of new policies and strategies. With public health and welfare at risk, a responsible plan cannot form its significant recommendations around legal authority, policies, and management tools that either do not yet exist, have not been innovated into mainstream practice, may be inappropriate or inadequate tools for the context of the problem, or have longer-term unintended environmental and cost of service consequences that are not yet fully understood or desired. Whether we like it or not, the reality today and likely tomorrow is that Texas counties do not have noticeable governmental powers to condition growth, much less limit or stop growth. Even municipalities have very limited control of their suburban ETJ areas where much of the growth is occurring. Texas law, related to the formation of water districts and utility corporations, facilitate the provision of utility service in these areas, regardless of the wishes of the cities or counties. Growth is driven by a variety of factors, many of which are present in western Hays County, and the fact is that rapid growth has been occurring where it wants to occur and is likely to continue for some time in this fashion. We cannot assume that away in a responsible plan.

Some public input to the study has called for *widespread* use of certain on-site water management measures with a related desire to preserve the livable/walkable small town ambience and sensitive environment in western Hays County. However, on-site water supplies, whether wells or rainwater systems, will result in lower density development that will also likely rely on septic tanks for wastewater treatment. With tens of thousands of potential new residents likely and the low density provisions brought about through widespread use of on-site water and sewer systems, urban sprawl will simply result that increasingly impacts and decrements an already very tight local water resources budget, increases the aerial footprint of development, is neither livable or walkable, proliferates roads and septic tanks, is difficult to provide on-site environmental controls, and not economic to provide with public services. So one must ask if certain alternative technology measures really do provide for a long-term environmentally sensitive approach.

The ambience and sustainable picture desired by many in western Hays County is likely only achievable if growth is somehow significantly limited or is channeled into certain development areas. Even if this were possible, it comes at a price. A number of jurisdictions who have attempted to limit or manage growth through various measures that limit new development or development densities have not been pleased with the outcome (for example, run-up of property values, higher taxes, and urban sprawl) and have changed course towards what is termed “smart growth” type initiatives that promote more compact development which concentrates growth towards the center of a community to avoid urban sprawl and advocates environmentally-sensitive land development with the goals of minimizing dependence on auto transportation, reducing air and water pollution, and making infrastructure investments more efficient. Under the County's subdivision ordinance, this more compact, manageable development, that lessens its footprint on the environment, is only likely to occur with the provision of centralized utility services that allow for these more compact densities.

Western Hays County has a very limited water budget. There is just not that much surface or groundwater water resident within the study area, and these resources are highly susceptible to the effects of prolonged drought. Except for water conservation and drought restrictions that affect the water demand side of the equation, the consumptive portion of all "local" water supply management measures negatively impact the already very limited water budget in western Hays County. Savings from water conservation has its practical limits and eventually results in what is termed "demand hardening," where there is no easy conservation measures left available in times of drought. Neither are rainwater harvesting systems a panacea for the County's large-scale water problem; they intercept stormwater runoff from making its way into rivers, streams, and aquifers, albeit with less evapotranspiration loss.

Whether it is a groundwater well or a rainwater system, all the local supply measures take a "consumptive bite" out of what is already a very tight water budget. We have a water supply problem *today* with all parts of the County experiencing some form of water supply scarcity. Yet even the Study's No Action forecast (which assumes no new major water projects are developed) indicates that the study area population could grow by another 82% by 2060. If you multiply each new incremental bite of consumptive water use of these on-site measures times 54,000 or more new residents, you've made an already bad water resource situation even worse. This report does recognize and recommend more significant implementation of other innovative water management measures in most portions of the study area, however these alternative technologies were most greatly emphasized in rural locales where that approach was deemed most appropriate, where development will likely be limited, and where this is a viable option as an alternative to limited groundwater supplies. With prospective growth, the only pragmatic way of addressing the larger scale water supply needs and not exacerbating the local resource problem is to import water supplies from outside areas with excess supplies.

A broad overview of water and wastewater recommendations arising from the High Case growth forecast is as follows:

In the <u>northwestern and north central</u> portion of the County:

- Expand water conservation efforts and use of rainwater collection systems in lieu of using limited Trinity groundwater;
- Extend service and more fully utilize existing capacity in the LCRA-Hwy 290 and Hamilton Pool Road (HPR) treated surface water pipelines;
- Sometime in the 2025-2030 timeframe or earlier, construct a 3.7 mile extension of the 16" diameter HPR pipeline and a new 8.5 mile, 20" diameter pipeline to Dripping Springs along RR-12 connecting the HPR and Hwy 290 pipelines. This will provide additional treated water service in the northwestern part of the County and to Dripping Springs, as well as provide an enhanced looped-system capacity to the existing Hwy 290 pipeline;
- Expand water reuse opportunities; and
- With greater development densities allowed for new subdivisions with certain types of water supplies, promote the use of well-managed small centralized wastewater treatment facilities with land application in lieu of widespread use of septic tanks.

In the northeastern portion of the County:

- Expand water conservation efforts and use of rainwater collection systems in lieu of using limited Edwards groundwater;
- Construct a pipeline from the City of Austin system to serve certain development areas that were limited purpose annexed by the City;
- Development of a brackish water desalination facility to serve higher-density demand centers;
- Further examine use of Middle Trinity Aquifer supplies for municipal supply purposes;
- Extend municipal water and wastewater service westward into Kyle and Buda's ETJ; and
- With greater development densities allowed for new subdivisions with certain types of water supplies, promote the use of well-managed small centralized wastewater treatment facilities with land application in lieu of widespread use of septic tanks.

In the southwestern portion of the County:

- Expand water conservation efforts and use of rainwater collection systems in lieu of using limited Trinity groundwater;
- As an interim new water supply for the Wimberley/Woodcreek area, in the near-term construct an 8.5 mile, 12"diameter treated water pipeline from Canyon Lake Water Service Company storage facilities on RR 32 cross-country to the north side of the Blanco River in Wimberley. Also provide for associated pumping and an 8" interconnect pipeline to wheel a portion of the water from the Wimberley WSC system to Aqua Texas facilities;
- About the year 2030 when the interim supply agreement with CLWSC would expire, construct an 18 mile, 16" diameter treated water pipeline from GBRA facilities at the San Marcos Water Treatment Plant, along RR 12, to the City of Wimberley. As before, the Wimberley/Aqua system interconnect would provide a portion of the water on to the Woodcreek service area. The previously-utilized 12" supply line from the CLWSC system could then be converted to an emergency interconnect, as well as a treated water transmission line serving the intervening area and being fed from the Wimberley WSC system;
- Expand water reuse opportunities; and
- With greater development densities allowed for new subdivisions with certain types of water supplies, promote the use of well-managed small centralized wastewater treatment facilities with land application in lieu of widespread use of septic tanks.

In the southeastern portion of the County:

- Expand water conservation efforts and use of rainwater collection systems in lieu of using limited Edwards groundwater;
- In the more rural area between Kyle and San Marcos west of IH-35, purchase Edwards water rights to allow for community well development;
- Extend municipal water and wastewater service westward into San Marcos' ETJ;
- In the longer-term around 2030, new or existing development the intervening area between San Marcos and Wimberley could access treated water supplies from the recommended GBRA supply pipeline extending from the San Marcos WTP to Wimberley; and
- With greater development densities allowed for new subdivisions with certain types of water supplies, promote the use of well-managed small centralized wastewater treatment facilities with land application in lieu of widespread use of septic tanks.

This Facilities Plan study also estimated the cost of implementing the various recommended water and wastewater management measures. Total needed investment in water infrastructure over the 50-year planning period is estimated at almost $446 million, while total needed investment in wastewater infrastructure over the 50-year planning period is estimated at $368 million. Cumulatively, the 50-year water and wastewater facility needs total $814 million.

Clearly, the fact that water is our most basic resource, and a key to public health, welfare, economic prosperity and environmental sustainability, makes it one of the highest priority issues for government and the public. In the public interest, the magnitude of the needed investment requires good planning, insightful regulation, and appropriate management choices with the long-term in mind, and financial responsibility and public accountability.

If adequate Federal and State appropriations continue, the Texas Water Development Board will have good financial assistance programs to help government and private utilities address these daunting financial requirements. However, while there is some government subsidy in certain loan programs, for the most part, there is "no free lunch." The great preponderance of this assistance is loans that must be repaid by the borrower. It will take great resolve on the part of the government and utilities to address these needs, confront difficult policy issues, garner the support of the ratepayers, carry the cost burden, and provide timely and adequate action to assure basic utility needs are met.

Key countywide policy recommendations that can facilitate this action include:

- With daunting growth pressure facing the area and to proactively help *avoid* growth-related impacts, Hays County should continue to support good integrated planning and insightful regulation that has the longer-term "end in mind;"
- There are *many* stakeholder groups with differing water interests in Hays County. The County can provide a key role as a regional leader, facilitator and actor to help bridge jurisdictional boundaries, better integrate water planning and policy, and facilitate needed actions;
- Both at the County and municipal level, there is a need for better linkage of land development regulation and provision of utility service;
- There is a growing need for cost-effective, professional *regional* operations of distributed utility systems (community wells, neighborhood treatment facilities, etc.) that could be provided under the auspices of the river authorities, a County water authority, or by private entities;
- The County should consider acquiring utility oversizing as an enhanced means of conditioning new development in a consistent, equitable manner;
- In rapidly-urbanizing areas, the County and affected groundwater districts should consider regulatory incentives that promote the development of water distribution systems internal to the subdivision, so that higher development densities with lower service costs can be obtained and the ultimate transition to surface water is greatly facilitated.
- To meaningfully address the management and depletion issues concerning the stressed Trinity Aquifer in western Hays County, new authority and adequate funding capability are needed for the Hays Trinity Groundwater Conservation District; and
- The County and other jurisdictions within the County should continue to promote and incentivize water management actions that are more sustainable, including broad support for water conservation and reuse, and rainwater collection systems as an alternative to groundwater.

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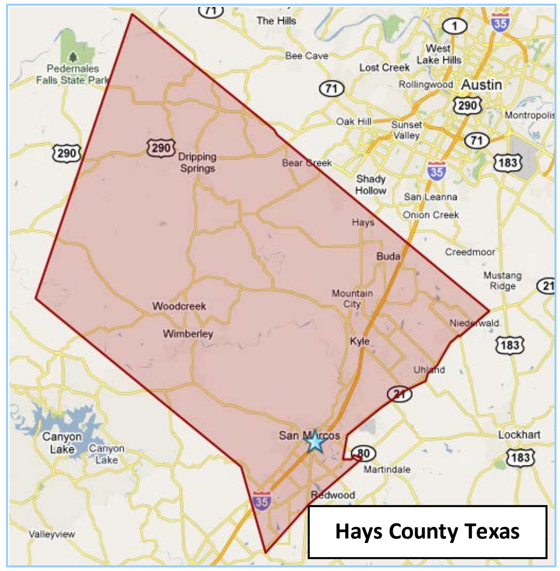
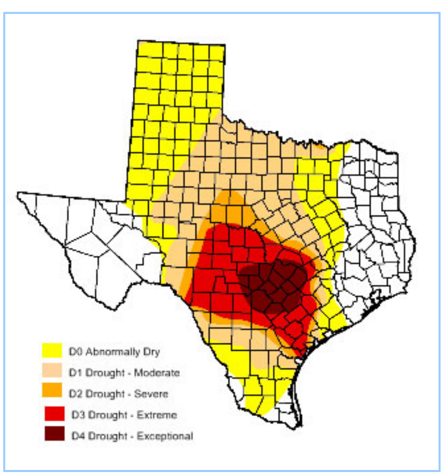
WATER AND WASTEWATER FACILTIES PLAN
FOR THE PORTION OF HAYS COUNTY
WEST OF THE IH-35 CORRIDOR

1.0 INTRODUCTION



In the past 20 years, Hays County, Texas has experienced one of the highest rates of growth in Texas and the nation… fueled for the most part by the metropolitan area growth of Austin and the IH-35 development corridor, the natural amenities of the County, reasonably priced housing, affordable cost of living, and an acceptable commute time to nearby employment centers. Some areas of the western portion of the County have grown due to an influx of retirees, local ambience, and tourism. Until 1960, population growth in Hays County was rather stagnant. Between 1960 and 1980, growth began to accelerate. Then, the population began to boom with high growth rates averaging from 4 to 5 percent annually from 1980-2010. In the last 30 years, Hays County population increased almost four-fold from 40,594 in 1980 to a recent 2009 Census estimate of almost 156,000 people.

While growth has noticeably slowed in the past two years due to depressed economic and real estate activity, the tremendous growth to date has increasingly impacted limited existing water supplies in the western part of the County. All three of the IH-35 corridor cities in the County (San Marcos, Kyle and Buda) have taken multiple actions to secure additional water in the last 10-15 years and are currently pursuing additional water supplies. In the portions of the County to the west, growth and periodic severe drought conditions have noticeably impacted available groundwater supplies and brought about regulation of non-domestic groundwater pumping of the Edwards (BFZ), Edwards (Barton Springs), and Trinity aquifers as well as provision of a new surface water pipeline into northwestern Hays County.



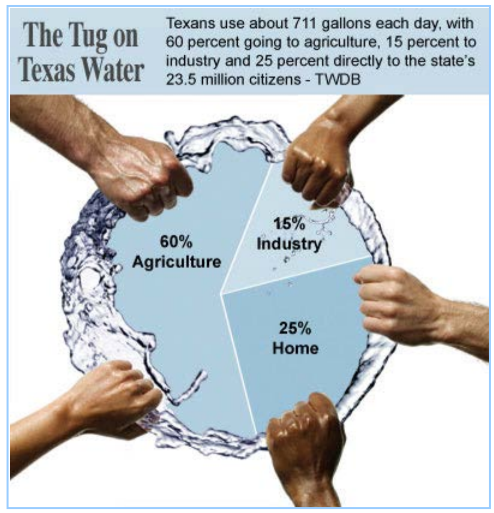
The succession of area wide droughts in mid-1990s, early and late 2000s, coupled with growth have impacted all three aquifers with mandated pumping restrictions being imposed in the two districts regulating the Edwards Aquifer in Hays County. In northwestern Hays County, an increasing number of Trinity Aquifer wells were going dry with each successive drought thus helping to bring about the creation of a new groundwater district in the western portion of the County. In the most recent severe drought in 2008, low rainfall and increased groundwater pumping resulted in the cessation of Trinity Aquifer spring flow at Jacob's Well in the Southwestern portion of the County.

Given the worsening water supply situation and the multiple municipal, regulatory districts, public and private water suppliers, and a plethora of individual on-site systems, Hays County government made application in 2008 to the Texas Water Development Board (TWDB) for a regional planning grant to study the situation and examine water and wastewater management options, infrastructure needs, and policy alternatives. The matching-funds grant was awarded, and in January 2009, HDR Engineering, Inc. was contracted to conduct the planning study.

1.1 PURPOSE AND GOAL OF THIS STUDY AND RELATIONSHIP TO OTHER STUDIES

For the most part, there are five levels of water-related planning that can be on-going at any given time, including those sponsored by the Federal, state, local and special district governments, as well as by the private sector. Of particular interest to the Hays County situation is:

(1) the State planning programs, supervised and funded by the TWDB,
(2) water management plans conducted by five regional water authorities, including the Lower Colorado River Authority (LCRA), the Guadalupe-Blanco River Authority (GBRA), the Edwards Aquifer Authority (EAA), the Barton Springs/Edwards Aquifer Conservation District (BSEACD), and the Hays Trinity Groundwater Conservation District (HTGCD),
(3) water facility planning conducted by the three larger private utilities of Dripping Springs Water Supply Corporation (DSWSC), Wimberley Water Supply Corporation (WWSC), and Aqua Texas, Inc. (Aqua), and
(4) wastewater facility planning conducted by the City of Dripping Springs and City of Wimberley.



It should be noted that TWDB also provides financial support to other regional and local planning efforts. TWDB has two main water planning assistance programs: (a) supervision and financial support of the Senate Bill 1-initiated, on-going regional water supply planning that is input to the periodic State Water Plan, and (b) a regional planning grants program that provides 50/50 matching funds for studies to more closely examine local conditions among neighboring entities, potential infrastructure needs, and regional cooperation potential.

This Hays County Water and Wastewater Facilities Plan study is being conducted under the latter regional planning grant program, yet generally fits into the framework of the regional water supply planning being conducted under the State Water Plan program. In other words, this study must *consider* the planning information and water management recommendations of the regional water plans in developing a more detailed facilities plan for Hays County. However, the regional water planning effort does not closely assess the needs of the unincorporated areas of counties, and in the areas west of IH-35 in Hays County, the unincorporated area is a key issue. The suburban and rural population of the unincorporated area is significant and is having a noticeable effect on the local water resources and the longer-term water planning of the entities with jurisdiction there.

With this in mind, this study was initiated to take a closer look at the unincorporated areas, how this growth and service demand may affect neighboring communities and utilities and the County water resources. The scope also provided for a more detailed look at water infrastructure needs beyond the narrower water supply planning of the regional water management plans, potential wastewater needs of the study area, and possible policy actions that may facilitate the provision of adequate water and wastewater utility service and help protect environmental resources.

In a typical municipal master plan, the study area is divided up into water pressure planes, sewer basins, and other study sub-areas. There is more insight on where growth is expected due to municipal or utility service boundaries, recent development trends, and other localized information. Detailed water and sewer models are developed that simulate system operations under current and future conditions. From this information, a water and wastewater facilities capital improvements program is defined, costed, and scheduled. In this study covering almost 450 square miles, two significant limitations prevent us from reaching this level of detail in identifying facility needs and costs, including not being able to forecast with sufficient accuracy where growth will occur in localized areas and study budget limitations in developing a series of more detailed utility models. However, it is possible to develop more generalized growth forecasts, assess how development in the rural areas may affect facility needs, generally cost water and wastewater facility needs, and examine how regulatory policy can affect the nature, feasibility, and cost of development and utilities and associated environmental impact.

1.2 STUDY AREA AND SPONSORING PARTICIPANTS

As described in more detail in Chapter 2, the planning area for this study includes the portion of Hays County, west of the IH-35 corridor cities. The cities of San Marcos, Kyle, and Buda had already assessed their water supply needs and are already engaged in developing their next increment of water supply. Thus, they elected not to participate in this study.

Sponsoring participants who contributed money or in-kind services towards this study include:

Texas Water Development Board (grantee),
County of Hays (TWDB grant applicant and contract manager),
City of Wimberley,
City of Dripping Springs,
City of Woodcreek,
City of Hays,
Barton Springs/Edwards Aquifer Conservation District,
Guadalupe-Blanco River Authority,
Hays Trinity Groundwater Conservation District,
Lower Colorado River Authority,
Dripping Springs Water Supply Corporation,
Wimberley Water Supply Corporation, and
Aqua Texas.

1.3 REPORT ORGANIZATION

The Hays County Water and Wastewater Facilities Plan is organized as follows:

- **Section 1** provides introductory information including the study background, purpose of the study, funding participants, and how the report is organized;
- **Section 2** relates information on existing conditions, including population and development trends, the local economic base, and entities with regulatory and/or utility service roles related to water resources;
- **Section 3** describes the methodology used in the study, including delineation of the study area, the span of the planning period, how population and service demands were forecast, information related to existing utility capacity, specification of unmet needs, and identification of alternative management strategies and costs;
- **Section 4** relates the identified management plans for the overall study area, for regional resource agencies, and for delineated planning sub-areas of the County;
- **Section 5** addresses identified facility needs including priority considerations in selecting recommended plans, key regulatory and development factors that affect the cost of utility service, and the magnitude of additional utility investment facing the County; and finally
- **Section 6** relates various policy issues that will affect the regulation, planning, implementation, operations, cost and impacts of future water and wastewater utility service.

2.0 EXISTING CONDITIONS

2.1 HISTORICAL DEVELOPMENT TRENDS

2.1.1 County and Study Area Population

Archeological findings indicate the presence of Paleo-Indian people near San Marcos Springs at least 8,000 years ago, and excavations at a site west of Wimberley reveal that Tonkawa Indians practiced farming in the area around A.D. 1200. However, settlement remained very sparse until 1848 when Hays County was formed by the State Legislature from a portion of Travis County, and the county organization and designation of San Marcos as the county seat gave impetus to further settlement. While the County population then fluctuated up and down over the next 50 years, it eventually grew to a population of around 15,000 persons by the early 1900s.

As indicated in Figure 2.1-1, the County population then remained fairly stagnant until the post World War II 1950s era, when modern growth in the County first began to accelerate. By 1960, the County population neared 20,000 residents. Within the next twenty years, the County population had doubled to over 40,000. Since the 1980s, development in Hays County has boomed as the Austin area metropolitan growth began to "spill over" into Hays County and more intense development along the IH-35 Austin-San Antonio corridor began in earnest. By the year 2000, the Census reported that the County had grown to almost 100,000 people. Ten years later, a 2010 population of over 157,000 people is reported for Hays County, even given several years of recent slower growth.

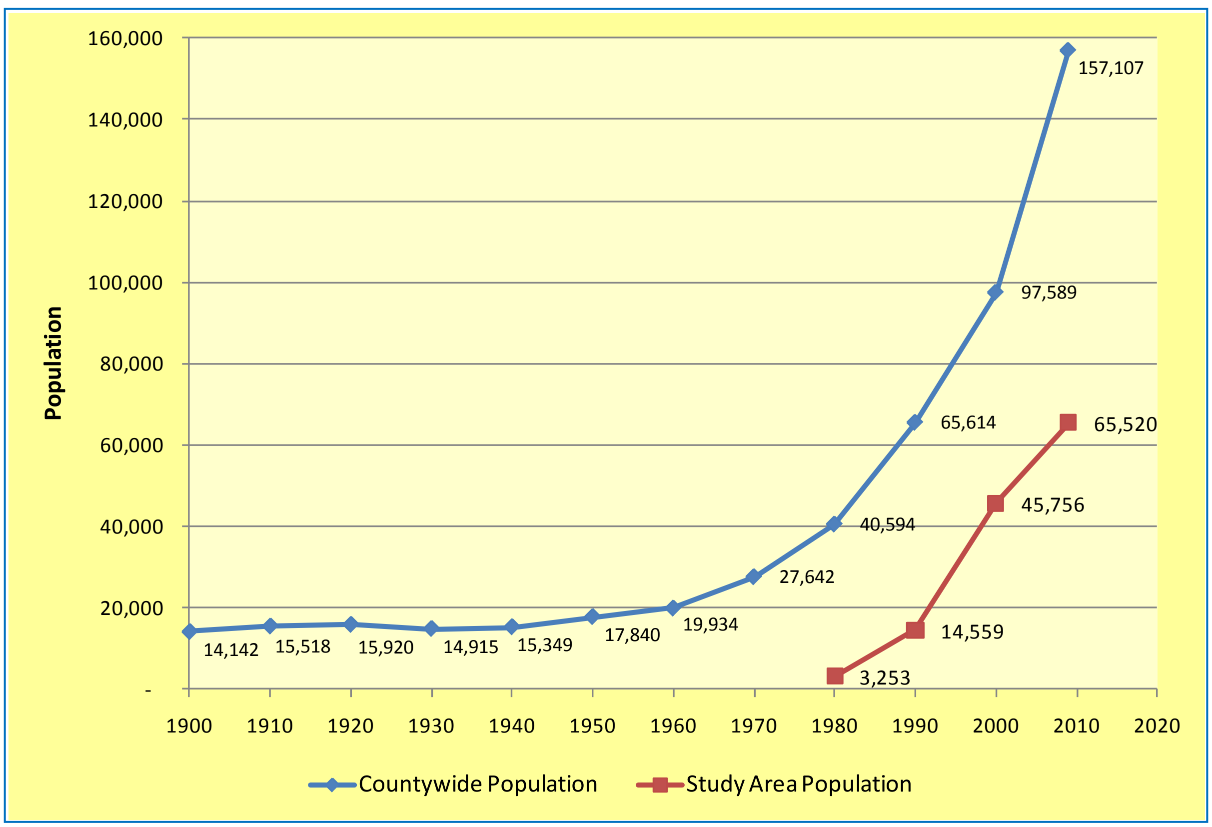


Figure 2.1-1. Historical Population Trends for Hays County and the Sub-County Study Area

During the 1980s and 1990s, the majority of this significant growth occurred in the communities of San Marcos, Kyle and Buda along the IH-35 corridor. However since the year 2000, the extent of growth in the remaining western portion of the County is gradually approaching that of the IH-35 corridor cities. Much of this western County growth is occurring in the Highway 290/RR 1826 corridors west of Austin, in and around Dripping Springs and the Wimberley/Woodcreek area. Given the limited time span of electric connections data provided this study by Pedernales Electric Coop, it was only possible to estimate the study area population since 1980, also shown in Figure 2.1-1. In 1980, the population base was relatively small, then increasing four-fold in the 1980s, three-fold in the 1990s, and then increasing by almost 50% since 2000. By 2010, the western study area is estimated have grown to a population of over 65,000 residents or about 42% of the County total.

2.1.2 Economic Base

Median household income for Hays County as a whole was estimated in 2008 at about $57,000 per year, which compares favorably to the statewide average of about $50,000. An earlier Federal economic Census in 2002 estimated retail sales in Hays County totaling about $1.246 billion, compared with $571 million in manufacturing shipments, and $240 million in wholesale trade. A 2007 research study that sought to determine which industries "drive" the local economy by generating outside income for the community also concluded that Hays County, as a whole, has a rapidly growing economy primarily dependent upon the retail, health care, social assistance, and manufacturing sectors to advance and maintain its economic development (Quintero, 2007).

However, much of the manufacturing and wholesale trade arises from businesses along the IH-35 corridor. A noticeable amount of the growth in the northern part of the County is related to "bedroom" commuting to various types of employment in Austin, and local employment and money actually spent in western Hays County is primarily manifested in retail trade. In the Wimberley/Woodcreek area, the significant arts and music sector and the presence of a large retirement population also emphasizes the importance of the retail trade sector. Within that overall retail trade activity is a noticeable portion associated with tourism-related sales activity.

2.1.3 Environmental Resources

Location and EcoRegions. Hays County is located in central Texas and covers approximately 679 square miles. This Plan's study area west of the IH-35 corridor covers about 450 square miles. As detailed in the Hays County Regional Habitat Conservation Plan, the County lies on the edge of the Edwards Plateau and Texas Blackland Prairie ecoregions (Hays County, 2010c). The area generally west of IH-35 is within the Balcones Canyonlands portion of the Edwards Plateau ecoregion. The Balcones Canyonlands form the southeastern boundary of the Edwards Plateau. Vegetation in this region is characterized by plateau live oak, ashe juniper, and honey mesquite woodlands.

Geology and Soils. The Habitat Plan relates that this portion of Hays County has generally shallow, rocky soils over limestone bedrock formations. Some of the limestone formations are highly porous that provide channels for surface water to recharge the underlying Edwards Aquifer. This area is crossed by spring-fed streams, many of which have eroded canyons in the limestone bedrock. Several large, perennial rivers or streams occur within Hays County over the Edwards Plateau including the Blanco River, San Marcos River, Pedernales River, Barton Creek, Onion Creek, and Cypress Creek, and many of these waterways are fed by major springs.

Vegetative Cover. In 2001, the National Land Cover Data project indicated that forests, shrublands, and grasslands or crop fields were the primary land cover types in Hays County (MRLC, 2001). Forested areas cover approximately 42 percent of the county, shrubland vegetation covers approximately 30 percent of the county, and grasslands and crop fields cover approximately 21 percent of the county. Only slightly more than five percent of the county is identified as developed land, primarily including the cities of San Marcos, Kyle, Buda, Wimberley, and Drippings Springs and the Interstate Highway 35 and U.S. Highway 290 corridors.

Aquifers. Hays County is underlain by the Edwards Aquifer and the Trinity Aquifer. The Edwards Aquifer (Balcones Fault Zone or BFZ) extends across approximately 4,350 square miles over portions of eleven Texas counties from Bell County to Kinney County. The aquifer is composed of the porous limestones of the Edwards Group, Georgetown Limestone, and Comanche Peak Limestone formations (TWDB, 1995). The aquifer includes three distinct units or subdivisions, two of which (the San Antonio segment and the Barton Springs segment) occur in the eastern portion of Hays County. The groundwater divide between the San Antonio and Barton Springs segments of the Edwards Aquifer is thought to occur west of the City of Kyle.

The recharge zone of the Edwards Aquifer (Balcones Fault Zone or BFZ) occurs along the eastern boundary of the study area. The aquifer is a prolific producer composed of fractured and faulted highly porous (karstic) limestone (TWDB, 1995). The amount of recharge occurring as lateral, subsurface inflow from the Trinity Aquifer is estimated to range from less than 25,000 to perhaps 64,000 acre-feet per year (USGS, 2007). Two-thirds of all Edwards Aquifer recharge occurs west of San Antonio. The remaining one-third enters through up dip, unconfined parts of the aquifer in Bexar, Comal, and Hays counties.

The aquifer has a production cap on it as a result of federal endangered species rules, and also causes certain federal rules related to impermeable cover and non-point source pollution to be invoked for the recharge and contributing zone areas of the aquifer. These rules are generally administered by TCEQ and the groundwater conservation district with jurisdiction. The contributing zone of the aquifer encompasses the majority of the recharge zone for Trinity aquifer in the study area. Groundwater flow in the Edwards is toward Barton or San Marcos Springs (TWDB 2008a, USGS 2004) depending on your point of reference. Precipitation recharge on the Edwards can be up to 100% and the majority of recharge result from streams and rivers flowing off the Trinity outcrops out of the Hill Country off the Balcones Escarpment and across the associated faults (TWDB 2008a, USGS 2004).

The Trinity Aquifer is the principal aquifer that provides groundwater to the residents of the study area and is composed of Trinity Group geologic formations, which include upper and lower members of the Glen Rose formation in Hays County, and extends across a wide band including 55 counties in the central part of Texas. The Glen Rose formation outcrops at the surface in portions of Hays County west of the Edwards Aquifer recharge zone (TWDB, 1995 and HTGCD, 2005). The Cow Creek limestone is the most productive geologic unit within the middle Trinity aquifer across the Trinity portion of the study area (Wierman et. al, 2010). In general the aquifer is much more productive and less prone to drought impact in the Wimberley area than from Dripping Springs north.

Yields and water quality in the aquifer can vary considerably over a short distance because many of the of the formations that make up the Trinity Aquifer are primarily limestone and yields are controlled by the location of fractures and dissolution features as well as lithology (Wierman et. al, 2010; TWDB, 2009a).

Trinity groundwater flow is generally from the northwest to southeast and provides recharge to the Edwards aquifer along the BFZ where the two aquifers laterally interface (TWDB, 2009a). Because of lithological differences, the middle Trinity is more accepting of rainfall recharge than the upper Trinity. The middle Trinity is exposed in the Wimberley area and in the Hill Country west of the study area (Wierman et. al, 2010; TWDB, 2009a). The TWDB has assigned a precipitation recharge rate of between 3-6% or about 0.75 inches per year for most of the Trinity study area (TWDB, 2009a). The majority of recharge occurs along stream beds into karst and structural features (Wierman et. al, 2010; TWDB, 2009a).

Surface Water. Several rivers and major creeks cross portions of Hays County, including the Blanco River, San Marcos River, Pedernales River, Cypress Creek, Onion Creek, and Barton Creek. These major waterways, and the numerous minor streams and creeks that feed them, are important water resources that support wildlife, riparian habitat, recreational uses, and aesthetics. Several significant springs occur in Hays County, including San Marcos Springs and Fern Bank Springs (which have been designated as critical habitat for several federally listed species) and Jacob's Well. There are also many other minor springs located across the county that discharge water from the Edwards Aquifer, Trinity Aquifer, and local groundwater sources.

Endangered Species. As stated in the County's Habitat Plan, the dense woodlands and open savannas of live oak, ashe juniper, and honey mesquite in the limestone hills and valleys of the area provide habitat for federally endangered golden-cheeked warblers and black-capped vireos. Spring-fed waterways help recharge the Edwards Aquifer. A wide variety of aquatic species depend on the water quality and quantity these drainages collect. Over 40 species of highly adapted, aquatic, subterranean species are known to live in the Edwards Aquifer (Longley, 1986). Seven aquatic species are listed as endangered in the Edwards Aquifer system, and one is listed as threatened. These include the Fountain Darter, Texas Blind Salamander, San Marcos Gambusia, Texas Wild Rice, Comal Springs Riffle Beetle, Comal Springs Dryopoid Beetle, Peck's Cave Amphipod and the San Marcos Salamander is listed as threatened (Edwards Aquifer Website, 2010). While the endangered and threatened aquatic species are associated with nearby water resources outside this study area, the proximate presence of these unique species highlights the sensitive nature of the spring-related environments in the western portion of Hays County.

The purpose of the Regional Habitat Conservation Plan (RHCP) is to support a federal Endangered Species Act Section 10(a)(1)(B) incidental take permit by establishing a conservation program that minimizes and mitigates to the maximum extent practicable the impacts of authorized take of the golden-cheeked warbler and blackcapped vireo in Hays County. As related in the Habitat Plan, the RHCP is needed because population growth in Hays County over the next few decades will drive a variety of new land development and infrastructure projects and result in other land use changes across the county. These anticipated land use changes will increasingly come into conflict with sensitive natural resources, including federally listed species. The RHCP will provide a streamlined mechanism for the County and its citizens to comply with the ESA. The County recognizes that a coordinated regional habitat conservation plan (HCP) will provide an effective tool in meeting the diverse needs of both people and sensitive wildlife.

2.2 WATER RELATED PLANNING, REGULATORY, AND UTILITY ENTITIES

2.2.1 State of Texas

2.2.1.1 Texas Water Development Board

The Texas Water Development Board (TWDB) is designated as the State's water planning and financial assistance agency under provisions of Chapter 16 of the Texas Code. Its mission is to provide leadership, planning, financial assistance, information, and education for the conservation and responsible development of water for Texas. To accomplish its goals of planning for the state's water resources and for providing affordable water and wastewater services, the TWDB provides water planning, data collection and dissemination, financial assistance and technical assistance services to the citizens of Texas. It is charged by the Legislature with the development of the State Water Plan; oversight, technical assistance, and funding support of a broad regional water supply planning process; and oversight, technical assistance and funding support of a regional groundwater planning process, among other programs. The TWDB also manages a matching grant program that provides financial support for regional water, sewer, and flood control planning, as well as water-related research. Studies funded under the regional planning grant program are intended to be generally consistent with the broader regional water supply planning program, where applicable, and to provide greater detail on local water-related issues and facility needs.

State Water Plan and Regional Water Planning. Prior to 1997 and as part of their statutory responsibilities, the TWDB had developed a series of State Water Plans and updates that addressed state, regional, and local water needs. These earlier Plans were primarily developed by TWDB staff, in coordination with other state agencies, water entities, and the general public. Implementation of State Water Plan recommendations was thought to be hampered by lack of funding assistance and local buy-in. The severe drought in the mid-1990s provided the impetus for the passage on the omnibus legislation Senate Bill 1 by the 75th Texas Legislature in 1997. This comprehensive water legislation was also an outgrowth of increased awareness of the vulnerability of Texas to drought and to the limits of existing water supplies to meet increasing demands as population grows. Among many things, Senate Bill 1 charged the TWDB to identify a series of appropriate water planning regions in the state and to initiate, support, and to monitor a series of regional planning efforts that would provide the basic input to the update of the State Water Plan and be updated on a regular 5-year cycle. Further significant changes to State water planning and policy were enacted by the Legislature with Senate Bills 2 and 3 in subsequent sessions.

In addition to revamping water planning in the State and providing for a revised approach to groundwater planning and management that increased local involvement and buy-in, the new laws also further addressed outstanding regulatory and financial implementation issues. Beginning January 2002, TWDB financial assistance for water supply projects may be provided only to projects that meet identified needs in a manner that is consistent with the approved regional water plans. In addition, the Texas Natural Resource Conservation Commission (now the Texas Commission on Environmental Quality or TCEQ) may not issue a water right permit for municipal purposes after January 2002 unless it is consistent with an approved regional water plan. Senate Bill 2 also provided for the creation of the Water Infrastructure Fund (WIF) program that, using State appropriations, provides for below-market rate loans to eligible entities for projects that are recommended water strategies in the approved regional or state water plans.

Subsequent to Senate Bill 1, the TWDB then promulgated rules, identified 16 planning regions in the State, appointed and funded local regional water planning groups(RWPGs) representing diverse water-related interests, provided basic planning data, and the regular cycle of regional/state water supply planning began. This first culminated with the adoption of regional plans in 2001, followed by the State Water Plan update one year later in 2002. The process was repeated with the 2006 (regional) and 2007 (state) updates of the plans. The RWPGs have recently adopted their 2011 updates, and the production of the 2012 State Water Plan is pending.

In the Hays County study area, two regional water planning groups are represented. Region K (Lower Colorado) encompasses the portion of northern Hays County that lies in the Colorado River Basin. Region L (South Central Texas) includes the southern portion of the County that lies in the Guadalupe River Basin. The topographical divide that separates the river basins spans Hays County from southwest to northeast and divides the County approximately in half.

Each planning region in the State encompasses a broad area containing multiple counties. For instance, Region K contains all or parts of 14 counties, and Region L bounds all or parts of 21 counties. Each county contains a number of communities and an array of different types of possible water use (municipal, industrial, steam-electric cooling, irrigation, livestock, etc.). In other words, the number of different water user groups (WUGs) and types of water use that must be studied within each region is rather formidable. For valid reasons, most of the study efforts focus on the organized demand centers (WUGs) and major types of water use.

The rural portions of counties are termed "County-Other" and typically receive less planning attention. Water management recommendations for County-Other usually tend towards less costly alternatives, such as water conservation, on-site water systems, etc. Even in rapidly-growing metropolitan areas where suburban expansion is occurring in unincorporated areas, the County-Other category typically receives limited attention, in part for lack of detailed planning data coupled with limited study budgets.

One of the intents of this regional planning grant study is to look at the facility needs of the suburban and rural areas of Hays County in greater detail than did the two regional plans and to identify management and policy initiatives that could address the water-related needs of existing residents and new growth in both the incorporated and unincorporated portions of the study area.

Groundwater Management Area (GMA) Process. In 2001, as part of Senate Bill 2, the Legislature moved the responsibility of creating groundwater management areas to the TWDB and directed the TWDB to delineate groundwater management areas that covered all of the major and minor aquifers of the state. In 2005, new State legislation initiated the creation of 16 regional Groundwater Management Areas (GMAs) in Texas that would regionalize decisions on groundwater availability and define a permitting target/cap for groundwater production. The legislation also requires regional water planning groups to use groundwater availability numbers determined by the local groundwater conservation districts (TWDB, 2006).

A result from this process has been the definition of a series of Desired Future Conditions (DFCs) that are the desired, quantified conditions of groundwater resources (such as water levels, water quality, spring flows, or volumes) at a specified time or in perpetuity. In essence, a desired future condition is a management goal that captures the philosophy and policies addressing how an aquifer will be managed (TWDB, 2006). For practical purposes and to coincide with regional water supply planning, TWDB rules require that DFCs be defined over the current 50-year period as the regional water supply planning efforts. With a defined DFC, and an estimate of current and future exempt use, the amount of Managed Available Groundwater (MAG) supply, that is available for permitting, can be determined over time.

2.2.1.2 Texas Commission on Environmental Quality

The Texas Commission on Environmental Quality (TCEQ) is the environmental planning and regulatory agency for the state under many various sections of the Texas Water Code. TCEQ functions address a number of relevant water supply, quantity, and quality and waste disposal issues, including among other responsibilities the management of the State's surface water right permitting system; dam safety; oversight of special water, utility, and underground water conservation districts; regulation of rates, operations, and services of water and sewer utilities; water-efficient pluming standards; evaluation and designation of priority groundwater management areas; permitting of wastewater reuse; management and monitoring programs to protect water quality; permitting and design of wastewater and solid waste disposal facilities.

Priority Groundwater Management Area (PGMA) Process. One of the TCEQ programs of particular interest to this study is the Commission's charge to evaluate and designate priority groundwater management areas (i.e. areas of Texas experiencing, or expected to experience, critical groundwater problems) and to initiate the creation of groundwater conservation districts (GCDs) within those areas, if necessary. The TCEQ has completed a final report that addresses groundwater management in the Hill Country PGMA, encompassing portions of western Comal, Hays, and Travis counties (TCEQ, 2010d). This report identifies and evaluates the areas in the Hill Country PGMA boundary not currently included in a GCD and recommends that the best solution to address groundwater management in the Hill County PGMA is for the Commission to issue an order creating a new GCD with boundaries that include the western Comal County territory, the southwestern Travis County territory, and the portion of Hays County in the Hill Country PGMA that is presently in the Hays Trinity GCD. The TCEQ goes on to recommend various duties to be assigned a consolidated District, a recommended structure for a new Board of Directors, and a District tax to fund its operations and maintenance activities. The matter has been referred to the State Office of Administrative Hearings (SOAH), which conducted a Public hearing on the matter in October 2010. SOAH is now considering a recommendation to the TCEQ. Consolidation of southwestern Travis and western Comal counties with the existing HTGCD in Hays County has been opposed by the HTGCD and supported by Hays County.

2.2.2 Regional

2.2.2.1 River Authorities

Lower Colorado River Authority

Background. LCRA is a conservation and reclamation district created by the Texas Legislature in 1934. It has no taxing authority and operates solely on utility revenues and fees generated from supplying energy, water and community services. LCRA manages water supplies and floods in the lower Colorado River basin, develops water and wastewater utilities, supplies low-cost electricity for Central Texas, provides public parks, and supports community and economic development in 58 Texas counties.

Of particular interest to this study, LCRA manages water supplies for cities, farmers and industries along a 600-mile stretch of the Texas Colorado River between San Saba and the Gulf Coast. LCRA operates six dams on the Colorado River that form the scenic Highland Lakes: Buchanan, Inks, LBJ, Marble Falls, Travis and Lake Austin. LCRA regulates water discharges to manage floods, and releases water for sale to municipal, agricultural and industrial users. The organization helps communities plan and coordinate their water and wastewater needs. It also operates an environmental laboratory and monitors the water quality of the lower Colorado River. It enforces ordinances that control illegal dumps, regulates on-site sewage systems, and reduces the impact of major new construction along and near the lakes.

LCRA operates 32 water and wastewater systems throughout Central Texas. LCRA provides wholesale and retail treated water and wastewater service to various customers in northern Hays County through its West Travis Regional Utilities. The West Travis County Region consists of two water treatment systems, one raw water transportation system, and three wastewater collection systems. The water system has grown from 400 customers in 1994 to more than 4,300 retail customers in 2009. The wastewater system serves about 1,300 customers. LCRA has invested almost $90 million in the water system and $23 million in the wastewater system to meet the needs of residents and to meet regulatory requirements and improve reliability of the system.

In the Hays County study area, the LCRA supplies treated water service to the City of Dripping Springs, the future Headwaters development project through the City of Dripping Springs, wholesale service to various water districts and water supply corporations serving Belterra, High Pointe, Rimrock, Rutherford Ranch, Reunion Ranch, and Salt Lick communities, as well as direct retail service to various subdivisions and individual properties within its service area. On November 17, 2010, LCRA's Board of Directors decided to seek a buyer for the Authority's 32 rural and suburban water and wastewater utility systems. LCRA believes it will take 18 to 24 months to find a buyer and complete the sale. If no viable buyer is found, LCRA will reconsider its options at that time.

Water Supply. LCRA has the rights to more than 2.1 million ac-ft/yr. These rights, based mostly on surface water permits issued by the State of Texas, include the right to divert and use up to 1.5 million ac-ft/yr from lakes Buchanan and Travis and 636,750 ac-ft/yr under downstream run-of-river water rights from the Gulf Coast, Lakeside, Garwood and Pierce Ranch irrigation operations. The Region K Water Plan indicates a firm water supply of 402,172 ac-ft/yr available in the LCRA system and firm water supply commitments of 402, 723 ac-ft/yr, thus yielding a potential current-day shortage of 551 ac-ft/yr if all commitments were exercised today. Both Region K and LCRA's Long-Range Water Supply Plan identify various management options for conserving water and developing new firm water supplies to **meet the growing needs of its service area.**

Guadalupe-Blanco River Authority

Background. GBRA is a water conservation and reclamation district and a public corporation established by the Texas Legislature, first created in 1933 under Section 59, Article 16 of the Constitution of Texas and called the Guadalupe River Authority. In 1935, it was reauthorized by an act of the Texas Legislature as the Guadalupe-Blanco River Authority.

GBRA provides stewardship for the water resources in its ten-county statutory district, which begins near the headwaters of the Guadalupe and Blanco Rivers, ends at San Antonio Bay, and all or portions of ten counties, including Kendall, Comal, Hays, Caldwell, Guadalupe, Gonzales, DeWitt, Victoria, Calhoun and Refugio counties. GBRA cannot levy or collect taxes, assessments, or pledge the general credit of the State of Texas. Funding for special projects comes from state and federal grants. All other revenues for maintenance and operation are obtained from the products and services that GBRA provides to customers throughout the basin.

GBRA provides various wholesale and retail water and wastewater services across its basin. In particular, GBRA provides treated water supply to the cities of Kyle and Buda and the Sunfield Municipal Utility Districts and operates the San Marcos Water Treatment Plant and wastewater treatment plants for Buda, Shadow Creek and Sunfield MUDs in the eastern portions of Hays County. Currently, GBRA only provides wastewater service to the Deer Creek Rehabilitation Center from its 0.025 mgd wastewater treatment plant located near Wimberley in the western Hays County study area.

Water Supply. As of April 2009, GBRA had contracts to provide water to over 40 public and private entities (TWDB, 2010b). In the upper Basin, diversions from Canyon Reservoir are currently authorized up to an average of 90,000 ac-ft/yr. The Region L Plan identifies 87,700 ac-ft/yr as Canyon Lake's firm supply. The Plan also indicates another 41,548 ac-ft/yr of GBRA firm supply and 133,953 ac-ft/yr of interruptible supply in the lower basin. All totaled, GBRA can provide at total of 263, 201 ac-ft/yr of firm and interruptible supplies.

2.2.2.2 Groundwater Districts

Hays Trinity Groundwater Conservation District

The Hays Trinity Groundwater Conservation District is a local unit of government authorized by the Texas Legislature in 1999 to manage and protect groundwater under the auspices of Chapter 36 of the Texas Water Code. The District was ratified by local voters in May 2003. The District encompasses the portion of Hays County to the west of the Barton Springs/Edwards Aquifer Conservation District and the Edwards Aquifer Authority and has jurisdiction over the development and use of the Trinity Aquifer Group within its jurisdiction. The District has a 5-member elected managing Board of Directors.

The legislation creating the District did not provide full Chapter 36 powers and placed limitations on district funding (only fees for well registration and connections to water systems), definition of exempt wells (does not consider residential lot size provisions of Chapter 36), access to private property for well inspection (no authority), autonomy (County provides oversight), and two year terms of office (Chapter 36 provides for four year terms). As a result, the District has had very limited financial resources, a burgeoning problem with exempt wells, an inability to ensure proper well installation or investigate possible violations, limited autonomy, and the cost and diverted focus associated with holding elections every year.

Barton Springs/Edwards Aquifer Conservation District

Upon a petition in the mid-1980s by most of the municipalities that depend on the Edwards Aquifer in Travis and Hays Counties as a water supply, the 70th Texas Legislature passed Senate Bill 988 in 1987 and created the Barton Springs/Edwards Aquifer Conservation District (BSEACD) as a groundwater conservation district under what is now Chapter 36, with a directive to conserve, protect, and enhance the groundwater resources in its jurisdictional area.

Under its enabling legislation, the District's jurisdictional area is bounded on the west by the western edge of the Edwards Aquifer outcrop and on the north by the Colorado River. The eastern boundary is generally formed by the easternmost service area limits of what are now the Creedmoor-Maha, Aqua-Texas Water Services, and Goforth Water Supply Corporations. The District's southern boundary is generally along the established groundwater divide or "hydrologic divide" between the Barton Springs and the San Antonio segments of the Edwards Aquifer. The area covers the unconfined (recharge) zone and the confined zone of the Barton Springs segment of the Edwards Aquifer but not its contributing zone. It includes the locations of all wells in the Barton Springs segment and also the locations of the natural outlets of the aquifer at Barton Springs and several other smaller springs along the Colorado River. While the District area encompasses approximately 247 square miles in Bastrop, Caldwell, Hays, and Travis Counties, about one-half of the District lies in Hays County and about one-quarter of the District is within the eastern portion of the boundary of this study. Although the jurisdictional area is defined by boundaries of the Edwards Aquifer, the District regulates groundwater from all aquifers in this area. An increasing amount of groundwater from other aquifers, especially the underlying Trinity Aquifer, is now being used in the District.

A five-member Board, elected for four-year staggered terms, serves as the governing body of this District. The BSEDCD is primarily funded by an assessment made to the City of Austin and water use and transport fees derived from permit holders. The BSEACD permits groundwater production from all aquifers within its jurisdictional area, namely the Edwards and Trinity aquifers. The different aquifers fall within specified management zones with regulations specific to each zone. Groundwater from new wells in the freshwater portion of the Edwards Aquifer is only permittable on an interruptible-supply basis and is subject to complete curtailment of pumpage during extreme drought. Firm-yield permits for groundwater production are available from the Saline portion of the Edwards Aquifer to the east of the freshwater Edwards, and the underlying Middle and Lower Trinity aquifers. As such, an increasing amount of Trinity Aquifer is now being used in the District, and the District is actively promoting desalination as a future water supply.

Edwards Aquifer Authority

The Edwards Aquifer Authority was created by the Edwards Aquifer Authority Act adopted by Texas lawmakers in 1993 and put into effect in 1996. The Legislature created the Authority as a special groundwater district with the purpose to manage, enhance, protect and regulate the San Antonio segment of the Balcones Fault Zone Edwards Aquifer, more commonly referred to as the Edwards Aquifer. As a result, the Authority is responsible for a jurisdictional area that spans 8,800 square miles across eight counties in south-central Texas, including all of Uvalde, Medina, and Bexar counties, plus portions of Atascosa, Caldwell, Guadalupe, Comal, and Hays counties.

The Authority provides for required well registration and authorizes Edwards groundwater withdrawals for non-exempt wells, and the construction of wells through two distinct permitting programs. The groundwater withdrawal permit program helps the Authority monitor water quantity (supply and demand) through a groundwater allocation system mandated by the Edwards Aquifer Authority Act. Under this system, other programs, such as a Critical Period Management Plan for reducing aquifer use during drought and Groundwater Conservation Plans aimed at improving water use efficiency, help to promote conservation practices across the region. Through its well construction and plugging permit program, the Authority helps protect water quality by ensuring all wells drilled into or through the Edwards Aquifer are properly constructed and/or plugged to standards that minimize the risk of non-point pollution and other contaminants entering the aquifer through poorly constructed or deteriorated wells.

2.2.3 <u>Hays County</u>

On March 1, 1848, the state legislature formed Hays County from territory that was formerly part of Travis County. After a series of boundary adjustments over time, Hays County now occupies an area of 693.5 square miles. County organization and the designation of San Marcos as county seat gave impetus to greater settlement. Hays County's population has grown from fewer than 500 residents at its inception to almost 160,000 persons in recent 2010 population estimates. It continues to be one of the fastest-growing counties in Texas.

Under authority granted by the State of Texas, Hays County government provides a variety of services including, among other programs, provision of County roads, drainage, parks, and policing/justice services. It conditions the subdivision of land in the unincorporated area and supervises design standards for roads and on-site septic systems.

The land development densities allowed in recently-adopted County subdivision regulations are centered on the type of utility service to be provided, what type of entity provides utility service, and the location of the property relative to sensitive groundwater recharge areas. The low densities provided for development employing individual on-site wells and septic systems essentially discourage this type of subdivision development. Where it does occur, the larger resulting lot sizes help protect both groundwater supply quantity and quality. Higher densities, allowed for rainwater collection systems, advanced septic systems, and centralized water supply and wastewater treatment systems, incentivize these approaches.

On May 9, 2000 the Hays County Commissioners Court passed a resolution authorizing the creation of the Hays County Water and Sewer Authority pursuant to Section 412.016 (now §562.016) of the Texas Local Government Code. This statute provides that a "county may acquire, own, finance, operate, or contract for the operation of, a water or sewer utility system to serve an unincorporated area of the county," also subject to some other statutory provisions. The statute also provides that "to finance the water or sewer utility system, a county may issue bonds payable solely from the revenue generated by the water or sewer utility system" and "this subsection does not authorize the issuance of general obligation bonds payable from ad valorem taxes to finance a water or sewer utility system." The action by the Commissioners Court, at that time, further limited any County involvement to just facilitating planning and further required that any expenses relating to water or sewer service provided through the new Authority be borne by those persons or entities receiving the utility service.

In additional to this planning facilitation role (as evidenced by their support and management of this study), the County also provides a "linked deposit" program that provides low interest loans from participating local banks to assist County residents in developing alternatives more desirable than the use of limited groundwater.

2.2.4 Municipal

City of Dripping Springs

The City of Dripping Springs is located at the juncture of U.S. Highway 290 and Ranch Road 12, twenty-five miles west of Austin in northern Hays County. What is now the community of Dripping Springs was first settled in 1854, but remained unincorporated until 1981 when it acted to prevent the City of Austin from annexing Dripping Springs into its extraterritorial jurisdiction. The City has a growing role in providing wastewater and water utility service. It owns and operates a wastewater treatment facility and has a future role in retailing service to the nearby planned Headwaters at Barton Creek development, which has a supply contract with LCRA and a service agreement with the City. While the City has certificated a service area for portions of the City and adjacent areas, the City's near-term ability to expand its water utility role is constrained by the lack of its own groundwater supply or surface water supply agreement capacity in LCRA's Highway 290 pipeline. Currently, the City depends on the Dripping Springs WSC to provide water service in and around the City.

City of Wimberley

The City of Wimberley is located on Ranch Road 12, fourteen miles northwest of San Marcos and forty miles southwest of Austin in western Hays County. In May 2000, a central portion of the Wimberley area was incorporated as the Village of Wimberley, including about 10% of the Wimberley area residents and many of the centrally located businesses. In 2007, the City Council renamed it the City of Wimberley. Wimberley has a mayor and council form of government. Wimberley boasts a strong tourism and eco-tourism economy and is home to many retirees, writers, artists, and musicians. The City has no current direct role in the provision of water or wastewater utility service. Local water service is provided by the Wimberley WSC, and limited sewer service is provided by the GBRA. The City has been working with

GBRA to develop a new wastewater treatment plant that would serve the central area of the City and has also been active in supporting the pursuit of additional water supplies to limit local groundwater withdrawals to help protect its unique natural resources and related eco-tourism economy.

City of Woodcreek

The City of Woodcreek is a primarily residential community located on Ranch Road 12 about fifteen miles northwest of San Marcos and about a mile north of Wimberley in western Hays County. Development began in the 1970s, and by the early 1980s, Woodcreek had a country club and with an eighteen-hole championship golf course. Citizens incorporated in the mid-1980s and established a mayor and council form of government. The City has no current direct role in the provision of water or wastewater utility service. Local water service and limited sewer service is provided by Aqua Texas, Inc. The City has been investigating ways to acquire, own, and operate those utilities.

Smaller Municipalities

There are other small incorporated communities in the study area. The City of Hays and Mountain City are located in the northeastern part of the County along RR 1626. Both are older communities whose fortunes have risen and fallen over a 100 to 150 year period. The old Mountain City site is now the location of a school. In 1984, a subdivision previously known as Mountain City Oaks incorporated under the name Mountain City. The City of Hays was founded in the 1970s following a movement to incorporate the Country Estates subdivision. Both of these municipalities have a direct role in providing water service. The Village of Bear Creek is located in the Bear Creek Oaks Subdivision in northern Hays County, adjacent to RR 1826 and the Travis County line. The subdivision was initiated as a 5-6 acre lot development in the late 1970's. In 1997, the residents voted to incorporate as a Village. The Village currently has no direct role in providing water service. About one-half of the Village is provided retail water by LCRA's West Travis County Regional System with the remainder of the development served by wells and rainwater systems.

Larger Cities Adjoining the Study Area

The larger cities of Austin, San Marcos, Kyle and Buda are located adjacent to the study area. All of these cities have a direct role in providing water and wastewater service and also have the potential for providing additional service in the study area through future annexations or extension of service into their ETJ. Because of environmental concerns, it is unlikely that City of Austin utility service will extend too far into the Edwards Aquifer recharge zone, although such service is pending as a result of an agreement to condition the development of a large subdivision to greater environmental standards than would have otherwise applied.

2.2.5 <u>Other Entities</u>

Special Water Districts

There are several special water districts within the County, typically serving larger developments such as Belterra along the Highway 290 corridor. Most were created by special Legislative acts and subject to the Texas Water Code and oversight authority and rules of the TCEQ. Most of these districts were created as a means of partially reimbursing developers for their investments in providing utility infrastructure and as an organizational structure for managing the operations and finances of the utility. A number of these Districts (mainly Municipal Utility Districts or MUDs) have the ability to generate funding through both a combination of property taxes and utility rate revenue. There are other forms of special water districts (SUDs, WCIDs, etc.) that rely primarily on utility sales revenue.

Utility Corporations

Within the Hays County study area, water supply corporations are the primary retailers of water service in the organized communities. The Dripping Springs and Wimberley WSCs are *non-profit* corporations, owned by the members, and governed by an elected board. The rates for these non-profit utilities are set directly by its Board, subject to appeal to the TCEQ under certain circumstances. Aqua Texas, serving the Woodcreek area and other smaller developments in the eastern part of the County, is a *for-profit*, investor-owned utility (IOU), governed by a private Board of Directors, and subject to direct rate regulation by the TCEQ. By law, it is entitled to a prescribed rate of return on its invested capital.

Other existing WSCs include those serving various existing or planned developments such as River Oaks Ranch Estates, Reunion Ranch, Cardinal Valley, Cedar Oaks Mesa, Cielo Azul Ranch, Goldenwood West, Radiance, Headwaters at Barton Creek, La Ventana, Lost Springs Ranch, River Oaks Ranch, Signal Hill, Skyline Ranch, and Wimberley Oaks.

Other Interest Groups

There are a number of private trade and non-profit groups with special interest and activities affecting development and growth issues, environmental protection, and provision of governmental and utility service in Hays County, including among others in no particular order, various Chambers of Commerce, the Greater Capitol Area Home Builders Association, Hays County Water Planning Partnership, Hays County Community Action Network, Hill Country Alliance, Friendship Alliance, Save Our Springs Alliance, Hill Country Conservancy, and the Wimberley Valley Watershed Association, as well an array of similar state and national trade, environmental and public interest organizations.

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3.0 OVERVIEW OF METHODOLOGY

The study area in western Hays County covers about 500 square miles and contains many water-related entities, ranging from state and regional interests down to small utilities serving individual subdivisions. The level of detail contained in a municipal master plan, where *zonal* segments within a community are analyzed for growth and specific facility needs are determined for each zone, is not possible with the scope and budget limitations of this study and the great number of entities present for which there is limited available data.

The methodology used in this study is fairly standard for a *regional-oriented* water resources plan that spans multiple basins, watersheds, aquifers, and management entities, as is the case in western Hays County. This study provides a closer level of analysis than do the multi-county regional water plans, but does not develop a specific plan for every small utility. For the most part, this study addresses water and wastewater needs at a higher sub-area level of the County. Where this study more specifically addresses certain municipal needs (Dripping Springs, Wimberley, and Woodcreek), it still does so at a high level, as we could not afford to engage in water or sewer system modeling that would develop detailed system improvements information.

Water plans age quickly and typically need to be updated every 3 to 5 years where rapid growth is occurring. The main purpose of this study is not to specify detailed, precise action or supplant the authority of local decision-makers, it is to provide an overview of the 50-year picture of the western Hays County water and wastewater situation to educate decision-makers and the public on current and pending water-related issues, outline conceptual recommended actions, and provide a general roadmap for addressing that future.

3.1 STUDY AREA AND PLANNING HORIZON

In developing the application for the TWDB planning grant that provided matching funds for this study, various Hays County entities were contacted to ascertain their interest in joining and partially funding this study. Because the cities of San Marcos, Kyle, and Buda had either recently performed studies, secured additional surface water supplies, and were participating in a separate effort to develop additional water supplies, they chose not to participate in this study. Various regional, county and local public and private interests in western Hays County did elect to participate (see Section 1.2), so the Hays County study area was bounded on the east by a line just west of the IH-35 corridor (excluding San Marcos, Kyle and Buda), on the north by Travis County, on the west by Blanco County and on the south by Comal County (see Figure 3-1).

Since a primary purpose of this study was to examine major water and wastewater needs, only more densely populated areas can provide a sufficient level of demand that makes such larger-scale projects economically feasible. More dense development also tends to cluster along major roadway corridors connecting these demand centers. If additional water supplies must be imported to an area, they typically extend along a roadway corridor to the demand center, thus making it possible to serve some portion of that intervening area.

With this in mind, the western Hays County study area was divided into 13 major sub-areas (see Figure 3-1) that generally relate to demand centers, roadway corridors, and existing utility service areas. Of these 13 sub-areas, the Dripping Springs and Wimberley sub-areas contain multiple entities that are separately identified by the TWDB and planned for. This study did likewise.

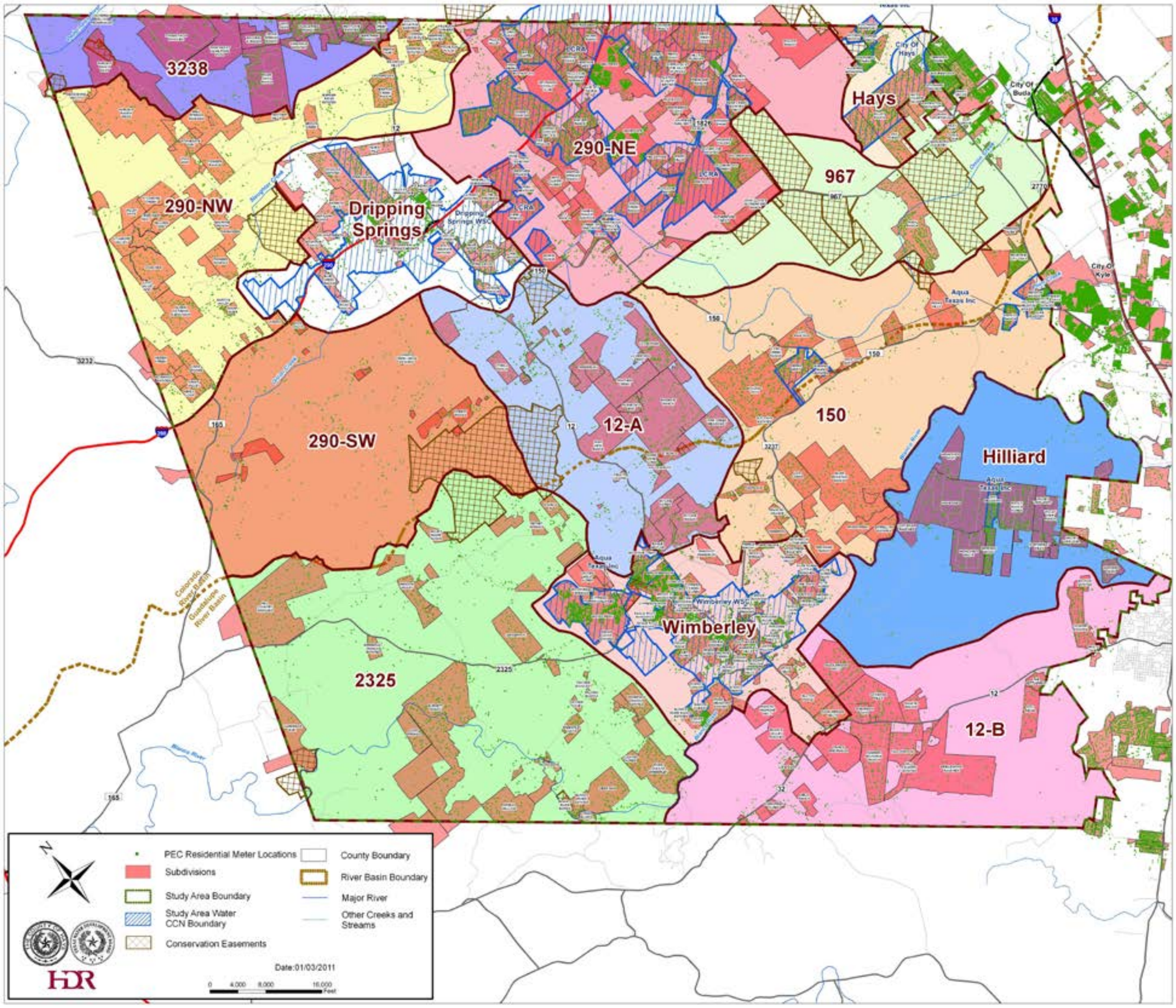


Figure 3.1-1. Study Area Boundary and Planning Sub-Areas

The delineated planning sub-areas, from northwest to southeast, include:

- 3238
- 290-NW
- Dripping Springs Area
  - Dripping Springs WSC
  - City of Dripping Springs
- 290-NE
- Hays
- 967
- 150
- 12-A
- 290-SW
- 2325
- Wimberley Area
  - Wimberley WSC
  - City of Woodcreek
  - Woodcreek Utilities
- Hilliard
- 12-B

The County map in Figure 3.1-1 is rotated slightly from true north to maximize the picture size and readability. Also shown on the map, of note, are the major roadways, river basins, rivers and major streams, utility certificated service areas, subdivisions, and residential electric connections. In some cases, given the density of development, the little green dots (electric connections) merge into solid green polygons.

The planning horizon for this study is a period of 50 years from 2010 to 2060, the same planning period as the recently-adopted multi-county regional water plans. Major water and wastewater projects can take from 5 to 20 years to develop. Many entities will also seek to reserve scarce water supplies and allow for excess capacity in the projects some years in advance of their ultimate need. Thus, this long-term planning period is appropriate for addressing the lead time necessary to develop this infrastructure before shortages appear, to size the facilities appropriately considering longer-term needs, and to provide a picture of possible long-term future development patterns, so that growth management planning and infrastructure development can be done in the near- and medium-term "with the long-term end in mind."

3.2 DATA SOURCES

This Plan faced its first technical challenge early-on in that the study scope was to provide more detail on urban, suburban, and rural development and water-related needs within the County, and yet it had been 9 years since the last U.S. Census in the year 2000. Population for the years between the decennial Census are estimated for County and named Places by State planning agencies, but become more suspect as the Census data ages, especially in rapidly-growing suburban and rural areas. Also, a number of other somewhat recent resource and infrastructure plans had also developed their own, sometimes noticeably differing, estimates of the current population.

To address this quandary and use what we believe to be the most credible basic planning data available, this study effort was fortunate to be provided Geographic Information System (GIS) coverage of residential electric connections data by the Pedernales Electric Cooperative, who provides electric service to the planning area (PEC, 2009). Knowing both the location and date of installation of the electric connections allowed us to compile and subdivide this information into many component areas of interest, including for the entire study area and by river basin, regional water planning area, groundwater district, municipality, certificated service area, and platted subdivision. This provided us current and accurate information on both the location and rate of growth in the study area, not possible with the use of Census or other sources of data. The cooperation of PEC is greatly appreciated.

The federal decennial Census was a source of data on historical growth of the County and for population per household sizes used in the population estimation (U.S. Bureau of Census, 2000). It should be mentioned that while the recently-conducted 2010 Census is beginning to release high-level data needed for legislative reapportionment, the more detailed data on counties and named places is not scheduled for release until May 2011.

The Texas Water Development Board's state and regional planning programs were also valuable sources of information on comparable population forecasts, per capita water use, available water supplies, unmet needs, alternatives, and management recommendations. Much of this information was accessed through the efforts of the Region K (TWDB, 2010a) and Region L (TWDB, 2010b) planning groups. TWDB reports on groundwater modeling and adopted desired future conditions and managed available groundwater (TWDB, 2009B, 2010c-h) for the Groundwater Management Area (GMA) process also provided valuable input to defining available groundwater supplies. Other TWDB reports on water loss management (TWDB, 2008B) and rainwater harvesting systems (TWDB, 2005) supplied useful information on these water management technologies.

Master plan and engineering report data from the two river authorities and the municipalities helped to define utility system and project features (LCRA, 2001 and 2006, GBRA, 2006 and 2009b, and City of Dripping Springs, 2010). Other data on water supply commitments from these entities helped to define available water supplies (LCRA, 2009 and 2010a and GBRA, 2009a).

Permits and other regulatory information were also accessed from State and regional regulatory entities (TCEQ, 2010a-d, Hays County, 2010a and b, HTGCD, 2009a and b, BSEACD, 2010b and c, and EAA, 2010a).

Finally, valuable information was gleaned from numerous personal communications in meetings, phone calls, and emails with various stakeholders. We appreciate the cooperation of County staff, regional providers, utility companies, municipalities, and other interest groups that provided input to this study.

3.3 PLANNING SCENARIOS

As is the case in many fast-growing areas with a rural ambiance and aesthetic, but sensitive, natural features, there is an on-going debate in Hays County about growth, the impacts of growth, and what can be done to foster, mitigate, or stop it. Even in the very limited instances around the U.S. where local authority has been sufficient to noticeably constrain growth, growth-related effects still permeate the situation, inducing inflated land prices and near-by suburban development.

In Texas, municipalities have various powers to regulate growth and define acceptable land uses within their corporate limits. However in their extraterritorial jurisdictions (ETJs) just outside the city, municipal powers are greatly diminished with regulatory authority essentially limited to requirements for watershed protection.

Cities have found that contractual developer agreements, which typically arise with the extension of municipal utility service to a proposed ETJ development, can be the most effective means of conditioning growth outside the city. In the unincorporated areas of Texas counties, there are even fewer growth-related controls, primarily related to subdivision platting and meeting various infrastructure design requirements. If new development can meet regulatory requirements, then it is very difficult and legally tenuous to deny approval to these projects.

At these various levels of local government in Texas, the ability to stop growth is practically non-existent unless a community has violated utility permit provisions, such that a highly undesirable regulatory moratorium is imposed on new utility connections. In fact, Texas state law essentially promotes growth in suburban and rural areas by providing developers the ability to create various different types of special water districts or corporations (MUDs, SUDs, WIDs, WSCs, etc.) if water and/or sewer utilities are either unavailable or refuse to be extended by a near-by city.

There are a number of dimensions to the growth management debate, most notably: (a) the chicken and the egg argument… which came first, the road and utilities or the growth, and (b) what is desirable development in the suburban areas, low density or compact development?

A variety of pro-growth, managed growth and no growth sentiments abound in the County. To attempt to address the range of these various sentiments, this study has defined three future planning scenarios:

- **High (HI) Case.** This planning scenario is a linear extrapolation forecast of the last 20 to 30 years' growth trend in electric connections. Given that significant water supply constraints were not too severe during most of the last three decades, this high case scenario essentially represents a forecast of growth that is unconstrained by water supply.
- **Middle (MID) Case.** This scenario reflects a slowing of growth for reasons (economy, road congestion, and new regulation) other than lack of water supply. Growth in most planning sub-areas was reduced by one-quarter to one-third below that of the HI Case in 2060.
- **No Action (NA) Case.** This scenario reflects even slower growth due to both lack of additional water supply and other infrastructure or regulatory reasons. In this scenario, existing excess water supply capacity in the northern part of the County is available for growth, but no new major water supply facilities are built there or elsewhere in the study area. Growth in the northwestern part of the County was constrained to what could be accommodated with existing excess water supply capacity in the existing LCRA and pending City of Austin pipelines. Growth elsewhere was reduced by two-thirds below that of the HI Case trend forecast in 2060.

3.4 POPULATION AND SERVICE DEMAND FORECASTING

Population. As previously discussed, active residential electric connections data from PEC serve as a fairly accurate statement of historical development patterns and trends in the study area. A residential electric connection essentially comprises one household or one Living Unit Equivalent (LUE).

By applying population per household data from the U.S. Census to historical residential electric connection counts, it was possible to estimate the study area population by sub-area location at five year intervals from 1980 to 2010. Historical growth trends in electric connections were then used to forecast the HI Case scenario, and with lesser growth rate assumptions, also develop the MID and NA Case forecasts. Future population levels for these scenarios were then calculated in a like manner using a person per household factor applied to the future household count.

A review of Census data indicated a series of three fairly common household sizes in the study area. For Census blocks in the Colorado Basin in the northern part of the County, persons per household (pph) averaged about 3.0. In the southern part of the County, the average household size was about 2.5 with the exception of the Wimberley area reflecting 2.3 pph. These patterns reflect the higher degree of urbanization and younger, child-bearing households in the north, more rural areas with a somewhat older population and fewer children in the south, and the large presence of older retirees in the Wimberley/Woodcreek area.

Water Service Demands. Water service demands are then estimated and forecast by the multiplication of the existing and projected population to a series of unit use factors, typically stated in gallons per capita (per person) daily. The TWDB receives annual reporting of total diverted, pumped, or purchased water used for municipal purposes, as well as their service area populations. Industrial water use is identified separately. From this municipal water use information, it is possible to calculate the average daily water use per capita over a period of historical years.

It should also be mentioned that while historical water use is measured to some degree of accuracy where a utility is present, population for the service area is often roughly estimated, so that the calculation of per capita water use can be skewed. In the unincorporated areas of counties, there is no good aggregated reporting of either water use or population to the TWDB, so the per capita water use values identified for these areas can also be suspect.

In dividing the total water used by the service area population, the TWDB is essentially “nesting” any commercial and institutional water uses in the service area within this per capita factor. Commercial and institutional water uses also scale upwards as the population and residential water use grows. For planning purposes, the use of “nested” per capita water use factor is a reasonable way to forecast water use from population data and still provide an allowance for non-residential water uses in the forecast.

For water supply planning purposes, the TWDB wants to be sure that there are adequate water management measures in place to meet the service demands of a hot, dry year when water use is high. To achieve this, recent historical years per capita use are reviewed to determine the appropriate hot, dry year value for each municipal demand to be forecast. Then that representative hot, dry per capita water use statistic is adjusted, usually downward, to reflect water conservation savings arising from on-going implementation of the Water Efficient Plumbing Bill passed by the Texas Legislature in 1991. This Bill limited the future sales of certain plumbing fixtures to water-efficient devices only. So, all new housing will have water-efficient toilets, faucets and shower heads, as well as existing homes and businesses who must replace their older plumbing fixtures over time. Conservation savings from the Plumbing Bill are expected to occur more or less “automatically” over time without special efforts of homeowners or businesses.

There are additional water conservation savings that can be achieved beyond the Plumbing Bill that require more discrete choices or significant actions, including innovation of water-efficient clothes washers, dishwashers, outdoor landscaping, etc. Savings from these “additional conservation” measures are identified as a separate water management measure that is more discretely applied in the development of the overall water management plan recommendations. Everyday water conservation savings are different than reductions in water use brought about by voluntary or mandatory restrictions during drought. In areas with already-low per capita water use or for entities who have already implemented considerable water conservation measures, water use can become “demand hardened,” such that water demands are not easily reduced further during protracted dry conditions, thus lessening the effectiveness of drought management measures.

Table 3.4-1 indicates existing and projected per capita water use values for various entities in the study area that are used in TWDB-supported long-range water supply planning. Again, the per capita water use statistics forecast below only reflect water conservation savings anticipated from on-going implementation of the State Plumbing Bill. TWDB staff has been using 110 gpcd as its default for groundwater planning purposes in rural areas. Because of uncertainty over the relatively high 132 gpcd value for rural Hays County –Other shown in Table 3.4-1, a per capita use factor of 120 gpcd (that splits the difference) was used to forecast rural residential water demand in this study.

Table 3.4-1
TWDB Existing and Projected Per Capita Water Use Factors for the Study Area

Entity	TWDB Projections (gpcd)					
	2010	2020	2030	2040	2050	2060
Hays County-Other	132	129	127	126	126	126
Dripping Springs	181	178	176	175	175	175
Dripping Springs WSC	152	149	145	142	138	135
Wimberley WSC	98	95	93	91	91	91
Woodcreek	127	125	123	121	121	121
Woodcreek Utilities	179	177	177	176	176	176

Wastewater Service Demands. As with water, wastewater service demands are similarly estimated and forecast by the multiplication of the existing and projected service area population to a series of unit use factors, typically stated in gallons per capita (per person) daily. In this case rather than a per capita *water use* value, the statistic represents an average per capita wastewater discharge (return flow) from the house. This unit discharge factor is less than per capita water use due to some consumptive use within the home (drinking, cooking, clothes drying, etc.) and any outdoor water use not returned to the sewer or septic tank. Because this wastewater discharge factor primarily arises from indoor water use, it does not tend to vary from year to year with changing outdoor weather conditions.

For purposes of this study, a unit wastewater discharge factor of 72 gpcd (or 60% of the 120 gpcd rural water use) was used as the initial statistic that, when applied to a population value, results in an estimate of average day wastewater service demand. As indoor water use efficiencies can also affect the level of wastewater discharge from the home, the initial unit wastewater discharge factor of 72 gpcd was then marginally reduced over time, depending upon the degree of water conservation assumed for each area and each scenario.

This average day wastewater service demand does not: (a) include an allowance for infiltration and inflow (i.e. an I/I factor) arising from stormwater or groundwater that may enter the wastewater system, or (b) reflect a more detailed rolling-monthly average calculation required by TCEQ for initiating planning and expansion of centralized wastewater treatment plants.

In the Hays County study area, most wastewater systems are relatively new with little infiltration or inflow to the system. As this is a longer-range planning study over a wide area, it was impractical to attempt rolling monthly average wastewater flow forecasts. The forecast of average wastewater service demands made in this study will provide a reasonable indicator of the timing and magnitude of additional wastewater facility needs.

This section has focused on the methodology used to assess historical population and water and wastewater service demands and the forecast of those demands. Actual forecasts for the various planning areas and growth scenarios are presented and discussed in Section 4.

3.5 EXISTING SERVICE CAPACITY LIMITATIONS

Water. Various source of planning, regulatory, and contract information was accessed to define the limitations of the existing service capacity arrangements, including data obtained from LCRA, GBRA, Regions K and L regional planning efforts, HTGCD, BSEACD, Dripping Springs WSC, City of Dripping Springs, Wimberley WSC, Aqua Texas, and other sources. In some cases, capacity is defined by a permit amount; in other cases, contract terms will do so. In other instances, facility capacity may be the limiting factor.

Wastewater. Determining existing service capacity limitations are somewhat more straightforward when it comes to wastewater planning. Permitted service capacities for existing centralized wastewater treatment facilities were obtained from TCEQ's Water Utilities Database. As discussed later, TCEQ has a more involved technique for determining when certain capacity targets for State-permitted facilities are exceeded that normally requires the initiation of planning and then construction of additional capacity. Existing service capacity for septic tanks is calculated based on estimated current use of those facilities.

3.6 ADDITIONAL SERVICE NEEDS

The next methodological step in the planning process was to identify additional service needs. In this study, additional service needs means the increase in future utility service demand as compared to the *current use* of service capacity. This is a slightly different approach than the identification of unmet needs which compares future demands to existing service capacity.

Much of this report is focused on somewhat sizeable regional planning sub-areas. If utility capacity or contract reservations of one entity is shown as part of the existing supply of a sub-area (rather than current use of that capacity), then existing capacity minus future demand might show a future surplus of capacity, even though many entities in the sub-area still have unmet needs. In a regional planning context, the use of utility capacity in the calculation of defining unmet needs can unintentionally portray supply capacity held by one entity inadvertently being assigned to meet the needs of other entities in the same planning sub-area.

Further, it is problematic to try to define a groundwater supply for a defined area within an aquifer or a district boundary. For instance, how much groundwater supply should be defined for the sub-area southwest of Dripping Springs or for a sub-area near Wimberley? Use of proportionate land area to divide a perceived total groundwater supply estimate into sub-areas is highly questionable given the non-uniform presence and saturated thickness of various aquifers across the County. Groundwater modeling also has its limitations in defining supplies within small sub-areas of a regional model.

So for purposes of this study, the *use of current supplies,* when compared to future utility demands, is used to calculate additional service needs. These additional service needs are then examined over time to ascertain when discrete facility capacities or contracts might be exceeded and additional management measures are warranted. This approach also allows for an estimate of potential total demand on groundwater in a sub-area, given that much of the pumping is occurring from exempt domestic wells that do not have to honor a pumping permit.

3.7 ALTERNATIVE SERVICE METHODS AND TECHNOLOGIES

There is a fairly wide array of possible alternative water management measures considering many different sources of water supply and management technologies. There are more limited number of alternatives for wastewater treatment and disposal. Those alternatives that have likely practical application in the Hays County study area are examined below in closer detail. In terms of broad categorization, they can generally be grouped into off-site (centralized) and on-site (individual property) oriented management measures.

3.7.1 <u>Water</u>

3.7.1.1 Imported Water

For continued growth in western Hays County and the current limit of groundwater and surface water supplies within the study area, it will be necessary for additional water supplies to be brought in from other regions. Imported water may consist of groundwater, surface water or a blended combination. Water is typically pressurized through pump stations and conveyed over large distances through pipelines to meet large centralized demands. Imported water projects are very capital intensive and involve significant planning to coordinate rights-of-way, easements, property purchases, and permits for stream, railroad, and road crossings. Therefore, imported water projects are more cost effective when designed for larger volumes of water for regional type projects.

Currently, the only imported water supply for the study area includes LCRA surface water from the Highland Lakes system for the northern portion of the County along US 290 supplementing supplies to recent developments and DSWSC.

The 2011 South Central Texas Regional Water Plan (Region L) and the Region K plan recommend strategies to import new water into the study area. The Region L plan recommends one strategy with two alternatives for meeting projected water demands in the Wimberley area. This strategy in general includes the delivery of treated water supply from GBRA source water through a 16 inch diameter pipeline sized for delivery of 4 mgd.

Region K recommends two imported water strategies to meet projected needs in northern Hays County, including development of brackish water supply from the Edwards-BFZ Aquifer and the purchase of supply from City of Austin. In addition, it is also recommended that additional pipelines for the LCRA system in northern Hays County be constructed by 2030 to meet projected demand and increase the reliability and operability of the existing pipeline.

Wimberley & Woodcreek Water Supply Project

Background. The 2011 Region L Plan describes a 4 mgd capacity water supply system for Wimberley and Woodcreek that utilizes near-term water from Canyon Reservoir and/or San Marcos and a long-term supply from various regional projects.

Near-term supplies, representing water leased from Canyon Lake on an interim basis, are available until current contract holders grow into their full contract amounts and require interim water returned for their own use. Long-term supplies being developed by GBRA would be contracted and reserved for the need in Wimberley and Woodcreek and made available once near term supplies were withdrawn. Total long-term supplies would be then delivered through the conveyance infrastructure from the San Marcos Water Treatment Plant and routed to Wimberley along RR 12 or FM 150.

Cost. 2011 Region L Plan costs for the three options (Figure 3.7-1) for both a short-term supply (1 mgd) and a long-term supply (4mgd) scenario are summarized in Table 3.7-1 reflecting October 2010 dollars. Detailed cost tables are included in Appendix C.

The facilities for each of the near-term cost estimates include a pump station, treated water transmission line from the plant to Wimberley/Woodcreek, and a terminal storage tank located near Wimberley. Facilities were sized for current and future demand in Wimberley/Woodcreek area and not intended to meet potential intervening demand along the pipeline route. The long-term costs utilize the same infrastructure and include a 4 mgd water treatment plant expansion at the existing San Marcos WTP. The short-term supply scenario under each option represents a delivery of 1 mgd of treated water through the 4 mgd system.

Option A includes a pipeline that would deliver up to 4.0 mgd beginning near Kyle and terminating at a new water tank in Wimberley. The preferred alignment for this 19 mile pipeline utilizes the right-of-way along FM 150 and RR 3237 into Wimberley. Total project cost for the long-term supply for Option A is estimated at $35,149,000 with annual cost of $8.09/kgal. A second optional pipeline route (Option B) would deliver water from the San Marcos WTP to Wimberley/Woodcreek using right-of-way along RR 12. The project would include an 18 mile, 16-inch diameter pipeline, and would require a pump station at the treatment plant and a booster station along the transmission route to deliver the treated supply. Total project cost for the long-term supply for Option B is estimated at $35,102,000 with annual cost of $7.54/kgal.

Table 3.7-1. Summary of Region L Costs for Wimberley/Woodcreek Water Supply Project

Cost Components	Option A	Option B	Option C
Near Term Supply (1 mgd)			
Total Project Cost	$29,809,000	$29,712,000	$15,365,000
Purchase of Treated Water	$854,000	$620,000	$1,073,000
Total Annual Cost	$3,829,000	$3,620,000	$2,603,000
Available Project Yield (ac-ft/yr)	1,120	1,120	1,120
Annual Cost of Water ($/kgal)	$10.49	$9.92	$7.13
Long Term Supply (4 mgd)			
Total Project Cost	$35,149,000	$35,052,000	$20,705,000
Purchase of Treated Water	$7,426,000	$6,491,000	$8,301,000
Total Annual Cost	$11,814,000	$11,006,000	$11,063,000
Available Project Yield (ac-ft/yr)	4,480	4,480	4,480
Annual Cost of Water ($/kgal)	$8.09	$7.54	$7.58

Option C would deliver water from the edge of the San Marcos distribution system 10 miles to Wimberley/Woodcreek along RR 12. Water from the San Marcos WTP would be wheeled through the City of San Marcos delivery system to an existing water storage tank at the intersection of Wonder World Drive and RR 12. San Marcos has additional water that it may be willing to sell to Wimberley as a short term supply until other supplies may be developed. Total project cost for the long-term supply for Option C is estimated at $20,705,000 with annual cost of $7.58/kgal.

In addition to the recommended strategies from the 2011 Region L Plan, a fourth supply alternative for Wimberley and Woodcreek has been considered that delivers treated Canyon Lake water from Canyon Lake Water Supply Corporation (CLWSC) a distance of 8.5 miles to the Blanco River. Although supplies from Canyon Lake are fully allocated, CLWSC has stated a willingness to wholesale up treated water supply on an interim basis (CLWSC, 2009).

A 12-inch diameter pipeline would be constructed from near FM 32 and the County line to tie into the CLWSC distribution system. The pipeline would be routed 8.5 miles cross-country into the Wimberley city limits terminating at the Blanco River. Additional treatment will be necessary to maintain a chlorine residual at Wimberley. Canyon Lake has estimated the wholesale cost of the water at their facility on RR32 at $3.60/kgal. Costs of the pipeline to connect from CLWSC to Wimberley would bring the cost of water delivered to Wimberley to a total of about $5.51/kgal. Detailed costs are included in Appendix C.

New supplies delivered to Wimberley, whether from GBRA, San Marcos or CLWSC will require additional improvements to the distribution systems of Wimberley WSC and Aqua Texas. Wimberley WSC has estimated costs to cross the Blanco River and upgrade the existing distribution system to receive 1 mgd of new supply at an additional $1 million (Wimberley WSC, 2010).

For supplies that would be routed through Wimberley for delivery to Woodcreek including 2011 Region L Plan Options B and C, and the CLWSC alternative, additional interconnect costs would be incurred. Interconnection costs, using new 8-inch pipelines, and a new pump station routed through downtown Wimberley on RR12, would be approximately $4,623,000. All costs to bring surface water supplies into Wimberley and Woodcreek described above are included in Appendix C with detailed information.

Implementation Issues. The participating entities must negotiate a regional water service contract to build and operate the system and to equitably share costs. This would probably include the need for a cost of service study.

Requirements specific to pipelines needed to link existing sources to users will include:

- U.S. Army Corps of Engineers Section 404 permit(s) for pipeline stream crossings;
- discharges of fill into wetlands and waters of the U.S. for construction and other activities;
- NPDES Storm Water Pollution Prevention Plan; and
- TPWD Sand, Shell, Gravel and Marl permit for construction in state-owned streambeds.

Mitigation requirements would vary depending on impacts, but could include vegetation restoration, wetland creation or enhancement, or additional land acquisition. Possible moderate impacts on riparian corridors are possible depending on specific locations of pipelines.

LCRA RR12 and Hamilton Pool Pipeline Extension Projects

Background. LCRA maintains the West Travis County Regional Water System (WTCRWS), the regional system which supplies water to western Travis County and northern Hays County. Water from the Highland Lakes system is treated at the Uplands Water Treatment Plant and conveyed west along FM 2244 and US 71 to Hamilton Pool Rd. Another transmission line runs south from the WTP along US 71 and west along US 290 to supply water to the original Hill Country WSC, Belterra, High Pointe, Dripping Springs WSC and a number of other developments within LCRA's CCN in the 290 NE planning subarea.

LCRA's Master Plan and Modeling Update for the WTCRWS indicate the potential extension of the Hamilton Pool pipeline and construction of RR12 pipelines in the future. Water conveyance reliability and capacity will be increased for the WTCRWS if the system could be looped near Dripping Springs.

Cost. Facilities to extend the Hamilton Pool line include 3.7 miles of 16-inch diameter pipeline, pump station upgrades, a 1 mg ground storage tank and a 1 mg elevated storage tank. Total project costs based on information supplied in the 2001 Master Plan update and indexed to October 2010 are estimated at $10,224,000.

The RR12 pipeline extension project would connect the WTCRWS with a pipeline connecting the Hamilton Pool Rd pipeline to the US 290 pipeline. A 20-inch line would be constructed on RR12. Total project cost for 8.5 miles of pipeline is $10,965,000 based on the 2001 Master Plan Update indexed to Oct 2010.

Implementation Issues. The participating entities must negotiate a regional water service contract to build and operate the system and to equitably share costs. This would probably include the need for a cost of service study.

Requirements specific to pipelines needed to link existing sources to users will include:

- U.S. Army Corps of Engineers Section 404 permit(s) for pipeline stream crossings;
- discharges of fill into wetlands and waters of the U.S. for construction; and other activities;
- NPDES Storm Water Pollution Prevention Plan; and
- TPWD Sand, Shell, Gravel and Marl permit for construction in state-owned streambeds.

Mitigation requirements would vary depending on impacts, but could include vegetation restoration, wetland creation or enhancement, or additional land acquisition. Possible moderate impacts on riparian corridors can be expected depending on specific locations of pipelines.

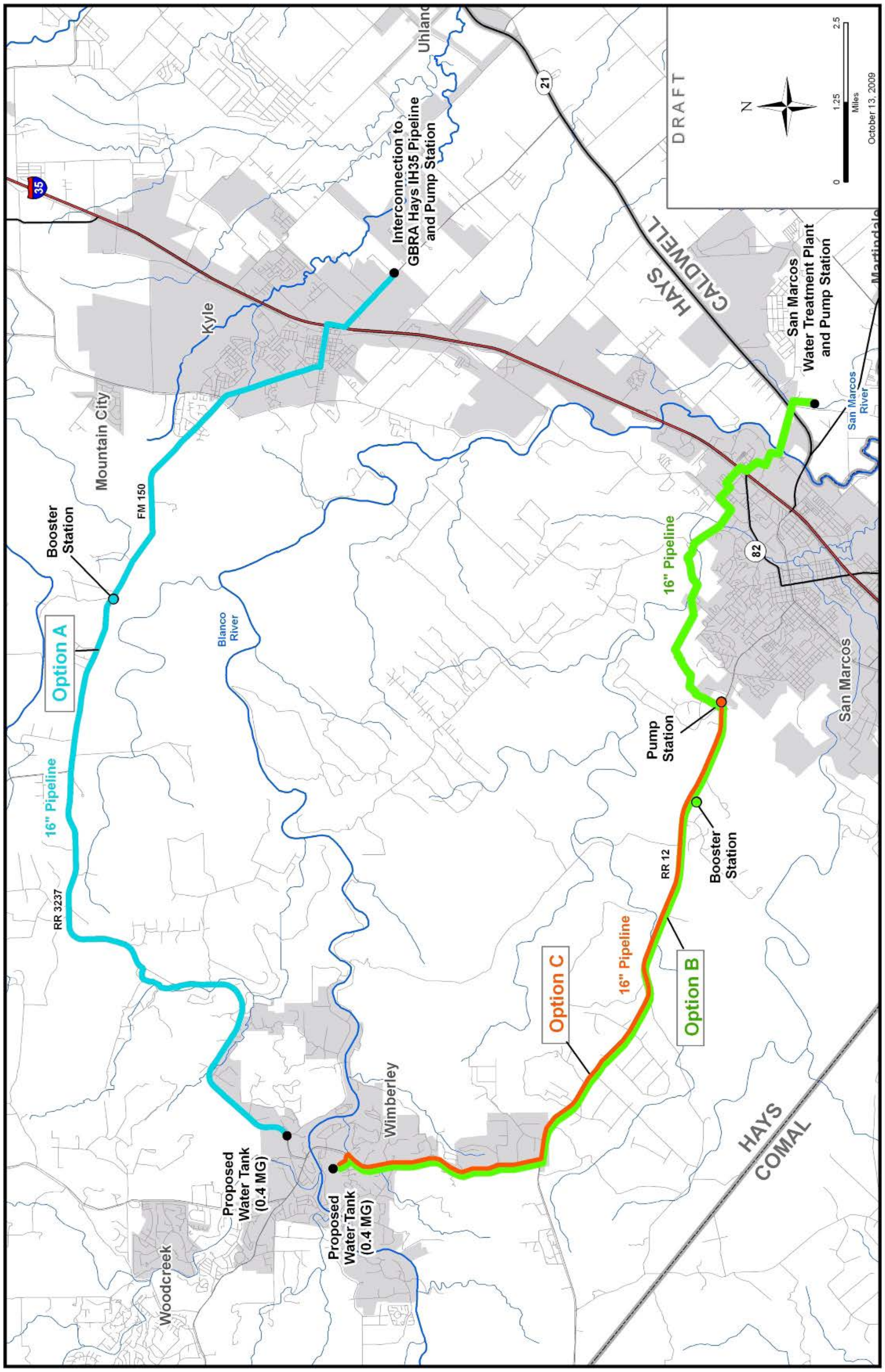


Figure 3.7-1
Wimberley/Woodcreek Supply Options Assessed in Region L Plan

Edwards-BFZ Aquifer Brackish Water Desalination

Background. Region K has recommended the development of brackish water supplies from the saline zone of the Edwards Balcones Fault Zone (BFZ) in eastern Travis County to partially meet projected needs in Hays County. The Edwards BFZ extends into Travis and Hays counties and is delineated between fresh and saline portions at 1,000 mg/L total dissolved solids (TDS).

Brackish supplies would be pumped through groundwater wells and desalinated in a water treatment plant employing reverse osmosis prior to distribution to customers in southern Travis and northern Hays County.

Treating brackish water to remove the high concentrations of dissolved solids creates a brine reject that must be properly disposed. Some disposal methods include evaporation in salt ponds, injection wells or blending with raw water sources with sufficient water quality. BSEACD and Texas Disposal Systems are also studying potential opportunities for reuse of the brine waste.

Cost. Facilities for this strategy include 23 groundwater wells, collection lines, a 10 mgd water treatment plant, pump station, and transmission and distribution pipelines. Total supply required by this strategy is 7,100 ac-ft/yr. Disposal facilities include two injection wells. Additional project costs include land purchases, easement acquisitions, contingencies, engineering, environmental and archeological studies, mitigation, and permitting.

Costs for the strategy were based on data from the 2011 Region K Water Plan and updated to reflect an additional 6 miles of transmission pipeline to meet projected need in the Hays subarea. All costs are indexed to October 2010 prices. Total project cost to supply treated brackish supply from eastern Travis County is estimated at $31,877,800 for a water supply of 8,800 ac-ft/yr. Analysis of this strategy in 2011 Region K Water Plan indicates that the total project costs might be significantly underestimated. A similarly sized project from the 2011 Region L Plan estimates comparable project costs at $118,000,000.

Implementation Issues. The project will require the following permits and activities:

- Permitting Class 1 disposal wells for deep well injection of desalination concentrate;
- Brine Disposal Discharge Permits by TCEQ;
- U.S. Army Corps of Engineers Sections 10 and 404 dredge and fill permits for stream crossings;
- Texas Commission on Environmental Quality administered Texas Pollutant Discharge Elimination System Storm Water Pollution Prevention Plan;
- TPWD Sand, Shell, Gravel and Marl permit if state-owned streambed is involved; and
- Texas General Land Office Easement if State-owned land or water is involved.

State and Federal Permits may require the following studies and plans:

- Environmental impact or assessment studies;
- Wildlife habitat mitigation plan that may require acquisition and management of additional land;
- Assessment of impacts on Federal and State-listed endangered and threatened species; and
- Cultural resources studies to determine resources impacts and appropriate mitigation plan that may include cultural resource recovery and cataloging; requires coordination with the Texas Historical Commission.

A potential alternative for this project may include development of the Middle and Lower Trinity Aquifer development in the BSEACD. It is expected that the groundwater supply in the Trinity would be of variable water quality but of higher quality than the saline zone of the Edwards BFZ thus requiring less treatment. Future development of the Lower and/or Middle Trinity will be limited by MAG estimates, but is presently underutilized and available for permitting. Total project and annual costs for this supply may be considerably less.

Extension of Municipal Systems

Background. Another strategy to meet water needs for suburban growth is the extension of municipal service to a development within a municipality's extraterritorial jurisdiction (ETJ). The Region K Plan indicates that some future supplies for western Hays County could be made available through the extension of municipal water systems, specifically the City of Austin.

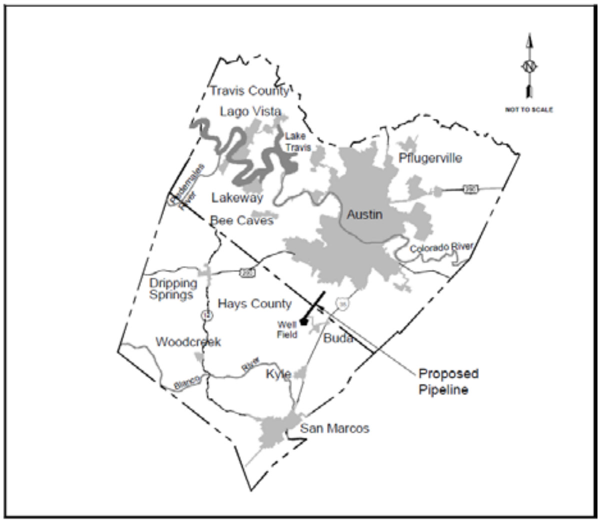


Figure 3.7-2. Proposed Pipeline from City of Austin to Spillar/Pfluger Tract

In April 2000, the City of Austin annexed the Spillar/Pfluger Ranch tracts which straddle Hays and Travis counties located in the 290 NE Sub-Area of the planning area. The large tracts covers over 3,000 acres located on the northern Edwards Aquifer and the Barton Springs Recharge Zone.

An agreement between the City of Austin and the Developer ensures that the development will honor the impervious cover limits of Austin's Save our Springs ordinance. In return, the City will provide water and wastewater services and waive the impact and hook up fees for utility service in the development.

The 600-acre Pfluger tract will be a large lot development with septic tanks, and therefore will not receive central sewer service. The City has water rights to groundwater and can limit amount used on the golf course and impact to neighboring wells. Sizing of the infrastructure will be specific to serve the needs of Circle C, Spillar Ranch and Pfluger Ranch developments.

Cost. Costs from the 2011 Region K Water Plan strategy to deliver 1,100 ac-ft/yr to meet needs in Hays County specifically for Spillar Ranch and Pfluger Ranch developments from the City of Austin were indexed to October 2010. Total project cost to deliver treated surface water is estimated at $3,114,000. Annual costs include the purchase of treated water from City of Austin at $3.20/kgal, debt service, and operation and maintenance. A detailed cost table developed from the 2011 Region K Water Plan is included in Appendix C.

Based on discussion with City staff, the extension of municipal service from the City of Kyle west to future developments along the FM 150 corridor is a possibility (City of Kyle, 2010). Over time, further service extensions will be contemplated by the cities of Kyle and Buda and the DSWSC to nearby new developments. Expansion of services for any of these utilities may require additional pipelines, pump stations, water storage, and treatment plant expansion. Project costs for individual projects will be determined on a case-by-case basis.

Implementation Issues. Requirements specific to pipelines needed to link existing sources to users will include:

- U.S. Army Corps of Engineers Section 404 permit(s) for pipeline stream crossings;
- discharges of fill into wetlands and waters of the U.S. for construction; and other activities;
- NPDES Storm Water Pollution Prevention Plan; and
- TPWD Sand, Shell, Gravel and Marl permit for construction in state-owned streambeds.

Mitigation requirements would vary depending on impacts, but could include vegetation restoration, wetland creation or enhancement, or additional land acquisition. Possible moderate impacts on riparian corridors depending on specific locations of pipelines.

3.7.1.2 Community Wells

Background. A community well in this refers to a permitted well field and a distribution system that is shared within a subdivision for potable indoor and outdoor water uses. Conversely, exempt wells including domestic wells fitted with a pump with capacity less than 17.4 gpm or 25,000 gallons per day in the HTGCD or 10,000 gpd in the BSEACD, irrigation, mining, dewatering and monitoring wells are not required to have an operating permit, but are subject to applicable requirements of the local groundwater district rules such as prohibitions against waste. If a well is providing water to 15 or more connections or regularly to at least 25 individuals, that water system is regulated under the Safe Drinking Water Act and must meet water quality standards established by TCEQ.

Subdivisions sharing a community well system benefit from pooled resources to cover operating and management expenses. Community wells are likely to be higher capacity wells to meet the demands and screened at deeper intervals resulting in greater reliability of the water supply. Given the limited groundwater resources in the County, the wells would be permitted and monitored by the groundwater district as to allowed use.

As growth continues in the rural portions of the county, exempt well use will increase. However, without any action, exempt pumping volumes could eclipse regulated pumping, diminishing the control the groundwater districts have to manage the resource. Permitting community wells could provide the groundwater districts with a means of increasing regulatory control over groundwater withdrawals.

There are a number of water providers in the study area that provide groundwater to customers. These include Wimberley WSC and Aqua Texas and others which are permitted to pump 1,713 ac-ft/yr.

Cost. The major facilities required for a community well system are: wells, pipelines, pump station, and storage and water treatment. Costs for community well systems will vary based on the required capacity of the supply system. Based on estimates from local drillers, a 100 gpm Trinity well could cost between $60,000 and $100,000. Total project costs for a system to supply a small subdivision (<50 dwelling units) is approximately $564,000. Annual costs including debt service, operation and maintenance and energy costs are $65,000. Detailed cost estimates can be found in Appendix C.

Implementation Issues. The development of additional groundwater in the Trinity, Edwards and Barton Edwards aquifers in Hays Counties must address several issues. Major issues include:

- The Trinity's DFC within the HTGCD[1] allows for up to 30 feet of drawdown over the next 50 years and 25 feet of drawdown within the BSEACD (specific to the Trinity below the Edwards);

[1] A DFC with zero drawdown was established for the small areas where the Upper Trinity crops out and are within the HTGCD and GMA10.

- Competition with others for groundwater in the area;
- Purchase of groundwater rights; and
- Impact on water levels in the aquifer.

Regulatory permits that are expected to be required for wells and pipelines include:

- Application and approval of CCN service area from TCEQ
- Regulations and permits by the groundwater conservation districts (Hays Trinity, Edwards, Barton Edwards).
- U.S. Army Corps of Engineers Sections 10 and 404 dredge and fill permits for the pipelines impacting wetlands or navigable waters of the United States;
- General Land Office easement for use of state-owned land; and
- TPWD Sand, Gravel, and Marl permit for construction in state-owned streambeds.

3.7.1.3 Certificate of Convenience and Necessity

The provision of various types of utility service (water, wastewater, electric, gas, etc.) requires significant capital investment. Because of this significant investment, to be able to attract financial capital into this sector, and to make the costs of delivered utility service more affordable, the recognition of this service as a public utility has been a historical practice. With recognition of this service as a public utility and the granting of what is generally an exclusive service area to that public utility, state governments have essentially created a public monopoly that excludes or limits competition to protect its financial viability. Along with the granting of that public monopoly comes an explicit or implicit obligation to provide acceptable utility service to those within the protected service area, as well as the designation of some type of oversight function to make sure that those granted monopoly powers are not unduly abused.

In Texas, that granting of the license to operate as a public utility *and* to enjoy a protected service area is known as a Certificate of Convenience and Necessity (or CCN). Large river authorities, municipalities, and smaller water districts in Texas have separate statutory authority to operate as utilities, but many have also sought the CCN designations to protect their service area jurisdictions. Utilities that do not have stand-alone utility authority must go through an administrative process at the TCEQ to gain their status as a public water and wastewater utility and delineate a protected CCN service boundary (TCEQ Rules, Section 291, Subchapter G).

Concerning limitations of monopoly power and representation, those non-profit utilities that have elected or appointed Boards of Directors enjoy direct authority over their utility and rate-making decisions that affect customers within their authority, municipal, district, or non-profit cooperative boundaries. In other words of the customers are sufficiently unhappy with the decisions of their governing body, that governing body can be replaced through the ballot box or new appointments. Where these authorities, municipalities, or districts provide retail service outside of their designated corporate or district boundaries or where wholesale service arrangements exist, there is an appellate mechanism for these external customers to raise the rate complaint to a state appellate authority, in this case the TCEQ and State Office of Hearings Examiners (TCEQ Rules, Section 291). The rates (or tariffs) and policies of for-profit (investor-owned) water and wastewater utilities are directly overseen by the TCEQ and a rate petition, possibly a hearing, and TCEQ approval are required to affect a rate (tariff) or substantial service policy change.

There are currently 36 CCNs fully or partially within the Hays County study area. Most represent a single defined area served by one utility, but larger entities, such as LCRA and Aqua Texas hold CCNs that cover multiple non-contiguous service areas. Because of the likely spread of multiple small, subdivision-oriented utilities; the provision of future wholesale service by LCRA and GBRA to smaller utilities, the greater prevalence of regional ownership and operations of multiple smaller service areas, there will likely be many more CCNs granted in the next 50 years. This is discussed as a policy issue in Section 6.0

3.7.1.4 On-Site Systems

Outside of organized subdivisions, landowners and homeowners have relied on on-site systems to provide for their water needs. These systems include private groundwater wells and rainwater collection systems to meet basic needs.

Individual Wells

Background. Individual or exempt domestic wells serving suburban and rural populations in the planning area are located in one of three groundwater districts, HTGCD, BSEACD or EAA. Wells east of the Trinity Outcrop are regulated by the BSEACD and/or EAA. Exempt wells are required to be registered with the districts and must comply with minimum construction standards. Figure 3.7-3 depicts the stratigraphic units and management zones in the Edwards and Trinity Aquifers (BSEACD, 2010c).

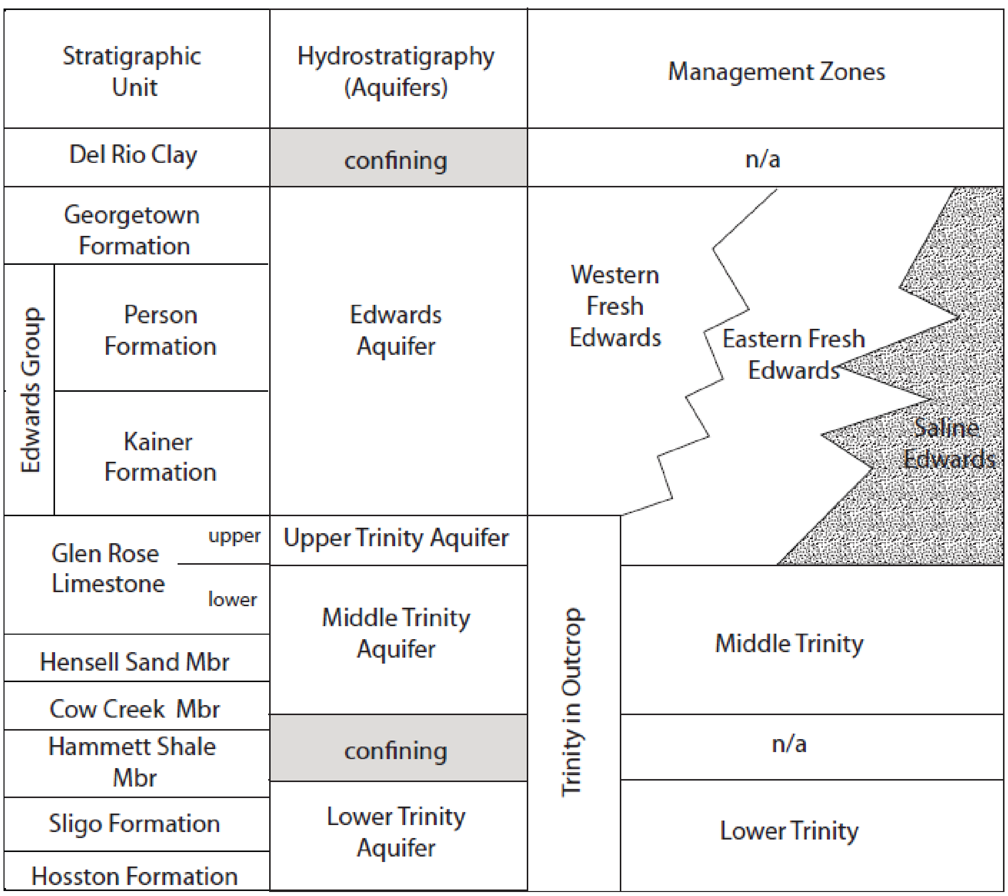


Figure 3.7-3. Stratigraphic Units, Aquifers and Management Zones for the Planning Area

Based on information from the HTGCD there are 5,391 exempt residential wells within the District, based on a 2002 air photo analysis and TCEQ data. According to the State statute and groundwater districts rules, domestic and livestock wells incapable of producing more than 25,000 gpd or 10,000 gpd in the BSEACD are not required to be permitted through the district and are therefore exempt from pumping restrictions.

Typical well depths range from 300 feet to 900 feet in the study area. Deeper wells generally have higher quality water due to lower concentrations of dissolved salts and hardness affecting taste and odor of the water. Scaling of appliances and plumbing fixtures are associated with the water's hardness and can limit the life of hot water heaters, dishwashers, etc.

Cost. Capital cost components for a private groundwater well include the construction costs for the well, pump, and typically treatment such as an aeration tank and some softening. Many areas within the aquifer have water quality issues and often require some level of treatment including point of use aeration tanks, water softening and potentially reverse osmosis systems to manage dissolved salts and other taste/odor issues.

Construction costs for a domestic well in the planning area can range from $25-$30 per foot. Besides construction costs, other costs may include groundwater district fees and required well logging. Wells that are drilled through the Edwards require additional materials such as packers and cement. Total project costs for a private middle Trinity well is estimated at $18,000. Annual costs which may include any debt service at 6% for 20 years, parts and labor for pump repair, and energy costs are estimated at $2,250/yr. Detailed cost tables are included in Appendix C.

Implementation Issues. Hays County subdivision ordinance requires a minimum of six acre per lot if the lot is to be provided solely with local groundwater. Some of the exempted wells have had issues with reliability during the recent droughts requiring wells to be drilled deeper and pumps lowered.

The development of additional groundwater in the Trinity, Edwards and Barton Edwards aquifers in Hays Counties must address several issues. Major issues include:

- The Trinity Aquifer DFC allows for up to 30 feet of drawdown over the next 50 years and 25 feet of drawdown within the BSEACD (specific to the Trinity below the Edwards);
- Competition with others for groundwater in the area; and
- Impact on water levels in the aquifer.

Regulatory permits that are expected to be required for wells include:

- Regulations and permits by the groundwater conservation districts (Hays Trinity, Edwards, Barton Edwards);
- Wells must be constructed according to groundwater district approved standards; and
- Within the EAA exempt wells can not be located within or serve subdivisions that require platting.

Rainwater Collection Systems

Background. Rainwater systems are in use throughout central Texas and represent a water supply option to offset non-potable demands as well as meet potable demands if correctly designed, installed and maintained. The cost of a rainwater system is slightly higher than the cost of drilling a well; however, it is becoming a preferred alternative in areas where groundwater is unreliable and of poor water quality.

Rainwater systems make use of rooftop surface area to collect falling rain and divert the water into storage tanks sized to hold adequate water for designated uses between rainfall events. System complexity can range based on automation of the system and intended uses of the water which affect the treatment. Treatment and distribution is managed by the property owner potentially minimizing energy and costs over other water supply alternatives.

Rainwater collection systems have been used at commercial and industrial buildings for reducing potable demand by meeting water needs for landscaping, cooling, vehicle washing, and toilet flushing.

The 2005 Regional Water Quality Protection Plan for the Barton Springs Segment of the Edwards Aquifer and Its Contributing Zone favors rainwater harvesting as water supply to improve water quality.

Discussions with local installers indicate that most of the rainwater systems being constructed in Hays County are not the sole water source for the property. However, some systems are sized appropriately to meet all of the water demand at the site.

Generally, without accounting for losses, it is assumed that 0.62 gallons per square foot of collection surface per inch of rainfall can be collected (TWDB, 2005). The historical (1940 -2009) annual average rainfall for Hays County is 32.6 inches. Assuming a 1,500 ft^2 roof area and 75% capture efficiency, 22,700 gallons of water could be collected each year based on average rainfall.

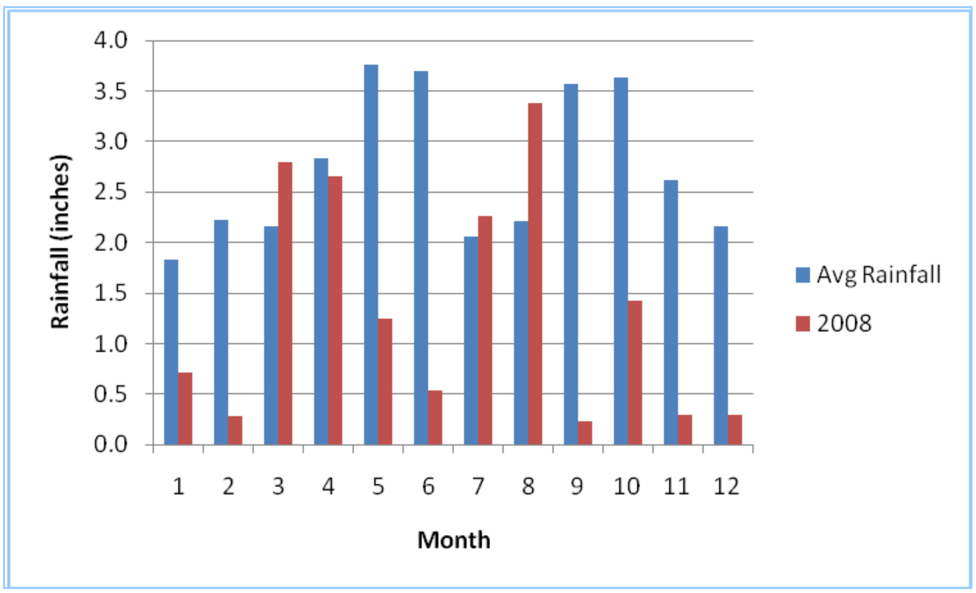


Figure 3.7-4. Historical Monthly Distribution of Rainfall for Hays County

Monthly distribution for rainfall for the area is very important when considering the sizing of the rainwater system. The graph in Figure 3.7-4 shows the monthly distribution of the average annual rainfall compared to 2008 an extremely dry year when the total annual rainfall was 16.1 inches. Rainwater harvested on a 1,500 ft^2 roof with 75% efficiency in 2008 would have only resulted in 11,200 gallons collected. The TWDB rainwater manual encourages sizing storage capacity to hold three months of water using median rainfall amounts.

Cost. System costs can vary based on the size, complexity of the system and the materials used. Additional costs can be incurred based on customer preferences on the appearance of the storage tanks to match the residence or landscaping (buried, wood, galvanized, stone veneer, etc). Components include storage tanks, gutters, screens, pumps, piping and may also include ultraviolet treatment and activated carbon filtration. A residential system sized to meet potable and non potable water demand with 20,000 gallons of storage is estimated to cost $25,000. These are general costs and will vary based on each site. Annual operation and maintenance for rainwater systems is estimated at $400 and includes cleaning of the storage tank(s), replacing filters and UV light and minor repairs. Detailed cost estimates are included in Appendix C.

It is important to note that the Texas Legislature and Hays County have developed financial incentives for the installation of rainwater systems. Rainwater harvesting equipment is considered water conserving equipment and is exempted from county and state property taxes. Rainwater harvesting equipment is not charged sales tax. Hays County has a program offering a $100 rebate for property owners that install rainwater systems. The subdivision ordinance favors water supply options other than groundwater, including rainwater systems. The minimum lot size for a subdivision relying on rainwater with advanced on-site sewerage facility (OSSF) is one acre.

Implementation Issues. Rainwater collection is a feasible option for offsetting non-potable demand in Hays County. Oversizing the storage tanks will provide additional reliability, but will also add to the system costs. Systems should be well designed and automated to maximize the use and efficiency. Unless mandated or constructed by developers, rainwater systems for residences will most likely be retrofits. Costs for the retrofits are likely to be cash expenses and unlikely to be amortized with the home loan. As a result, homeowners may sacrifice system reliability for cost savings. In many cases, costs will most likely limit the reliability of residential retrofits with rainwater systems. New homeowners unfamiliar with the technology will require informational resources for various operation and maintenance issues.

Hays County requires rainwater harvesting systems to be designed using the Texas Manual on Rainwater Harvesting by a licensed Professional Engineer. Dwelling units that rely on rainwater harvesting as the sole source of water supply must include deed restrictions and plat notes prohibiting subsequent owners from installing groundwater wells.

Systems are to be designed using the largest of the three demand calculations:

- Max water usage rates for water conserving households (AWWA, Residential End Uses of Water)
- 45 gpcd
- 150 gallons / dwelling unit

Water Conservation

Background. Water conservation is an important strategy to reduce water demand for the study area. The TWDB municipal water demand projections take into account the effect of the 1991 State Water Efficient Plumbing Act. This is recognized in the gallons per capita per day (gpcd) demand forecasts for the water user groups in Hays County. Table 3.7-2 indicates the projected gpcd in the study area.

The 2011 Region L and K Plans include recommendations for additional conservation beyond the Plumbing Act in Hays County to meet projected needs. Strategies are based on water conservation Best Management Practices (BMPs) for municipal water users, as included in the Water Conservation Implementation Task Force November 2004 Report to the 79th Texas Legislature. Some of the BMPs include reuse of reclaimed water, rainwater harvesting, and water loss management which have specific descriptions in this chapter and are considered separate strategies from conservation. Other conservation measures are being applied in the area, such as water system audits and water conservation pricing, leak detection, public outreach and education, prohibition on wasting water and low-flow plumbing fixture requirements.

Table 3.7-2. TWDB Projected Gallons per Capita per Day (gpcd) for the Study Area

Entity	TWDB Projections (gpcd)					
	2010	2020	2030	2040	2050	2060
HAYS COUNTY-OTHER	132	129	127	126	126	126
DRIPPING SPRINGS	181	178	176	175	175	175
DRIPPING SPRINGS WSC	152	149	145	142	138	135
WIMBERLEY WSC	98	95	93	91	91	91
WOODCREEK	127	125	123	121	121	121
WOODCREEK UTILITIES INC	179	177	177	176	176	176

The regional plans have identified entities with potential for additional conservation based on the gpcd in 2000. Entities with gpcd of 140 or greater had reductions applied at 1% per year till reaching 140 gpcd and thereafter at 0.25%. For municipal entities having water use of less than 140 gpcd, a reduction of per capita water use by one-fourth percent per year was applied.

Table 3.7-3. Projected Water Conservation Savings (ac-ft/yr) from 2011 Region L Plan

Entity Name	Region L Conservation from Plumbing Fixtures, Washers Retrofits and Lawn Irrigation Savings					
	2010	2020	2030	2040	2050	2060
Hays County-Other	0	0	12	49	112	184
Wimberley WSC	0	0	0	0	19	70
Woodcreek	0	0	2	6	20	37
Woodcreek Utilities Inc	56	177	337	455	619	771

Costs. Region L estimated municipal water conservation strategies unit costs decreasing from $648/ac-ft-yr in 2010 to $566/ac-ft-yr in 2060. Region K conservation strategies range between $541/ac-ft-yr to $705/ac-ft-yr for Hays County. Table 3.7-4 identifies costs for municipal conservation from the 2011 Region L Plan.

Table 3.7-4. Total Estimated Costs for Municipal Conservation Programs

Entity Name	Total Cost					
	2010	2020	2030	2040	2050	2060
Hays County-Other	$0	$0	$9,433	$37,534	$86,854	$141,576
Wimberley WSC	$0	$0	$0	$0	$14,676	$53,642
Woodcreek	$0	$0	$1,323	$4,535	$15,573	$28,752
Woodcreek Utilities Inc	$38,437	$104,785	$193,365	$257,964	$348,401	$431,974

Implementation Issues. Generally, conservation strategies are relatively low in cost compared to other water strategies. It allows existing water supplies to serve more population and increases water use efficiency in the region. Another benefit of conservation is that it avoids water supply strategies that require additional land and other resources which may have significant environmental impacts.

It should be noted that conservation is not a new water supply or a replacement of supply in the way that imported surface water from the Highland Lakes is a new supply. Conservation represents a reduction of demand that can be used to manage the existing supply. During times of reduced water supply such as during a drought, conservation is a useful strategy to reduce demands and stretch supply. At a certain level, the demand for water can not be influenced through programs and incentives. For example, Wimberley's gpcd is very low and it is debatable if additional conservation strategies will be cost effective.

3.7.1.5 Water Loss Management

Background. Public water supply systems convey water from its source through buried pipelines, through treatment processes and a distribution system to eventually be delivered to the end users of the water. During the water production, treatment, and distribution, water losses are incurred through leaking infrastructure, treatment backwash, inaccurate metering, and general maintenance such as hydrant flushing to maintaining water quality compliance with TCEQ regulations.

The industry rule of thumb is less than 10% for urban water systems and less than 15% for rural water systems. According to Rule 9 of the Hays Trinity Groundwater Conservation District, water utilities permitted within the district must account for 85% of all groundwater produced. Water losses are determined using a 90-day average of the difference between total water pumped and water sold. A utility with losses greater than 15% must submit an action plan that will bring the system into compliance within two years.

Cost. Remediating infrastructure causes of water loss can be expensive projects and may include line replacements, pump repair or replacements, treatment plant upgrades and meter replacements. The water supply system in the City of Woodcreek, which is owned and operated by Aqua Texas, needs infrastructure upgrades to reduce system water losses. Aqua Texas estimates that project costs will range between $3 million and $5 million (Aqua Texas, 2010). About 80% of the project costs will be for water line replacements. Other costs include meter audit, installation of pressure reducing valves, and engineering, legal and other contingencies.

Other annual costs associated with a water loss control program may include active leak control components to monitor the system, regular tests, implementation of pressure management, and timely and quality leak repair. Identifying system leaks may require technology such as advance metering, SCADA, hydraulic modeling, and leak detection equipment.

Implementation Issues. Water loss management is an appropriate strategy to apply to water supply systems which have excessive water losses. This strategy optimizes systems to make the fullest use of existing water supply and relieve some demand on the groundwater resources.

As part of House Bill 3338, the Texas Legislature requires that public water utilities complete a water audit every five years as part of an effort to reduce water loss and conserve the State's water resources. Although required every five years, the TWDB recommends performing an audit annually. The standardized TWDB water audit methodology measures efficiencies, encourages water accountability, and quantifies water losses. The TWDB methodology identifies the difference between real water loss and apparent water loss (TWDB, 2008B). Figure 3.7-5 describes the water accounting terminology and relationships for determining water losses. Real water loss represents water that is lost through the distribution system leakage and excessive pressure. Apparent loss results from inaccurate meters, unauthorized use, and data analysis errors.

<table>
<tr><td rowspan="7">Corrected Diversion Or Input Volume</td><td rowspan="4">Authorized Consumption</td><td rowspan="2">Billed Authorized Consumption</td><td>Billed Metered Consumption</td><td rowspan="2">Revenue Water</td></tr>
<tr><td>Billed Unmetered Consumption</td></tr>
<tr><td rowspan="2">Unbilled Authorized Consumption</td><td>Unbilled Metered Consumption</td><td rowspan="7">Non-Revenue Water</td></tr>
<tr><td>Unbilled Unmetered Consumption</td></tr>
<tr><td rowspan="5">Water Losses</td><td rowspan="3">Apparent Losses</td><td>Unauthorized Consumption</td></tr>
<tr><td>Customer Meter Under-Registering</td></tr>
<tr><td>Billing Adjustment And Waivers</td></tr>
<tr><td rowspan="2">Wholesale Water Imported</td><td rowspan="2">Real Losses</td><td>Reported Leaks</td></tr>
<tr><td>Unreported Loss</td></tr>
</table>

Figure 3.7-5. Categorization of Water Accounting and Water Losses

3.7.1.6 Wastewater Reuse

Background. Wastewater reuse is considered a water strategy that involves recycling treated wastewater effluent as a replacement for potable water supply to meet non-potable demands, reducing the overall demand for fresh water supply. Current examples of existing reuse systems include those of the cities of Austin, San Antonio, Abilene, Cleburne, Georgetown, and Round Rock. Many other communities also make their effluent available for irrigation purposes. There are two types of authorized reuse in Texas. Direct reuse is where treated wastewater is piped directly from wastewater plant to place of use (also called “flange-to-flange”). Direct reuse typically involves connecting the wastewater treatment plant discharge facilities to one or more areas that have a relatively high, localized water use that can be met with non-potable water such as for irrigation of golf courses or public lands or for industrial use. Indirect reuse is where treated wastewater is discharged to river, stream, or lake for subsequent diversion downstream and use, generally intended for municipal water supply.

Wastewater reuse quality and system design requirements are regulated by TCEQ by 30 TAC §210. TCEQ allows two types of reuse as defined by the use of the water and the required water quality. The general public or food crops generally can come in contact with Type 1 reuse water. For Type 2, the general public or food crops cannot come in contact with the reuse water. Current TCEQ criteria for reuse water are shown in Table 3.7-5. Regulatory trends indicate that criteria for unrestricted reuse water will likely become more stringent over time. The water quality required for Type 1 reuse water is more stringent with lower requirements for oxygen demand (BOD_5 or $CBOD_5$), turbidity, and fecal coliform levels.

Table 3.7-5. TCEQ Quality Standards for Reuse Water

Parameter	Allowable Level
Type 1 Reuse	
BOD_5 or $CBOD_5$	5 mg/L
Turbidity	3 NTU
Fecal Coliform	20 CFU / 100 ml[1]
Fecal Coliform (not to exceed)	75 CFU / 100 ml[2]
Type 2 Reuse	
For a system other than a pond system	
BOD_5	20 mg/L
or $CBOD_5$	15 mg/L
Fecal Coliform	200 CFU / 100 ml[1]
Fecal Coliform (not to exceed)	800 CFU / 100 ml[2]
Type 2 Reuse	
For a pond system	
BOD_5	30 mg/L
Fecal Coliform	200 CFU / 100 ml[1]
Fecal Coliform (not to exceed)	800 CFU / 100 ml[2]

1 geometric mean
2 single grab sample

Beneficial reuse is currently being implemented at the Woodcreek municipal golf course with reclaimed water from the Woodcreek Wastewater Treatment Plant operated by Aqua Texas. Other WWTPs in the plan area are looking for customers for the reclaimed water, but are generally disposing of the resource through land application. The City of Dripping Springs irrigates the WWTP site and soccer fields located at the City of Dripping Springs Sports and Recreation Park complex through subsurface drip irrigation. As other new areas become available for irrigation, the City may expand its wastewater disposal facilities. The maximum permitted effluent application rate is approximately 0.1 gallons per day per square foot.

Cost. Reuse projects are capital intensive and expensive. Facilities generally include additional treatment processes to meet requirements, dedicated pump stations and pipelines and storage tanks. Irrigation needs are often met with recycled water. Due to the seasonal demand of irrigation, reuse facilities are often sized for peak usage periods. For a reuse system with typical irrigation application rates, the annual available project yield is about 57 percent of the reuse system capacity. Available project yield may be higher for systems supplying a large portion of the reuse water to industrial or other users that have a more uniform reuse water demand.

Table 3.7-6 identifies the unit costs for reuse water projects based on peak capacity and WWTP improvements to meet Type I reuse requirements. These costs are for general planning purposes and will vary significantly depending on the specific locational circumstances of an individual water user group.

Table 3.7-6. General Wastewater Reuse Capital and Annual Cost of Water

Facilities Size	Total Project Costs (Oct 2010$)	Annual Unit Cost (Oct 2010$)
0.5 mgd	$11.55/gal	$7.91/kgal
1.0 mgd	$8.27/gal	$5.79/kgal
5 mgd	$5.17/gal	$3.61/kgal
10 mgd	$2.58/gal	$3.17/kgal

Implementation Issues. Virtually any water supply entity with a wastewater treatment plant could pursue a reuse alternative. Those with a municipal water right for direct reuse can use the full amount without any amendment to their permit. Few entities, if any, would be capable of utilizing their entire effluent capacity for reuse at present; long term, it is likely that increased pressure on water supplies will result in increased emphasis on reuse, with reused water potentially approaching the quantity of effluent available. The water quality impact of reuse is often a concern for the community when attempting to implement these types of projects. Much of the study area is within the contributing and recharge zone of the Edwards Aquifer, the drinking water source for numerous communities. TCEQ's Chapter 213 prohibits discharges that add pollutants to waters in the recharge zone. Therefore, reuse over the recharge zone should be carefully assessed and may require advanced treatment and implementation of best management practices, such as buffering of sensitive environmental karst features and management of stormwater and downstream runoff.

3.7.2 Wastewater

3.7.2.1 Centralized Treatment Plants

Providing water for growing areas must also be complemented by a plan to treat that water once it is used by residential, commercial and industrial customers. Wastewater treatment is required to meet health and safety regulations as determined by the Texas Commission on Environmental Quality. Treatment solutions are generally determined by population density and area regulations such as County ordinances, aquifer protection agencies, and State agencies. Areas of high population density can more economically utilize a centralized wastewater treatment plant (WWTPs) to collect, treat, dispose or reuse the treated water. WWTPs are equipped with various technologies and processes to remove suspended solids, neutralize pathogens, reduce bacteria, chemicals, and nutrients such that the treated water can be disposed without harmful effect to the environment or reclaimed water customers. As mentioned in the reuse section, treated water from WWTPs is a potential supply resource for numerous non-potable demands.

WWTPs are generally designated as providing primary, secondary or advanced treatment based on the level of purification. Primary treatment uses screening, sedimentation and disinfection processes. Secondary treatment utilizes biological treatment to reduce the biochemical oxygen demand (BOD). Most plants include nutrient removal to reduce nitrogen and phosphorus levels. Advanced treatment describes processes to remove metals and other toxic substances that remain after primary and secondary treatment.

In Texas, WWTPs require Texas Pollutant Discharge Elimination System (TPDES) permits for discharging treated wastewater into waterways in the County. There are additional restrictions for discharges in

Hays County considering the pollution risk associated with the public water supply of the Edwards Aquifer. There is significant public resistance to treated wastewater being disposed into surface water within the western portions of the County. The TAC, Chapter 213.6 states that municipal and industrial discharges in the recharge zone of the Edwards Aquifer is prohibited if increases in pollutant loading are expected. Additional water quality requirements are required for discharges to streams within five miles upstream of the recharge zone.

Other disposal options include through spray or drip irrigation. Spray irrigation requires significant amounts of land and storage capacity to operate the irrigation system and may be limited to the weather and public use of the land area. Drip irrigation disposal requires much less land than spray irrigation and smaller storage capacity since it can be operated during public use of the lands and in weather events. Drip irrigation is constrained in rocky areas since regulatory guidance requires 6 inches of topsoil and one foot of vertical separation between rocks and other limiting soils types. Facilities that dispose of treated effluent by land application including surface irrigation, evaporation, drain fields or subsurface land application are required to obtain a Texas Land Application Permit (TLAP) permit.

Sewer collection systems deliver raw wastewater from customers to the treatment plant, generally by gravity or in some cases through pressurized force mains. Gravity sewers are the simplest options, but require a minimum cover over the pipes and minimum slope to convey the wastewater. Collection systems are sized to carry peak flow at 75 to 100 gpcd for residences and specified for other businesses (Table 3.7-7). Lift stations are used in collection systems to raise the hydraulic grade line to a design level to continue the minimum slope or to avoid other infrastructure.

Table 3.7-7. TCEQ Design Flows for New Wastewater Treatment Facility

Source	Remarks	Daily Wastewater Flow (gal/person)
Municipality/Subdivision	Residential	75-100
Trailer Park	2½ Persons per	50-60
(Transient)	Trailer	
Mobile Home Park	3 Persons per Trailer	50-75
School	Cafeteria & Showers	20
	Cafeteria/No Showers	15
Recreational Parks	Overnight User	30
	Day User	5
Office Building or Factory	A facility must be designed for the largest shift	20
Hotel/Motel	Per Bed	50-75
Restaurant	Per Meal	7-12
Hospital	Per Bed	200
Nursing Home	Per Bed	75-100

WWTPs that are permanently constructed on the site are referred to as conventional plants, whereas facilities that are prefabricated, delivered to the site and installed as components are commonly known as package plants. Although the plants utilize similar treatment processes, package plants are smaller in treatment capacity and necessary space than conventional plants. Conventional WWTPs have a 50 year useful life versus 25 years for a package plant.

Costs. General costs for wastewater treatment systems will vary depending on the technology, size, land requirements, collection system and disposal method. Table 3.7-8 includes planning level costs for WWTPs and package plants.

Table 3.7-8. Planning Level Costs for WWTP and Package Plants

Capacity (mgd)	WWTP Conventional Capital Cost Oct 2010 ($)	Package Plant Capital Cost Oct 2010 ($)
0.1	$2,133,000	$1,044,000
0.5	$5,100,000	$1,957,000
1	$8,808,000	n.a.
5	$20,118,000	n.a.

Other costs for wastewater systems include collection systems which are typically pipes constructed to convey gravity dominated flow and manholes. Construction of gravity collection systems can be expensive ($75/linear foot). Other system components may include lift stations and force mains to pressurize and convey sewage to the WWTP. Land costs are also important to consider since most plants will be required to land apply the treated effluent.

Existing Wastewater Treatment Plants

Within the planning area, there are 17 built, permitted and/or pending applications for municipal wastewater treatment plants; although only eight of those are currently constructed and two of those are owned by the Dripping Springs ISD (Figure 3.7-6). The combined permitted treatment capacity that is currently built is 1.85 mgd. The total built, permitted and/or pending capacity including unconstructed facilities is 3.1 mgd. Table 3.7-9 summarizes the three WWTPs serving the suburban areas within the demand centers of City of Dripping Springs, Woodcreek and Wimberley. Other subdivisions and commercial areas within the planning area may be served by either package plants or septic tanks.

Table 3.7-9. Selected Existing WWTPs in the Planning Area

Community	Size (mgd)	Type	Disposal	Operator
Wimberley	.025	Extended aeration	Drip irrigation	GBRA
Woodcreek	0.375	Extended aeration	Spray irrigation	Aqua Texas
Dripping Springs	0.1625	Extended aeration	Drip irrigation	Dripping Springs

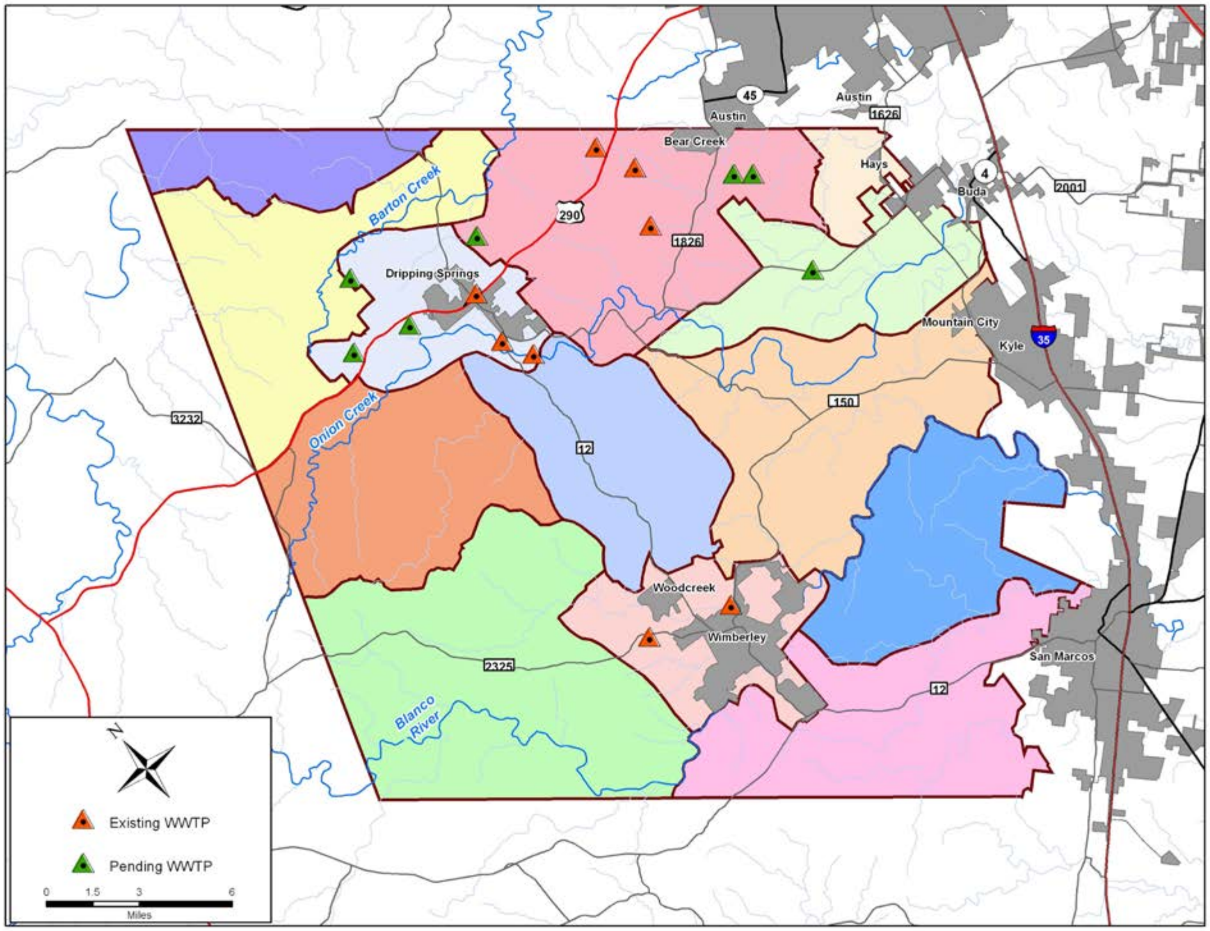


Figure 3.7-6 Municipal Wastewater Treatment Plants in the Study Area

Wimberley

GBRA owns and operates the 25,000 gpd package plant in Wimberley. The plant is a extended aeration activated sludge, receiving effluent from the Deer Creek of Wimberley Nursing Home and Rehabilitation Center. It is currently permitted at 15,000 gpd. The rest of Wimberley relies on private septic systems which are pumped frequently. The location of the plant is at the Blue Hole recreational area, which is planned to become part of the Blue Hole Regional Park which would take advantage of the treated effluent for irrigation. The plant has a subsurface discharge into a disposal field.

Woodcreek

Aqua Texas owns and operates two wastewater collection systems and one wastewater treatment plant for residents in Woodcreek. The WWTP is an extended aeration package plant with secondary clarification and chlorination and is located on Jacobs Well Road in the Phase II subdivision. The WWTP includes aeration basins, final clarifiers, sludge digester, chlorine contact chamber and a 58 ac-ft storage pond for treated effluent prior to irrigation. Sludge is hauled by registered hauler and disposed in TCEQ permitted land application site. The treated effluent is disposed through spray irrigation at the Woodcreek municipal golf course. The WWTP requires 143 acres for disposal at the golf course in the interim phase and 175 acres in the final phase.

Application rates are not to exceed 1.96 ac-ft/yr/acre irrigated with effluent storage of 58.34 ac-ft. The anticipated phasing is:

Interim Phase:	250,000 gpd
Final Phase:	375,000 gpd

Dripping Springs

Dripping Springs owns and operates one wastewater treatment plant with a total permitted volume of 0.1625 mgd. However, a second plant has been permitted which will be constructed by a developer at the Scenic Greens development 4.4 miles west of the City.

The South Regional Wastewater Treatment System collects and treats wastewater from certain areas within and adjacent to the corporate limits. City-owned land is used for effluent disposal via subsurface drip irrigation. The wastewater treatment plant consists of a concentric steel structure and can be ultimately rated at approximately 500,000 gpd. Currently, the aeration basin is partitioned such that the initial basin capacity is 127,500 gpd (City of Dripping Springs, 2010). The WWTP incorporates mechanical screening, activated sludge aeration, clarification, chlorine feed and chlorine contact, return and waste activated sludge pumping, and aerobic digestion, sludge is hauled to a TCEQ permitted landfill disposal. A 333,000 gallon ground storage effluent holding tank is used to store treated effluent prior to disposal via the subsurface drip irrigation. The collection system consists of 6 to 12-inch gravity wastewater lines, a 15-inch gravity trunk line along Ranch Road 12, and two lift stations. The pipelines are installed in existing City rights of way and in dedicated easements.

A wastewater permit was issued to the City on October 14, 2005, by the TCEQ, and renewed on November 24, 2009. The phased permit was issued as follows:

Initial Phase:	75,000 gpd
Interim Phase:	127,500 gpd
Final Phase:	162,500 gpd

The Interim phase will provide wastewater treatment and effluent disposal for approximately 531 connections, and the Final Phase will provide wastewater treatment and effluent disposal for approximately 677 connections. Sizing of each phase is based on 240 GPD of wastewater flow per LUE.

The City utilizes the 40 acre City-owned WWTP site for effluent disposal through subsurface drip irrigation. In addition, the City can dispose of approximately 35,000 GPD on soccer fields located at the City of Dripping Springs Sports and Recreation Park. As other areas become available for irrigation, the City may expand its wastewater disposal facilities. The maximum permitted effluent application rate is approximately 0.1 gallons per day per square foot.

The second facility to be operated by the City is the treatment plant to be located west of Dripping Springs along US 290 in the Scenic Greens development. The facility will serve primarily the 900 residences platted for the development. The permit describes the plant as using activated sludge, aerobic digesters and UV disinfection. Disposal will be via subsurface irrigation ultimately on 57.4 acres.

A wastewater permit was issued to the City in January 2010, by the TCEQ, as follows:

Initial Phase:	62,500 gpd
Interim Phase:	125,000 gpd
Final Phase:	250,000 gpd

Wimberley WWTP expansion

Background. The City of Wimberley is partially served by a package plant but has been planning, in cooperation with GBRA, an expansion to sewer most of the city, specifically around the downtown area along Cypress Creek, where many OSSFs are at capacity and require routine pumping and off-site disposal (GBRA, 2009b). The City is proposing to decommission the existing plant and construct a 0.115 mgd wastewater collection system to provide service to 199 customers (commercial and residential) in the downtown Wimberley area (Figure 3.7-7). Treated effluent will be disposed through subsurface drip irrigation in the Blue Hole Regional Park. The collection system would include gravity sewers, lift stations and force mains. The wastewater system would be owned and operated by GBRA providing retail service through an inter-local agreement with the City. The City passed an ordinance requiring all property owners in the City limits and ETJ to connect to the wastewater system once it is operational. The city would charge a one-time connection fee of $10,000 payable over five years. The estimated wastewater bill without the connection fee is estimated to be $218/month.

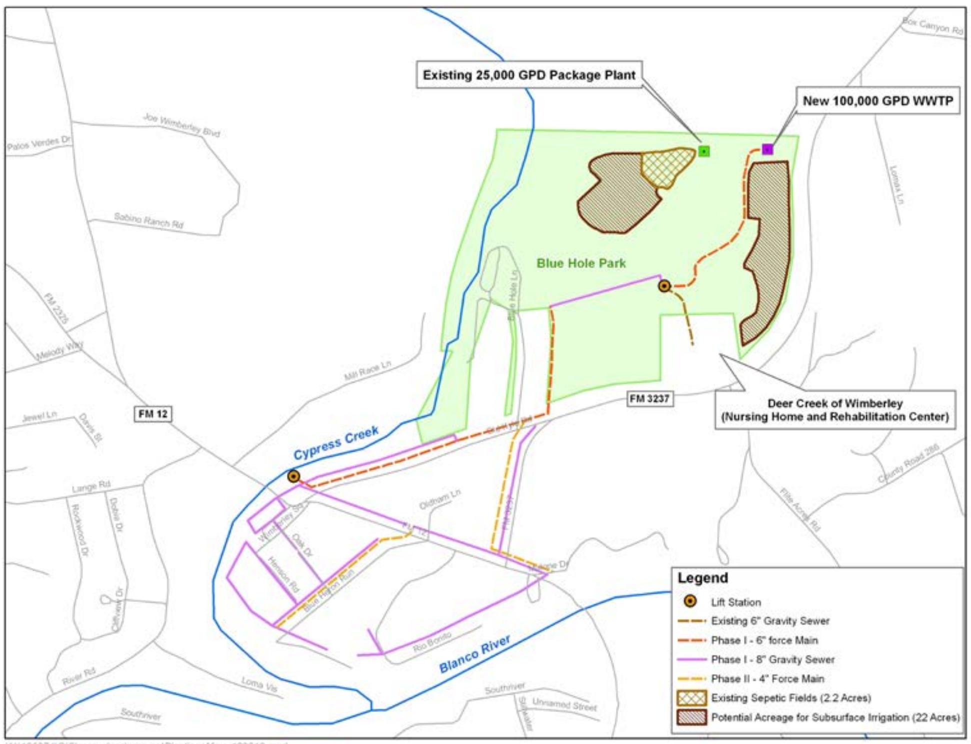


Figure 3.7-7. Proposed Phase 1 & 2 of Wimberley Wastewater Collection and Treatment System

Cost. GBRA submitted an application for funding from the Clean Water State Revolving Fund (CWSRF) and Texas Water Development Fund for a total of $8,525,000. This includes $5.8 million for construction costs, $602,000 for engineering and design, $235,000 for special services, and $1.4 million for fiscal services. Detailed costs from the GBRA Preliminary Engineering Report dated December 2009 are included in Appendix C.

Implementation Issues. Future commercial and residential development along Winters Mills Parkway could also be served through this WWTP; however, costs do not include collection lines and plant capacity expansion to serve this area.

There are significant issues related to affordability, public acceptance, and high cost to utility customers. GBRA has submitted for funding through the CWSRF and the Texas Water Development Fund. The project is currently on hold pending the resolution of funding issues.

Subsurface irrigation pipes must be covered by at least 6 inches of soil (30 TAC, Chapter 222) and have at least 12 inches of vertical separation from restrictive soils. Soils in the proposed disposal area are rock or clay and considered very limited and the project may require importing top soil.

Disposal of treated effluent by land application including surface irrigation, evaporation, drain fields or subsurface land application is required to obtain a Texas Land Application Permit (TLAP) permit.

City of Dripping Springs WWTP Expansion

The City of Dripping Springs is considering pursuing funding from the TWDB for the South Regional Wastewater System Expansion. The 0.1875 mgd expansion would include the WWTP, collection system, holding tank(s), pump station, force main for disposal, and additional subsurface drip irrigation facilities. The timing of expansion will be dependent on the growth and demand within the City's CCN.

The improved system will allow the City to further extend sewer service, taking defective OSSFs offline and provide capacity for growth. The proposed wastewater service area will include approximately 2,850 acres to encompass the City's city limits, and a portion of the City's ETJ adjacent to the city limits (Figure 3.7-8).

Total project costs for the expansion of the South Regional Wastewater System are estimated at $15,765,000. Additional cost detail is included in Appendix C. Connection costs to the wastewater system for new structures are $9,752/LUE and $1,500/LUE for existing structures.

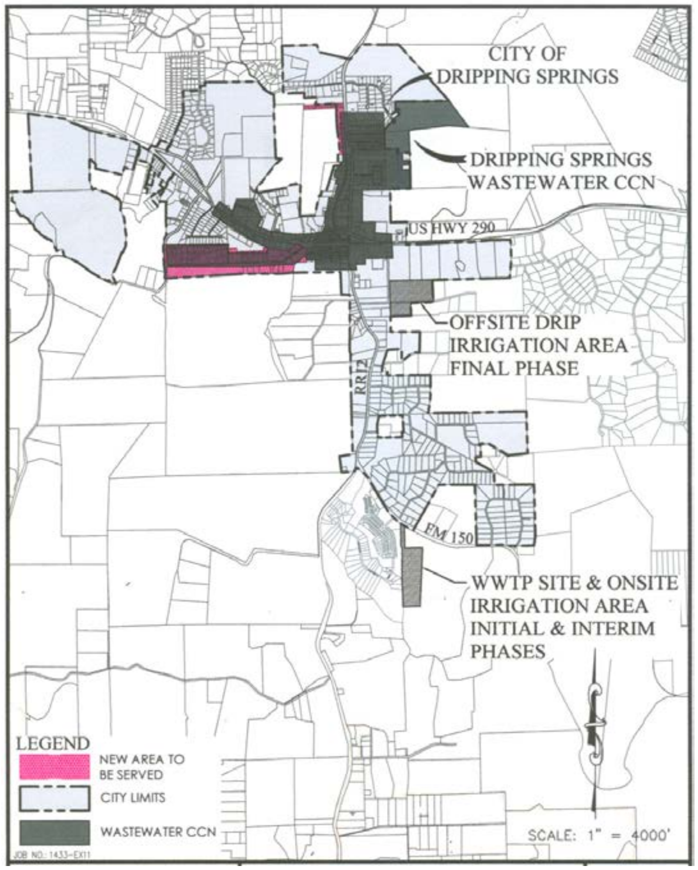


Figure 3.7-8. City of Dripping Springs Proposed Wastewater Service Area

In the future, the City may amend their existing permit to increase the Final Phase to 350,000 GPD. As the City grows, wastewater flows will increase but the effluent disposal method will remain the same.

In the future, the City will need to identify reuse customers for the treated effluent such as the city owned recreational fields. Reusing this water would ultimately replace treated surface water and treated groundwater that is currently being used. Irrigation using treated effluent via 30 TAC, Chapter 210 will require additional treatment units required to meet Type I effluent requirements.

3.7.2.2 On-Site Septic Systems

Septic systems also known as on-site sewerage facilities (OSSF) are very common within the planning area and consist of a buried tank connection from a customer's sewer line to a buried tank and leach field. Most septic tanks have two chambers; the first allows solids to settle and the second for additional settling and drainage to a leach field. The tank holds the wastewater in an anaerobic environment to allow for biological treatment. The leach field includes a network of perforated drainage pipes in shallow trenches backfilled with gravel. Additional treatment of the effluent is performed through the soil percolation.

Advanced septic systems utilize more complex treatment and disposal technology than a conventional septic system. Treatment may be performed using aerobic bacterial digestion and dispersed into soil media through pressurized pipe. Conventional systems rely on gravity to convey effluent to leach fields. It is also necessary to pump the accumulated sludge in the septic tanks regularly to maintain proper operation of the septic system and reduce potential for contamination of the site. Pumping intervals are dependent on the size of the tank, use of the system and regulations.

Cost. Costs vary depending on the type of system, size and use. Typical costs for a single family residence range as detailed in Table 3.7-10. Annual costs are minimal and can range between $40 - $500 depending on the type and location for the service call.

Table 3.7-10. Range of Costs for Single Family Residence Septic System

System Type	Typical Range of Costs
Standard Septic System	$6,000 - $8,000
Aerobic System	$8,000 - $10,000
Low Pressure Dosage System	$10,000 - $12,000

Implementation Issues. Septic tanks improperly designed or installed in areas close to groundwater, surface water or in restrictive soils can cause bacterial contamination and become a health hazard. Hays County is situated in portions of the Contributing Zone of the Barton Springs segment of the Edwards Aquifer and Recharge Zone of the Edwards Aquifer.

Additional precautions are taken to protect the water quality of the groundwater since soil conditions are porous limestone susceptible to rapid transportation of pollutants. Hays County includes additional guidance for distances between OSSFs and waterways (150 ft), property lines (40 ft), and wells (20 – 150 ft depending on the OSSF component). New system permits require a 2 year maintenance contract.

Minimum lot sizes in Hays County are often driven by the type of wastewater service. Table 3.7-12 identifies the minimum lot sizes for OSSFs. However, the selection of OSSF is also dependent on cost, soil types, builder preferences, and simplicity of installation.

3.7.2.3 Hybrid Treatment Systems

Background. An alternative or hybrid system which combines features of centralized systems with septic tanks may be an option for some customers in the planning area. Often described as a decentralized system, this system uses the septic tank to collect and treat solids while the effluent is conveyed to a treatment plant for on-site reuse. Wastewater for a subdivision or multifamily complex could be collected through the effluent-only sewers, treated at a package plant and reused for common area irrigation, residential irrigation or disposed through dispersal fields. Septic tanks would require periodic sludge pumping to maintain proper operation. Since solids are not included in effluent-only sewer pipes, manholes are not necessary in the collection system, infiltration and inflow from stormwater and groundwater are less problematic, and the sewer pipes can be smaller in diameter than conventional sewer pipe (Venhuizen, 2010). The treatment process is unique from conventional wastewater treatment since the process begins with pretreatment at the septic tank and includes additional treatment of the effluent at a central location using biofiltration through sand/gravel or other media or trickling filters.

Cost. System costs include residential septic tanks, gravity effluent lines to a treatment plant, pump stations, treatment plant and reuse lines. Compared to conventional wastewater collection systems and treatment plants, the alternative systems are more cost-effective when utilized on a subdivision or smaller scale. Cost per dwelling unit could range from $12,000 to $14,000 depending on the number of connections, topography and soil type. A decentralized system can provide wastewater treatment proximate to where wastewater flows are generated, saving on energy and infrastructure costs. Savings are realized through reduced pipe sizes based on the effluent-only design.

Implementation Issues. There is an emerging awareness of the benefits of the decentralized systems, such as scalability and cost effectiveness. However, builders and regulators are not as familiar with the technology and may favor more conventional solutions. Within the study area, several of these systems have been constructed for commercial establishments, but there has not been a residential application of a decentralized system. Regulators without experience with the systems may create obstacles.

An alternative wastewater system would be identified as a TCEQ permitted system, not an OSSF imposing lot size restrictions. Operations and maintenance would be the responsibility of system customers. Disposal of treated effluent by land application including surface irrigation, evaporation, drain fields or subsurface land application is required to obtain a Texas Land Application Permit (TLAP).

3.7.2.4 Grinder Pumps and Low Pressure Systems

Background. In areas that can not use OSSFs or gravity sewers due groundwater concerns, difficult topography or rocky terrain, grinder pumps could be used in combination with a package wastewater treatment plant. Grinder pumps are submersible pumps, typically installed in a 36 inch diameter wet well that collects from the residence. All solids are ground to a slurry and pumped through small diameter pressure sewers to the treatment facility.

Cost. Low pressure systems use smaller diameter pipe, require less cover and are easier to install than gravity sewers. Pumps and pressurized sewer systems have a shorter useful life (15 years) compared to the gravity collection systems (40 years). Pumps and wet wells currently cost around $3,000. The customer is typically responsible to maintain their pumps and may enter into a maintenance contract with an independent company. Operation and maintenance costs for the homeowner are estimated at $300/year. Replacement costs for pumps are about $2,300.

3.8 DEVELOPMENT REGULATION AND SERVICE CHOICES

The Hays County development regulations adopted in August 2009 “provide a framework for the orderly and efficient development of rural and suburban Hays County”. The County has interlocal agreements to address developments within a municipality’s extraterritorial jurisdiction (ETJ). For authorization of any development within the County’s jurisdiction, a water and wastewater service plan must be submitted. The plan must demonstrate service availability, estimate of water demand for all phases of the development, and required infrastructure.

Each plan that identifies local groundwater as the water supply is also reviewed by the appropriate groundwater conservation districts and/or the EAA. Exemptions from certifying water availability include subdivisions with a maximum of 5 lots averaging at least 2 acres/lot and subdivisions with a maximum of 10 lots sized 10 acres or greater. A number of platted subdivisions have taken advantage of this exemption.

The County's subdivision ordinance requires minimum lot sizes for subdivisions conditioned by the type of water and wastewater service and potential impact to the Edwards Aquifer (Table 3.7-11). Developments that will rely on OSSFs for wastewater service are described in Table 3.7-12. Systems treating or disposing more than 5,000 gpd and disposing on sites other than the location of the treatment facility would be considered a TCEQ permitted wastewater system. Water supply systems include local groundwater (public or non public) groundwater and other water supply systems.

A local groundwater system is defined as a system with more than 1/3 of its supply from local groundwater. A public system includes those which are regulated by TCEQ as public water systems (PWS) or those owned and/or operated by a recognized government entity. The minimum lot restriction for a public local groundwater system is between 0.5 and 1.0 acres in the EACZ, and 0.75 and 1.5 acres in the EARZ.

The minimum lot size for a subdivision using a non-public local groundwater system for water supply within the Hill Country Priority Groundwater Management Act (PGMA) is 6 acres unless it is platted under the exemption that allows for 5 lots or less averaging at least 2 acres/lot. Other water supply systems represent those in which more than 2/3 of the total supply comes from non local groundwater sources such as surface water, rainwater or imported groundwater. For these supply systems, the minimum lot size will be determined mostly by the wastewater service.

The subdivision ordinance will have a significant effect on all future residential subdivisions. Although groundwater may be the cheapest water supply, it is expected that developers will be seeking alternative water supplies such as surface water, rainwater or imported groundwater to increase development densities. Higher densities may result in greater profits for the developer and cost savings on the water and wastewater infrastructure.

Regulated OSSFs are limited to systems smaller than 5,000 gpd where effluent is disposed at the same site as the treatment system. Table 3.7-12 includes conventional and advanced OSSF. A conventional system includes facilities and system of a standard treatment system that does not use a pressurized system to disperse the effluent to the disposal area. An advanced system may include sand filtration, proprietary treatment systems, secondary treatment systems or standard treatment system using a pressurized system to disperse the effluent uniformly over the disposal area.

Similar to the water service type, the water quality impact to the Edwards Aquifer and the wastewater service type will dictate the minimum lot size. Advanced OSSF systems can have smaller lot sizes compared to the conventional OSSF systems.

Table 3.7-11. Minimum Lot Sizes in Acre for Water and Wastewater Services

Water Supply Systems	Wastewater Service	Within EARZ	Within EACZ	All Other Areas
Other Water Supply System	TCEQ Permitted Public System	None	None	None
Other Water Supply System	TCEQ Permitted Private System	1.00	0.75	None
Public Local Groundwater System	TCEQ Permitted Public System	0.75	0.50	None
Public Local Groundwater System	TCEQ Permitted Private System	1.50	1.00	None
Non-Public Local Groundwater System	TCEQ Permitted Public System	1.00	0.75 6.00[1]	0.50 6.00[1]
Non-Public Local Groundwater System	TCEQ Permitted Private System	2.00	1.50 6.00[1]	1.00 6.00[1]
Any	OSSF	Refer to Table 741.06 in Chapter 741		

EARZ – Edwards Aquifer Recharge Zone
EACZ – Edwards Aquifer Contributing Zone
[1] Applicable to new subdivisions and Manufactured Home Rental Communities served by individual private wells located within the Priority Groundwater Management Area and required to demonstrate water availability under Chapter 715, except as modified under §715.3.06(D)

Table 3.7-12. Minimum Lot Sizes in Acres for OSSFs

Location	Water Service	Advanced	Conventional	TCEQ Min.
EARZ [1]	Other Water Supply System	1.50	2.00	1.00 [4]
EARZ	Public Local Groundwater Supply System[2,8]	2.50	4.50	1.00 [4]
EARZ	Any Other	3.00	5.00	1.00 [4,6]
EACZ [3]	Other Water Supply System	1.00	1.50	0.50 [5]
EACZ	Public Local Groundwater Supply System	1.50	2.50	0.50 [5]
EACZ	Any Other	2.00 6.00[9]	3.00 6.00[9]	1.00 [6]
Any Other	Other Water Supply System	0.50 1.00 [7]	1.00	0.50 [5] 1.00 [6]
Any Other	Public Local Groundwater Supply System	1.00	1.50	0.50 [5]
Any Other	Any Other	1.50 6.00[9]	2.00 6.00[9]	1.00 [6]

Notes:
1. Edwards Aquifer Recharge Zone as defined in 30 TAC §213
2. A Public System is a Public Water System as defined in 30 TAC §290
3. Edwards Aquifer Contributing Zone as defined in 30 TAC §213
4. TCEQ Minimum lot size as per 30 TAC §285.40(c)
5. TCEQ Minimum lot size as per 30 TAC §285.4(a)(1)(A)
6. TCEQ Minimum lot size as per 30 TAC §285.4(a)(1)(B)
7. Minimum lot size for use of surface application system as per 30 TAC §285.33(d)(2)
8. See Chapter 715 for definition of a Local Groundwater Supply System
9. Applicable to new subdivisions and Manufactured Home Rental Communities served by individual private water wells located within the Priority Groundwater Management Area and required to demonstrate water availability under Chapter 715, except as modified under §715.3.06(D)

3.9 PRIORITY CONSIDERATIONS IN MAKING MANAGEMENT RECOMMENDATIONS

Selecting the correct service method or technology for water and wastewater will be driven by reliability, technical viability, social and environmental acceptability, public health, and economics. All the technologies described in this section are technologically feasible and potentially permittable but will face many public and regulatory challenges. Selecting which technology to apply will generally be limited to economic factors and access issues.

Infrastructure projects are very capital intensive and are appropriate for areas with adequate residential densities such as suburban areas. Due to distances between demand and low densities in rural areas, appropriate technologies to meet water and wastewater will be limited to less costly on-site solutions.

Groundwater resources in the County are not sufficient to meet all of the projected growth. Demands will need to be shifted to supplies other than local groundwater such as rainwater harvesting and imported surface water. Suburban areas with sufficient development densities located along service corridors such as US 290 and RR12 and those near the demand centers of Dripping Springs and Wimberley will have potential access to capital intensive imported water strategies and wastewater service.

Where appropriate, water strategies recommended for WUGs in the 2011 Region L and K Plans have been adopted in this plan including:

- Conservation (Section 3.7.1.7),
- Imported surface water for Wimberley and Woodcreek, (Section 3.7.1.1),
- Edwards-BFZ Aquifer brackish water desalination (Section 3.7.1.3), and
- Extension of municipal service from City of Austin (Section 3.7.1.4).

Wastewater technologies for suburban areas will be limited to public acceptance of discharge facilities. Unless reuse customers are available nearby, zero discharge facilities will require additional land for disposal of effluent adding to project costs. There is likely to be a proliferation of package wastewater treatment plants in the area to serve growth and limited opportunities for regionalization. Proponents of regionalization would argue that the decentralized operation and maintenance of the various package plants increases the public health risk and is not cost efficient. However, regionalization of wastewater service is not a current reality and was not evaluated considering the discharge limitations, lack of reuse customers, and cost effectiveness.

4.0 MANAGEMENT PLANS

4.1 HAYS COUNTY STUDY AREA MANAGEMENT PLAN

4.1.1 Projected Population and Service Demands

Population. Because of the local debate over a desired rate or growth or no-growth, as well as just good planning practice, this Facilities Plan study developed three alternative growth forecasts and associated management plans. As previously discussed, data on the location and timing of residential electric connections since 1980 was obtained from Pedernales Electric Coop. Because of the GIS coverage that was provided, it was possible to compile this data many different ways so that forecasts could be made for many different sub-areas of the County, as well as the study area as a whole. Persons per household statistics were applied to the electric connections data to yield population estimates.

The High Case forecast (HI) was developed using a linear trend forecast from the historical data. In other words, this reflects a continuation of the growth experienced in recent decades, which for the most part, has been relatively unconstrained by water supply availability. The Middle Case (MID) slows the growth by one-quarter to one-third below that of the HI Case in 2060. The No Action Case (NA) constrains growth in the northern part of the County to what can occur with existing water supply capacity. Growth elsewhere was reduced by two-thirds below that of the HI Case forecast in 2060.

As indicated in Figure 4.1-1 and Table 4.1-1, the projected overall population growth in the study area is rather formidable in all three development scenarios, increasing from a current estimate of 65,520 persons to a range of 119,434 persons (+82%) in this study's NA Case, 154,877 persons (+136%) in the MID Case, or 186,667 persons (+185%) in the HI Case by the year 2060.

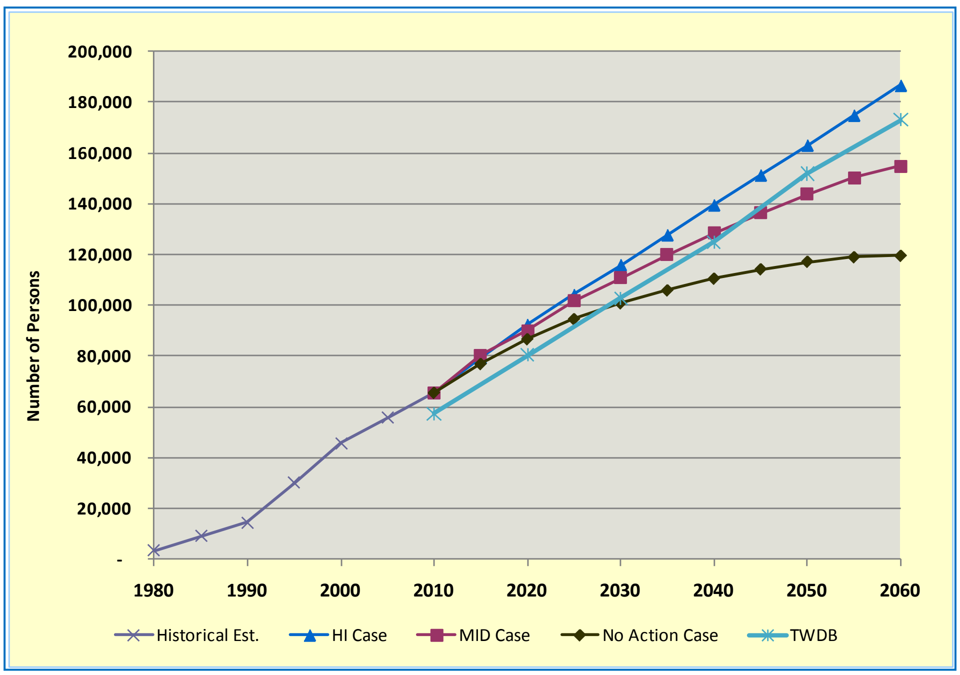


Figure 4.1-1. Historical and Projected Population for the Hays County Study Area

TWDB data was also compiled to provide a comparable number from their regional planning information. The TWDB numbers estimate a slightly lower 2010 population of 57,244 and a forecast of about 173,000 persons by 2060. The TWDB's 2060 projected population is fairly comparable to the HI Case forecast of this study. If both studies had used the same 2010 population estimate, the ultimate forecasts would have been very close to one another.

Table 4.1-1. Historical and Projected Population for the Hays County Study Area

Planning Forecast	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
Hays County W-WW Facilities Plan											
NA Case	65,520	76,864	86,626	94,515	100,762	105,839	110,453	114,129	117,101	118,889	119,434
Avg. Annual Growth Rate		*3.2%*	*2.4%*	*1.8%*	*1.3%*	*1.0%*	*0.9%*	*0.7%*	*0.5%*	*0.3%*	*0.1%*
MID Case	65,520	80,426	89,997	101,582	110,873	119,870	128,266	136,367	143,557	150,142	154,877
Avg. Annual Growth Rate		*4.2%*	*2.3%*	*2.5%*	*1.8%*	*1.6%*	*1.4%*	*1.2%*	*1.0%*	*0.9%*	*0.6%*
HI Case	65,520	79,361	92,390	104,175	115,960	127,744	139,529	151,313	163,098	174,883	186,667
Avg. Annual Growth Rate		*3.9%*	*3.1%*	*2.4%*	*2.2%*	*2.0%*	*1.8%*	*1.6%*	*1.5%*	*1.4%*	*1.3%*
TWDB Regional Planning	57,244		80,396		102,651		124,987		151,822		172,924
Avg. Annual Growth Rate			*3.5%*		*2.5%*		*2.0%*		*2.0%*		*1.3%*

Water Demands. To develop estimates and forecasts of water service demand, per capita water use values (See Section 3.4) are multiplied times the population values to estimate current and future municipal water demands. As discussed previously, these per capita water use values: (1) reflect a value representing a hot, dry year, (2) decline over time reflecting water conservation anticipated to result from the State's Water Efficient Plumbing Bill, and (3) are also calculated in a manner that provides an additional allowance for associated commercial and institutional water demands in the forecast.

The results of these calculations are shown in Table 4.1-2. The units of measurement indicate an expected average day water use (in million gallons daily) during a hot, dry year, which is a useful concept for water supply planning. As indicated, water service demands could increase from a current estimate of about 9.0 mgd to a range of 16.0 mgd (+78%) in this study's NA Case, 20.6 mgd (+128%) in the MID Case, or 24.6 mgd (+173%) in the HI Case by the year 2060. The TWDB also forecasts a level of water demand similar to our HI Case forecast. Given the limited water supplies in the study area, this presents a formidable planning challenge.

Table 4.1-2. Historical and Projected Water Demand (mgd) for the Hays County Study Area

Planning Forecast	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
NA Case	9.031	10.545	11.918	13.087	13.789	14.393	14.934	15.390	15.758	15.974	16.044
Avg. Annual Growth Rate		*3.1%*	*2.5%*	*1.9%*	*1.0%*	*0.9%*	*0.7%*	*0.6%*	*0.5%*	*0.3%*	*0.1%*
MID Case	9.031	10.992	12.280	13.889	15.087	16.189	17.207	18.227	19.132	19.961	20.578
Avg. Annual Growth Rate		*4.0%*	*2.2%*	*2.5%*	*1.7%*	*1.4%*	*1.2%*	*1.2%*	*1.0%*	*0.9%*	*0.6%*
HI Case	9.031	10.912	12.787	14.375	15.809	17.261	18.701	20.182	21.662	23.140	24.617
Avg. Annual Growth Rate		*3.9%*	*3.2%*	*2.4%*	*1.9%*	*1.8%*	*1.6%*	*1.5%*	*1.4%*	*1.3%*	*1.2%*

Wastewater Demands. Similar to developing the water service demands, per capita wastewater discharge factors (See Section 3.4) are multiplied times the population values to estimate current and future municipal wastewater demands. As discussed previously, these per capita discharge factors also decline over time reflecting indoor water conservation anticipated to result from the State's Water Efficient Plumbing Bill. However, per capita wastewater discharge factors are lower than for water use in that some water use is physically consumed indoors and some water is used outdoors, and in either case, is not returned to the sewer.

The results of these calculations are shown in Table 4.1-3. The units of measurement indicate an expected average day wastewater service demand (in million gallons daily). As previously discussed, an additional factor for wet-weather Infiltration/Inflows (I/I) is normally added to develop a forecast of flows at the wastewater treatment plant, but was not done in this study as most of the existing systems are relatively new (thus having low I/I), as would any new recommended system. Also, these service demand forecasts are also used to judge additional needs for on-site systems, and septic tanks typically have only small I/I. The average day wastewater demand forecast can be reasonably compared to average day value in existing or future permits.

As indicated, wastewater service demands could increase from a current estimate of about 4.7 mgd to a range of 8.0 mgd (+71%) in this study's NA Case, 10.4 mgd (+121%) in the MID Case, or 12.5 mgd (+167%) in the HI Case by the year 2060. The TWDB also forecasts a level of water demand similar to our HI Case forecast. Given the limited water supplies in the study area, this presents a formidable planning challenge.

Table 4.1-3. Historical and Projected Wastewater Demand (mgd) for the Hays County Study Area

	Estimated	Projected									
Planning Forecast	2010	2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
NA Case	4.683	5.498	6.155	6.668	7.058	7.359	7.623	7.818	7.960	8.019	7.992
Avg. Annual Growth Rate		*3.3%*	*2.3%*	*1.6%*	*1.1%*	*0.8%*	*0.7%*	*0.5%*	*0.4%*	*0.1%*	*-0.1%*
MID Case	4.683	5.754	6.394	7.167	7.766	8.335	8.853	9.341	9.758	10.126	10.359
Avg. Annual Growth Rate		*4.2%*	*2.1%*	*2.3%*	*1.6%*	*1.4%*	*1.2%*	*1.1%*	*0.9%*	*0.7%*	*0.5%*
HI Case	4.683	5.673	6.558	7.342	8.114	8.873	9.620	10.355	11.077	11.787	12.485
Avg. Annual Growth Rate		*3.9%*	*2.9%*	*2.3%*	*2.0%*	*1.8%*	*1.6%*	*1.5%*	*1.4%*	*1.3%*	*1.2%*

4.1.2 Existing Capacity Limitations

Water. Various source of planning, regulatory, and contract information was accessed to define the limitations of the existing service capacity arrangements, including data obtained from LCRA, GBRA, Regions K and L regional planning efforts, HTGCD, BSEACD, Dripping Springs WSC, City of Dripping Springs, Wimberley WSC, Aqua Texas, and other sources.

Various contractual supply amounts were obtained from GBRA and reviewed, but all Hays County water agreements are for entities in the eastern portion of the County, outside this study area (GBRA, 2009a).

LCRA provided information relating an 11,178 LUEs of capacity for its Hwy 290 pipeline (LCRA, 2010a) and 3,900 LUEs of capacity for its Hamilton Pool Road (HPR) pipeline (LCRA, 2010b). LCRA has service agreements for most of this capacity, but is examining ways it can continue to extend service within its current capacity constraints.

Dripping Springs WSC has a contract with LCRA that allows for up to 1 mgd of supply from the Hwy 290 pipeline (Dripping Springs WSC, 2010). The WSC also conjunctively uses Trinity groundwater, but contested the award of an initial groundwater permit from the HTGCD. With the on-going litigation, the WSC has no current permit limitation amount. The WSC has a groundwater permit application pending before the District, which has not yet been acted on. For purposes of this study, the 240 ac-ft/yr (0.214

mgd) of groundwater supply identified in the Region K Plan (TWDB, 2010a) was used as the WSC's groundwater supply limitation.

As of November 2009, the Hays Trinity Groundwater Conservation District indicated 46 active groundwater withdrawal permits totaling 1,857 ac-ft/yr of pumping capability (HTGCD, 2009a). The largest permits are held by the two utility corporations that serve the Wimberley and Woodcreek areas and constitute 1,355 ac-ft/yr or 73% of the permitted total. The majority of the remainder of the permits is held by either small subdivision-oriented utilities or other small non-exempt uses.

The Dripping Springs WSC challenged the initial permit that was to be given it by the HTGCD, and with on-going litigation, no permit has yet been issued for the WSC. Non-exempt pumping of 2,371 ac-ft/yr reported in 2008 plus exempt domestic and agricultural use of 3,300 ac-ft/yr yielded a total estimated pumping of about 5,671 ac-ft/yr (HTGCD, 2008). The HTGCD's 2005 Management Plan utilized a estimate of "sustainable" groundwater availability of 3,713 ac-ft/yr. This level of use and limited availability resulted in an estimated over-drafting of the aquifer by 2,371 ac-ft/yr. During recent 2008 drought conditions, Trinity groundwater levels experienced significant decline, stream flow was reduced or interrupted, and Jacobs Well, near Wimberley, stopped flowing for the second time in recorded history. Various monitoring wells in the District also indicate longer-term water level declines, generally indicative of longer-term groundwater use in excess of recharge.

The utility corporations serving the Wimberley and Woodcreek areas are almost totally dependent on groundwater to meet local water demands. There is a small amount of reuse being provided to the Woodcreek golf course. Wimberley WSC and Aqua Texas hold HTGCD pumping permits that provide them with a current groundwater supply of 695 ac-ft/yr (0.621 mgd) and 660 ac-ft/yr (0.590 mgd), respectively. Both have permit issues before the HTGCD that would allow for an increased pumping amount (WWSC) or no reduction in their current permits as a result of water loss management savings (Aqua Texas).

Wastewater. Permitted service capacities for existing centralized wastewater treatment facilities were obtained from TCEQ's database (TCEQ, 2010c). Within the planning area, there are currently 8 facilities with a combined permitted limit of 1.9 mgd to treat municipal wastewater. There are 15 existing or planned municipal treatment projects considering the permitted existing plants, permitted but not yet built, renewal of permit but not yet build, and pending applications with a combined permit limit totaling 3.1 mgd.

Wastewater treatment facilities serving portions of the incorporated communities in the study area include a 0.1625 mgd extended aeration/drip irrigation disposal facility in Dripping Springs, a 0.375 mgd extended aeration/drip irrigation system in Woodcreek and a 0.025 mgd extended aeration/drip irrigation facility in Wimberley. Both Wimberley and Dripping Springs have plans for near-term expansion of centralized treatment services. Other subdivisions and commercial areas within the planning area are either served by smaller, package-type treatment plants or by septic tanks.

4.1.3 Additional Service Needs

As previously discussed in Section 3.6, the next methodological step in the planning process was to identify additional service needs. In this study, additional service needs means the increase in future utility service demand as compared to the *current use* of service capacity. This is a slightly different approach than the identification of unmet needs which compares future demands to existing service capacity. In a regional study, if utility capacity or contract reservations of one entity is shown as part of the existing service capacity of a region or sub-area, then existing capacity minus future demand can show a future surplus of capacity, even though many entities in the sub-area still have unmet needs or unintentionally portray supply capacity held by one entity inadvertently being assigned to meet the needs of other entities in the same planning sub-area.

Further, it is problematic to try to define a groundwater supply for a defined area within an aquifer or a district boundary. So for purposes of this study, the *use of current supplies,* when compared to future utility demands, is used to calculate additional service needs. These additional service needs are then examined over time to ascertain when discrete facility capacities or contracts or overall limits on permittable groundwater supply might be exceeded and additional management measures are warranted.

Water. The results of these additional service need calculations are shown in Table 4.1-4. As indicated, *additional* water service needs, beyond today's use of current capacity could increase from 1.514 mgd in 2015 to 7.013 mgd in this study's NA Case, from 1.961 mgd to 11.547 mgd in the MID Case, or from 1.880 mgd to 15.586 mgd in the HI Case by the year 2060.

Wastewater. The results of these additional wastewater service need calculations are also shown in Table 4.1-4. As indicated, *additional* wastewater service needs, beyond today's use of current capacity could increase from 0.815 mgd in 2015 to 3.309 mgd in this study's NA Case, from 1.070 mgd to 5.676 mgd in the MID Case, or from 0.989 mgd to 7.801 mgd in the HI Case by the year 2060.

Table 4.1-4. Additional Water and Wastewater Service Needs (mgd) for the Hays County Study Area

	Estimated	Projected									
Planning Forecast	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**	**2055**	**2060**
Water											
NA Case	-	1.514	2.887	4.056	4.757	5.361	5.903	6.359	6.726	6.943	7.013
MID Case	-	1.961	3.249	4.857	6.056	7.158	8.176	9.196	10.101	10.930	11.547
HI Case	-	1.880	3.756	5.344	6.777	8.229	9.670	11.151	12.630	14.109	15.586
Wastewater											
NA Case	-	0.815	1.471	1.985	2.374	2.676	2.940	3.134	3.277	3.336	3.309
MID Case	-	1.070	1.711	2.484	3.083	3.652	4.169	4.657	5.074	5.442	5.676
HI Case	-	0.989	1.874	2.658	3.430	4.190	4.937	5.672	6.394	7.104	7.801

4.1.4 Recommended Management Actions

Because of the long-lead time necessary to develop additional water supplies and operating under the conservative outlook, it is better plan and be high (have some excess capacity) than plan and be low (not have enough). Thus, the HI case forecast, a continuation of recent development trends, is used as the recommended planning scenario for this Facilities Plan.

Water. Table 4.1-5 summaries the projected HI Case suburban and rural population and water service demand forecasts and the expected use of existing and/or new supplies that meet those needs. Facilities costs for these water management actions are discussed in Sections 3.7 and Section 5.4.

During the course of the 50-year planning period, major new water infrastructure projects contained in this forecast include a new LCRA treated water pipeline in the northern part of the County, two new treated water pipelines in the southern part of the County, and a brackish groundwater desalination facility in the northeastern part of the County.

Smaller new water projects that still require a sizeable effort, include water loss management rehabilitation of certain water systems, expansion of water reuse in certain areas, and extension of municipal service from adjoining cities and utilities into adjacent suburban areas in the study area. Smaller scale, but still important efforts, at a subdivision or individual home level to help meet future supply needs would include additional water conservation, expanded use of rainwater collection systems in lieu of new individual wells, new community wells where appropriate, and exempt domestic wells if other options are impractical.

Table 4.1-5. Water Managament Plan and Water Balance - HI Case Scenario

	Estimated	Projected									
Planning Area	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**	**2055**	**2060**
POPULATION											
Suburban	39,947	51,086	61,972	72,130	82,424	92,853	103,417	114,117	124,952	135,923	147,029
Rural	25,573	28,288	30,483	32,161	33,705	35,112	36,384	37,523	38,522	39,389	40,120
Total	65,520	79,374	92,455	104,291	116,129	127,965	139,802	151,640	163,475	175,312	187,149
WATER DEMAND (avg day mgd)											
Suburban	5.962	7.545	9.189	10.612	11.898	13.222	14.553	15.942	17.347	18.767	20.203
Rural	3.069	3.367	3.597	3.763	3.910	4.038	4.148	4.241	4.315	4.373	4.414
Total	9.031	10.912	12.787	14.375	15.809	17.261	18.701	20.182	21.662	23.140	24.617
USE OF EXISTING AND NEW WATER MANAGEMENT MEASURE BY TYPE (avg day mgd)											
Additional Water Conservation	-	0.076	0.177	0.295	0.430	0.582	0.752	0.941	1.148	1.372	1.614
Rainwater Collection Systems	0.763	0.944	1.128	1.298	1.467	1.649	1.841	2.047	2.263	2.500	2.749
Centralized Reuse	-	-	0.100	0.100	0.100	0.100	0.200	0.200	0.200	0.300	0.300
Water Loss Management	-	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150
Trinity GW - Suburban	2.965	2.489	2.208	2.137	2.125	2.278	2.299	2.399	2.483	2.433	2.617
Trinity GW - Rural	2.125	2.291	2.399	2.451	2.485	2.502	2.504	2.491	2.465	2.416	2.353
Barton-Edwards GW	1.055	1.159	1.173	1.187	1.203	1.231	1.252	1.271	1.284	1.290	1.353
Edwards GW	0.806	0.926	1.025	1.119	1.197	1.278	1.356	1.432	1.503	1.569	1.630
BE Brackish Water Desal	-	-	0.039	0.079	0.120	0.164	0.209	0.256	0.305	0.355	0.408
LCRA US290 Pipeline	1.199	1.962	2.898	3.541	3.879	4.159	4.445	4.745	5.034	5.331	5.405
LCRA RR3238 Pipeline	0.118	0.209	0.301	0.398	0.454	0.515	0.579	0.647	0.720	0.796	0.880
LCRA RR12 Pipeline	-	-	-	-	0.127	0.335	0.553	0.785	1.030	1.289	1.554
GBRA	-	-	-	-	1.149	1.370	1.593	1.825	2.059	2.295	2.535
Canyon Lake WSC	-	0.474	0.729	0.930	-	-	-	-	-	-	-
City of Kyle	-	0.034	0.067	0.101	0.136	0.162	0.184	0.207	0.231	0.257	0.284
City of Austin	-	0.197	0.393	0.590	0.786	0.786	0.786	0.786	0.786	0.786	0.786
Total	9.031	10.912	12.787	14.375	15.809	17.261	18.701	20.183	21.662	23.140	24.617
NET SUPLUS (DEFICIT)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Trinity GW (mgd)	5.090	4.780	4.607	4.587	4.610	4.780	4.803	4.890	4.949	4.849	4.971
Trinity GW (ac-ft/yr)	5,701	5,354	5,160	5,138	5,163	5,353	5,379	5,477	5,543	5,431	5,567

Key water management actions by broad area include:

In the northwestern and north central portion of the County:

- Expand water conservation efforts and use of rainwater collection systems in lieu of using limited Trinity groundwater;
- Extend service and more fully utilize existing capacity in the LCRA-Hwy 290 and Hamilton Pool Road (HPR) treated surface water pipelines;
- Sometime in the 2025-2030 timeframe or earlier, construct a 3.7 mile extension of the 16" diameter HPR pipeline and a new 8.5 mile, 20" diameter pipeline to Dripping Springs along RR-12 connecting the HPR and Hwy 290 pipelines. This will provide additional treated water service in the northwestern part of the County and to Dripping Springs, as well as provide an enhanced looped-system capacity to the existing Hwy 290 pipeline;

- Expand water reuse opportunities; and
- With greater development densities allowed for new subdivisions with certain types of water supplies, promote the use of well-managed small centralized wastewater treatment facilities with land application in lieu of widespread use of septic tanks.

In the northeastern portion of the County:

- Expand water conservation efforts and use of rainwater collection systems in lieu of using limited Edwards groundwater;
- Construct a pipeline from the City of Austin system to serve certain development areas that were limited purpose annexed by the City;
- Development of a brackish water desalination facility to serve higher-density demand centers;
- Use of Middle Trinity Aquifer supplies (below the Edwards) for municipal supply purposes;
- Extend municipal water and wastewater service westward into Kyle and Buda's ETJs; and
- With greater development densities allowed for new subdivisions with certain types of water supplies, promote the use of well-managed small centralized wastewater treatment facilities with land application in lieu of widespread use of septic tanks.

In the southwestern portion of the County:

- Expand water conservation efforts and use of rainwater collection systems in lieu of using limited Trinity groundwater;
- As an interim new water supply for the Wimberley/Woodcreek area, in the near-term construct an 8.5 mile, 12"diameter treated water pipeline from Canyon Lake Water Service Company storage facilities on RR 32 cross-country to the north side of the Blanco River in Wimberley. Also provide for associated pumping and an 8" interconnect pipeline to wheel a portion of the water from the Wimberley WSC system to Aqua Texas facilities;
- About the year 2030 when the interim supply agreement with CLWSC would expire, construct an 18 mile, 16" diameter treated water pipeline from GBRA facilities at the San Marcos Water Treatment Plant, along RR 12, to the City of Wimberley. As before, the Wimberley/Aqua system interconnect would provide a portion of the water on to the Woodcreek service area. The previously-utilized 12" supply line from the CLWSC system could then be converted to an emergency interconnect, as well as a treated water transmission line serving the intervening area and being fed from the Wimberley WSC system;
- Expand water reuse opportunities; and
- With greater development densities allowed for new subdivisions with certain types of water supplies, promote the use of well-managed small centralized wastewater treatment facilities with land application in lieu of widespread use of septic tanks.

In the southeastern portion of the County:

- Expand water conservation efforts and use of rainwater collection systems in lieu of using limited Edwards groundwater;
- In the more rural area between Kyle and San Marcos west of IH-35, purchase Edwards water rights to allow for community well development;
- Extend municipal water and wastewater service westward into San Marcos' ETJ;
- In the longer-term around 2030, new or existing development the intervening area between San Marcos and Wimberley could access treated water supplies from the recommended GBRA supply pipeline extending from the San Marcos WTP to Wimberley; and

- With greater development densities allowed for new subdivisions with certain types of water supplies, promote the use of well-managed small centralized wastewater treatment facilities with land application in lieu of widespread use of septic tanks.

Overall, the management actions shown in Table 4.1-5 greatly diversify water supply. The problematic pumping of the Trinity Aquifer in the western County and Edwards pumping in the northeastern County are essentially stabilized over time at about current levels. Pumping in the southeastern Edwards is projected to increase with no new water supplies there to address additional growth.

This recommended Plan sounds like an easy prescription for addressing much of the County's and groundwater districts' groundwater problems, but it is not. Many of these alternative management measures are very costly, as well as difficult to implement, and the cost burden for developing these alternative supplies will likely narrowly fall on the concentrated demand centers of towns and larger subdivisions where the economies are more favorable for them participating in these projects. There is still considerable growth forecast in the suburban and rural areas that will not use these alternative new supplies, and will instead, utilize additional groundwater resources. In this forecast, their additional pumping is being offset by the towns and large subdivisions anticipated to lessen their dependence on groundwater supplies. So one of the difficult problems facing the County is one of increasing inequity among its residents; those who are paying considerably more to lessen impacts on the aquifers and those who continue to impact those resources and bear no cost of the new, more expensive supplies.

At a very basic market level of economics, those making expanded use of the groundwater resources would not be receiving the "pricing signal" of what the resource and mitigation of resource impacts implicitly costs. It will likely take changes in State groundwater law to help bridge this gap to allow for some type of pricing mechanism (such as an impact fee on new wells) so that use of additional groundwater better reflects its true costs. To further close the equity gap, proceeds from such a levy could be pooled to provide financial assistance for those converting to new alternative supplies.

Wastewater. Table 4.1-6 summaries the projected HI Case suburban and rural population and water service demand forecasts and the expected use of existing and/or new wastewater treatment methods that meet those needs. During the course of the 50-year planning period, major new wastewater infrastructure projects contained in this forecast include a new centralized wastewater treatment plant and collection system for Wimberley and expansion over time, expansion of centralized treatment and sewer collection system for the Woodcreek area, and expansion of the existing treatment plant and sewer collection system at Dripping Springs.

Table 4.1-6. Wastewater Managament Plan and Water Balance - HI Case Scenario

	Estimated	Projected									
Planning Area	2010	2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
POPULATION											
Suburban	39,947	51,086	61,972	72,130	82,424	92,853	103,417	114,117	124,952	135,923	147,029
Rural	25,573	28,288	30,483	32,161	33,705	35,112	36,384	37,523	38,522	39,389	40,120
Total	65,520	79,374	92,455	104,291	116,129	127,965	139,802	151,640	163,475	175,312	187,149
WASTEWATER DEMAND (avg day mgd)											
Suburban	2.855	3.651	4.394	5.076	5.756	6.434	7.110	7.784	8.455	9.124	9.789
Rural	1.828	2.022	2.163	2.266	2.358	2.439	2.510	2.571	2.622	2.664	2.696
Total	4.683	5.673	6.558	7.342	8.114	8.873	9.620	10.355	11.077	11.787	12.485
WASTEWATER CAPACITY USE BY TYPE (avg day mgd)											
OSSFs	4.004	4.591	5.046	5.431	5.791	6.123	6.429	6.707	6.957	7.179	7.372
No-Discharge WWTP	0.680	1.082	1.512	1.910	2.323	2.750	3.192	3.648	4.121	4.609	5.113
Total	4.683	5.673	6.558	7.342	8.114	8.873	9.620	10.355	11.077	11.787	12.485
NET SUPLUS (DEFICIT)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Smaller new wastewater projects that still require a sizeable effort would include provision of smaller scale centralized treatment for individual developments and extension of municipal sewer service from adjoining cities into suburban areas. Smaller scale on-site septic systems to help meet future wastewater treatment needs, where appropriate and where other centralized treatment options are not available are also needed.

Sensitivity Analysis

Water. Tables 4.1-7 and 4.1-8 provide a summary of anticipated future water use by water management strategy for the alternate MID and NA Cases. In the MID Case scenario, growth is simply slowed, and some new projects are deferred in time while others, such as near-term needed actions in Wimberley, are not. In the NA Case, there is no action to build new major water facilities and local entities would further use existing available resources. These more severe resource constraints act to slow the projected growth rate. It should be noted that the overall use of Trinity and Barton-Edwards supplies are essentially stabilized around current levels in the NA Case as well, as northwestern and northeastern portions of the County utilize existing available excess capacity from LCRA and the City of Austin, and additional growth is greatly slowed in areas that cannot access those existing available surface water supplies.

Wastewater. Tables 4.1-9 and 4.1-10 present the alternate wastewater plan results for the MID and NA case scenarios. As growth is slowed (MID Case) and then slowed more so (NA Case) in these two scenarios, projected future wastewater needs and management demands are lessened as well. However, as new water supplies are provided less quickly, or not at all in some areas, the projected use of OSSF facilities increases with the slowed or lessened presence of centralized water systems.

4.1.5 Comparison of Facilities Plan Recommendations to Regional Water Supply Plans

Region K (Lower Colorado) Water Planning

Summary of Findings. The Region K water planning is locally managed and overseen by the LCRA. The most recent 2011 regional plan was adopted by the Region K RWPG in late July 2010. As the regional plan is voluminous, only highlights of this regional plan will be presented here.

The TWDB and Region K recognize seven municipal water user groups (WUGs) in the northern Hays County portion of this study's planning area, including the City of Dripping Springs, Dripping Springs WSC, Hill Country WSC (now LCRA), Cimarron Park Water Company, a portion of Mountain City, and County-Other.

The population of the WUGs in northern Hays County in Region K in this study area is currently estimated at 36,805 persons with the County-Other population representing 22,722 persons or about 62% of that total. The population of the WUGs in the northern Hays County portion of Region K within this study area is projected to increase by over three-fold, growing to 122,577 persons by the end of the 50-year planning period in 2060. County-Other is forecast to reach 75,207 persons by 2060 and still comprise about 61% of the population of this area. As indicated, a considerable portion of this growth in the northern Hays County area is expected to happen in the rapidly-developing unincorporated suburbs, most likely located in the intervening area between Austin and Dripping Springs, along and adjacent to U.S. Highway 290 and RR 1826.

Table 4.1-7. Water Managament Plan and Water Balance - MID Case Scenario

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
POPULATION											
Suburban	39,947	52,072	60,172	70,013	78,168	86,218	93,905	101,475	108,409	114,947	120,279
Rural	25,573	28,354	29,825	31,569	32,705	33,653	34,360	34,892	35,147	35,195	34,598
Total	65,520	80,426	89,997	101,582	110,873	119,870	128,266	136,367	143,557	150,142	154,877
WATER DEMAND (avg day mgd)											
Suburban	5.962	7.618	8.760	10.195	11.293	12.319	13.289	14.284	15.195	16.054	16.772
Rural	3.069	3.375	3.520	3.694	3.794	3.871	3.918	3.943	3.937	3.907	3.806
Total	9.031	10.992	12.280	13.889	15.087	16.189	17.207	18.227	19.132	19.961	20.578
USE OF EXISTING AND NEW WATER MANAGEMENT MEASURE BY TYPE (avg day mgd)											
Additional Water Conservation	-	0.076	0.169	0.284	0.408	0.544	0.690	0.848	1.011	1.181	1.342
Rainwater Collection Systems	0.763	0.948	1.075	1.245	1.383	1.520	1.654	1.794	1.924	2.054	2.161
Centralized Reuse	-	-	0.100	0.100	0.100	0.100	0.100	0.100	0.250	0.250	0.250
Water Loss Management	-	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150
Trinity GW - Suburban	2.965	2.679	2.340	2.224	2.164	2.117	2.179	2.222	2.082	2.054	2.147
Trinity GW - Rural	2.125	2.283	2.333	2.393	2.404	2.398	2.373	2.335	2.278	2.203	2.095
Barton-Edwards GW	1.055	1.242	1.255	1.277	1.278	1.278	1.278	1.272	1.254	1.225	1.168
Edwards GW	0.806	0.947	1.021	1.110	1.161	1.208	1.246	1.278	1.298	1.307	1.276
BE Brackish Water Desal	-	-	0.034	0.075	0.111	0.148	0.184	0.222	0.259	0.295	0.320
LCRA US290 Pipeline	1.199	1.834	2.407	3.151	3.643	3.983	4.307	4.566	4.808	5.052	5.157
LCRA RR3238 Pipeline	0.118	0.220	0.299	0.392	0.441	0.492	0.545	0.601	0.657	0.715	0.779
LCRA RR12 Pipeline	-	-	-	-	-	0.058	0.136	0.302	0.468	0.639	0.859
GBRA	-	-	-	-	1.088	1.254	1.407	1.560	1.694	1.814	1.830
Canyon Lake WSC	-	0.418	0.717	0.916	-	-	-	-	-	-	-
City of Kyle	-	0.038	0.067	0.100	0.129	0.151	0.171	0.192	0.213	0.236	0.259
City of Austin	-	0.157	0.314	0.472	0.629	0.786	0.786	0.786	0.786	0.786	0.786
Total	9.031	10.992	12.280	13.889	15.087	16.189	17.207	18.227	19.132	19.961	20.578
NET SUPLUS (DEFICIT)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Table 4.1-8. Water Managament Plan and Water Balance - NA Case Scenario

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
POPULATION											
Suburban	39,947	49,301	57,562	64,466	70,163	74,997	79,529	83,353	86,643	88,982	90,428
Rural	25,573	27,563	29,064	30,048	30,600	30,841	30,924	30,776	30,458	29,907	29,006
Total	65,520	76,864	86,626	94,515	100,762	105,839	110,453	114,129	117,101	118,889	119,434
WATER DEMAND (avg day mgd)											
Suburban	5.962	7.265	8.488	9.571	10.239	10.846	11.408	11.912	12.346	12.654	12.853
Rural	3.069	3.280	3.430	3.516	3.550	3.547	3.526	3.478	3.412	3.320	3.191
Total	9.031	10.545	11.918	13.087	13.789	14.393	14.934	15.390	15.758	15.974	16.044
USE OF EXISTING AND NEW WATER MANAGEMENT MEASURE BY TYPE (avg day mgd)											
Additional Water Conservation	-	0.096	0.215	0.350	0.491	0.637	0.790	0.945	1.100	1.248	1.377
Rainwater Collection Systems	0.862	1.036	1.202	1.349	1.458	1.554	1.644	1.721	1.784	1.829	1.819
Centralized Reuse	-	-	-	-	-	-	-	-	-	-	-
Water Loss Management	-	-	-	-	-	-	-	-	-	-	-
Trinity GW - Suburban	2.868	3.114	3.273	3.292	3.323	3.282	3.347	3.372	3.353	3.280	3.155
Trinity GW - Rural	2.125	2.223	2.275	2.284	2.259	2.213	2.157	2.087	2.009	1.913	1.805
Barton-Edwards GW	1.059	1.218	1.293	1.340	1.373	1.391	1.411	1.422	1.423	1.411	1.371
Edwards GW	0.799	0.911	0.995	1.052	1.086	1.105	1.117	1.120	1.114	1.096	1.053
BE Brackish Water Desal	-	-	-	-	-	-	-	-	-	-	-
LCRA US290 Pipeline	1.199	1.609	2.114	2.665	2.846	3.063	3.286	3.509	3.728	3.924	4.168
LCRA RR3238 Pipeline	0.118	0.181	0.236	0.283	0.324	0.361	0.396	0.430	0.461	0.487	0.509
LCRA RR12 Pipeline	-	-	-	-	-	-	-	-	-	-	-
GBRA	-	-	-	-	-	-	-	-	-	-	-
Canyon Lake WSC	-	-	-	-	-	-	-	-	-	-	-
City of Kyle	-	-	-	-	-	-	-	-	-	-	-
City of Austin	-	0.157	0.314	0.472	0.629	0.786	0.786	0.786	0.786	0.786	0.786
Total	9.031	10.545	11.918	13.088	13.789	14.393	14.934	15.390	15.758	15.974	16.044
NET SUPLUS (DEFICIT)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Table 4.1-9. Wastewater Managament Plan and Water Balance - MID Case Scenario

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
POPULATION											
Suburban	39,947	52,072	60,172	70,013	78,168	86,218	93,905	101,475	108,409	114,947	120,279
Rural	25,573	28,354	29,825	31,569	32,705	33,653	34,360	34,892	35,147	35,195	34,598
Total	65,520	80,426	89,997	101,582	110,873	119,870	128,266	136,367	143,557	150,142	154,877
WASTEWATER DEMAND (avg day mgd)											
Suburban	2.855	3.727	4.277	4.942	5.478	5.997	6.482	6.950	7.365	7.746	8.034
Rural	1.828	2.027	2.117	2.225	2.288	2.338	2.371	2.391	2.392	2.380	2.325
Total	4.683	5.754	6.394	7.167	7.766	8.335	8.853	9.341	9.758	10.126	10.359
WASTEWATER CAPACITY USE BY TYPE (avg day mgd)											
No-Discharge WWTP	0.514	1.093	1.507	2.015	2.463	2.920	3.375	3.838	4.283	4.720	5.167
OSSFs	4.177	4.661	4.887	5.152	5.304	5.415	5.478	5.503	5.475	5.406	5.193
Total	4.691	5.754	6.394	7.167	7.766	8.335	8.853	9.341	9.758	10.126	10.359
NET SUPLUS (DEFICIT)	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Table 4.1-10. Wastewater Managament Plan and Water Balance - NA Case Scenario

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
POPULATION											
Suburban	39,947	49,301	57,562	64,466	70,163	74,997	79,529	83,353	86,643	88,982	90,428
Rural	25,573	27,563	29,064	30,048	30,600	30,841	30,924	30,776	30,458	29,907	29,006
Total	65,520	76,864	86,626	94,515	100,762	105,839	110,453	114,129	117,101	118,889	119,434
WASTEWATER DEMAND (avg day mgd)											
Suburban	2.855	3.528	4.092	4.550	4.917	5.216	5.489	5.709	5.887	5.996	6.043
Rural	1.828	1.970	2.063	2.118	2.141	2.143	2.134	2.109	2.073	2.023	1.949
Total	4.683	5.498	6.155	6.668	7.058	7.359	7.623	7.818	7.960	8.019	7.992
WASTEWATER CAPACITY USE BY TYPE (avg day mgd)											
No-Discharge WWTP	0.514	0.785	1.052	1.302	1.533	1.753	1.973	2.181	2.378	2.550	2.727
OSSFs	4.177	4.713	5.103	5.367	5.525	5.607	5.650	5.637	5.582	5.469	5.265
Total	4.691	5.498	6.155	6.668	7.058	7.359	7.623	7.818	7.960	8.019	7.992
NET SUPLUS (DEFICIT)	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Estimated municipal water demands for these WUGs in this study area in 2010 total to 5,748 ac-ft/yr (or 5.1 mgd). With the anticipated population growth and a base water conservation forecasting assumption, projected water demand for the WUGs is expected to reach 18,358 ac-ft/yr (or 16.4 mgd) by 2060, again over a three-fold increase beyond the current level of municipal water use.

All of the WUGs in this county study area, except surface-water supplied Hill Country WSC (now LCRA), utilize Trinity or Edwards groundwater. Dripping Springs WSC, the City of Dripping Springs, and portions of County-Other also have surface water supply available from the LCRA in addition to Trinity and Edwards groundwater. A portion of County-Other (the Sunfield MUDs) have a contract for GBRA supply from Canyon Lake. Current water supplies for the study area WUGs total 6,211 ac-ft/yr (or 5.5 mgd). The year 2060 projection of current supply for the WUGs totals 7,629 ac-ft/yr (or 6.8 mgd). The increasing current supply over time is due to the Region K planners showing LCRA meeting all the growing demands of Hill Country WSC as a current supply.

By comparing current water supply with current water demand, the Region K planners indicate an existing water supply surplus of 463 ac-ft/yr (or 0.4 mgd). With the rapidly increasing water demand and the limited current supply, a total water supply deficit of 10,729 ac-ft/yr is indicated by the year 2060 for all the WUGs in the northern part of the Hays County study area in Region K.

More specifically, water supply deficits are indicated by the Region K planners for:

- Dripping Springs WSC - deficit by 2040 and reaching 366 ac-ft/yr by the year 2060;
- City of Dripping Springs – deficit in 2010 and reaching 3,230 ac-ft/yr by 2060;
- Hill Country WSC – no deficit;
- Cimarron Park Water Company – deficit in 2010 and reaching 629 ac-ft/yr by the year 2060;
- Mountain City - deficit in 2010 and reaching 22 ac-ft/yr by the year 2060; and
- County-Other – deficit by 2020 and reaching 6,482 ac-ft/yr by the year 2060.

Recommended Region K water management measures for these WUGs include:

- Dripping Springs WSC – An additional 366 ac-ft/yr (0.327 mgd) from LCRA by 2060;
- City of Dripping Springs – An additional 2,482 ac-ft/yr (2.216 mgd) from LCRA by 2060;
- Hill Country WSC – No additional management measures;
- Cimarron Park WSC – Additional supplies of 600 ac-ft/yr (0.536 mgd) from a new Edwards Aquifer (BFZ) Brackish Water Desalination Project by 2060;
- Mountain City – Long-term drought management of 39 ac-ft/yr (0.035 mgd) during sustained dry periods; and
- County-Other – Additional supplies of 6,000 ac-ft/yr (5.4 mgd) from a new Edwards Aquifer (BFZ) Brackish Water Desalination Project and 1,100 ac-ft/yr (0.982 mgd) from LCRA by 2060.

The details of the Region K – Lower Colorado Plan may be found at the TWDB's regional planning web site: http://www.twdb.state.tx.us/wrpi/rwp/3rdround/2011RWP.asp

Comparison to this Facilities Plan. This Facilities Plan differs in several respects from the Region K Plan in that, first, the regional plan showed 6,000 ac-ft/yr of the 6,482 ac-ft/yr of unmet need for the suburban/rural portion of northern Hays County being satisfied by water from the possible Edwards BFZ Brackish Water Desalination project. This project will be very expensive and would be located near Creedmoor in southern Travis County over 20 miles from where the large majority of the suburban/rural unmet need is located along the Highway 290 corridor and in Dripping Springs. Further, that pipeline corridor would almost necessarily pass through the sensitive Edwards Aquifer/Barton Springs recharge zone.

In lieu of the desalination supply to serve the northwestern portion of Hays County, this Facilities Plan instead recommends a new 10-mile, 20" diameter LCRA pipeline that would extend from LCRA's existing HPR pipeline down RR 12 to Dripping Springs. This project has been identified in LCRA's master planning as its next logical step to serve the needs of this fast-growing area.

While the Region K Plan has, in effect, also recommended the desalination project to meet the large majority of future needs of County-Other (Hays City and others), in the northeastern portion of the County, there may be other more cost-effective options for Hays City, Cimarron Park WSC, and others there, such as "punch through" cased wells to develop groundwater supplies in the Trinity Aquifer that lies below the Edwards. Also to address its unmet needs, the Region K planners recommended long-term drought management for nearby Mountain City. Sustained or frequently repeated drought management does not prove to be very popular or politically acceptable over the long-term. This northeastern community might also make use of the available Trinity supplies. A recent determination by the TWDB indicates a permitted availability (MAG) of about 1,300 ac-ft/yr from the portion of the Trinity within the BSEACD boundaries in the northeastern part of the County (TWDB, 2010f).

Finally, the Hill Country WSC hasn't existed for a number of years, having been acquired by LCRA as part of its West Travis County Regional Water System. This Facilities Plan has included the former Hill Country WSC within its Hwy 290 NE Sub-Area forecasts.

Region L (South Central Texas) Water Planning

Summary of Findings. The Region L water planning is locally managed and overseen by the San Antonio River Authority (SARA). The most recent 2011 regional plan was adopted by the Region L RWPG in early August 2010. As the regional plan is voluminous, only highlights of this regional plan will be presented here.

The TWDB and Region L recognize five municipal water user groups (WUGs) in the southern Hays County portion of this study's planning area, including the City of Woodcreek, Woodcreek Utilities Inc., Wimberley WSC, a portion of Mountain City, and County-Other.

The population of the WUGs in southern Hays County in Region L within this study area is currently estimated at 22,579 persons with the County-Other population representing 9,765 persons or about 43% of that total. The population of the WUGs in southern Hays County in Region L is projected to increase by almost six-fold, growing to 57,842 persons by the end of the 50-year planning period in 2060. County-Other is forecast to reach 18,308 persons by 2060 and comprise about 32% of the population of this area. Much of the growth in this southern Hays County area is expected to occur within the more urbanized WUGs and to a lesser degree in County Other.

Estimated municipal water demands for these WUGs in this study area in 2010 total to 3,259 ac-ft/yr (or 2.9 mgd). With the anticipated population growth and a base water conservation forecasting assumption, projected water demand for the WUGs is expected to reach 8,216 ac-ft/yr (or 7.3 mgd) by 2060, an increase of about 2-1/2 times over the current level of municipal water use.

All of the WUGs in this county study area primarily use Trinity groundwater with some Edwards use in the eastern portion of the study area. Current water supplies for the WUGs total 4,395 ac-ft/yr (or 3.9 mgd). The year 2060 projection of current supply for the WUGs also totals 4,395 ac-ft/yr (or 3.9 mgd).

By comparing existing water supply (including the 3,136 ac-ft of Canyon Lake water) with existing water demand, the Region L planners indicate a current water supply surplus of 1,136 ac-ft/yr (or 1.0 mgd) for their southern Hays County planning region. With the rapidly increasing water demand and the limited current supply, a total water supply deficit of 3,821 ac-ft/yr (or 3.4 mgd) is indicated by the year 2060 for all the WUGs in the southern part of the Hays County study area in Region L. More specifically, water supply deficits are indicated by the Region L planners for:

- Mountain City (portion) - deficit by 2020 and reaching 134 ac-ft/yr by 2060,
- Woodcreek - deficit in 2010 and reaching 387 ac-ft/yr by the year 2060,
- Wimberley WSC - deficit in 2010 and reaching 1,409 ac-ft/yr by the year 2060, and
- Woodcreek Utilities - deficit in 2010 and reaching 2,580 ac-ft/yr by the year 2060.

Recommended Region L water management measures for these WUGs include:

- Woodcreek – additional water conservation, short-term drought management, and 400 ac-ft/yr from GBRA Canyon Lake supplies, beginning before 2020;

- Woodcreek Utilities – additional water conservation, and 2,655 ac-ft/yr from GBRA Canyon Lake supplies, beginning before 2020;
- Wimberley WSC – additional water conservation, short-term drought management, and 1,425 ac-ft/yr from GBRA Canyon Lake supplies, beginning before 2020;
- Mountain City (portion) – additional water conservation and additional Hays/Caldwell PUA (Carrizo) supply of 150 ac-ft/yr, beginning in year 2020; and
- County-Other – additional water conservation.

Concerning GBRA, the Region L water plan indicates the total amount of water needed by GBRA to meet its customers' current contract amounts and projected future contract amounts in 2030 is 238,440 ac-ft/yr, with 22,042 ac-ft/yr being for use in the upper basin (at or above Canyon Dam), 79,056 ac-ft/yr being for use in the mid-basin below Canyon Dam and above Victoria, and 137,342 ac-ft/yr being for use in the lower basin at or below Victoria. The total amount of water needed by GBRA to meet its customers' current contract amounts and projected future contract amounts in 2060 is 279,484 ac-ft/yr, with 33,151 ac-ft/yr being for use in the upper basin, 95,003 ac-ft/yr being for use in the mid-basin, and 151,330 ac-ft/yr being for use in the lower basin.

The Regional L Plan also made a series of water management recommendations for GBRA to meet both anticipated water demands and to provide additional water supplies. Of particular note to the Hays County study area are the recommendations that could provide new water supplies into the southern and/or mid-portions of the County, including:

- GBRA Simsboro Aquifer to be implemented prior to 2020. This strategy can provide an additional 30,000 ac-ft/yr for 2020, increasing to 49,777 ac-ft/yr of supply for the years 2050 through 2060;
- GBRA Mid-Basin (Surface Water) to be implemented prior to 2020. This strategy can provide an additional 25,000 ac-ft/yr for 2020 through 2060;
- Storage Above Canyon Reservoir (ASR) to be implemented prior to 2020. This strategy can provide an additional 3,140 ac-ft/yr for 2020 through 2060; and
- Wimberley and Woodcreek Water Supply Project to be implemented in the near-term. This strategy can provide an additional 1,120 ac-ft/yr upon implementation soon after 2010 and an additional 4,480 ac-ft/yr for 2020 through 2060.

The details of the Region L – South Central Texas Plan may be also found at the TWDB's regional planning web site: http://www.twdb.state.tx.us/wrpi/rwp/3rdround/2011RWP.asp

Comparison to this Facilities Plan. Rather than very near-term implementation of GBRA supply to Wimberley/Woodcreek, this Hays County Water and Wastewater Facilities Plan defers the need of Wimberley and Woodcreek for GBRA water until about 2025. Based on local input, there is now greater interest in pursuing a 15-yr interim treated water supply agreement with nearby Canyon Lake Water Service Company as an interim approach whose existing supply is less expensive and relatively quickly available. It will take a longer period of time for GBRA to develop the new supply needed for the Wimberley/Woodcreek area, so this Plan anticipates GBRA having those longer-term supplies developed and available when the interim agreement with CLWSC would expire. The Wimberley area utilities may need to make adequate financial commitment to GBRA at an appropriate time in the next ten years to secure these long-term supplies for their needs after 2025.

Also, the Region L Plan's supply availability for Hays County includes 3,136 ac-ft/yr of water from Canyon Lake for Region L - County-Other that should have been assigned to Region K - County-Other to meet the needs of the developing Sunfield MUDs located there. If this quantity is removed from available County-Other supply for Region L, this leaves a remaining 137 ac-ft/yr of groundwater supplies for the rural portions of the southern County and produces a current deficit for the rural area in 2010 that ultimately reaches 2,447 ac-ft/yr by 2060. Region L planning numbers also includes an allocation of 1,344 ac-ft/yr for County-Other arising from a recommended new pipeline conveying GBRA Canyon Lake water from the San Marcos WTP to Wimberley/Woodcreek. However as discussed above, this Facilities Plan defers construction of that line until around 2025. The near-term deficit in the rural area of the southern County will likely be addressed by on-site water systems, including new exempt domestic wells and rainwater collection systems, some extension of City of San Marcos service westward into its ETJ, and some intervening rural service along a near-term pipeline route from the CLWSC system into Wimberley. After about 2025, the longer-term supply that could be provided by GBRA along a RR 12 route to Wimberley also could serve additional unmet needs of the rural area as well.

To address its unmet needs, the Region L planners also recommended additional water conservation and Hays-Caldwell PUA Carrizo groundwater supplies for the Guadalupe Basin portion of Mountain City in Region L. The deficit in the other portion of Mountain City in the Colorado Basin in Region K is addressed with a long-term drought management recommendation. It is unlikely that the small community would meet its needs in one area of town with a drought management measure and develop access to new groundwater supplies in another area of town. Also, the ability of the community to access future Hays-Caldwell PUA water would likely depend on the City of Kyle's willingness to serve the community wholesale, as well as possibly confronting inter-basin transfer issues that could be associated with wholesale service to the northern portion of the town. It is more likely that this small northeastern community might also make use of the available Trinity groundwater supplies located below the Edwards.

4.2 OTHER REGIONAL RESOURCE MANAGEMENT PLANS

4.2.1 Lower Colorado River Authority

Key Facility Plan recommendations for LCRA are:

- Find ways to extend service to *new contractual* customers with its *existing* Hwy 290 pipeline capacity to make more full and economical near-term use of those facilities and to help avoid the proliferation of new low density developments without internal distribution lines in the rapidly developing Hwy 290/FM 1826 corridors and in and around Dripping Springs.
- About the 2025-2030 timeframe or sooner, construct a new 8.5 mile, 20" diameter pipeline extension from its existing HPR pipeline to Dripping Springs along RR 12 to interconnect and loop its system in northern Hays County. Not only will this provide for needed additional surface water supplies to the far northwestern portion of the County and the Dripping Springs area, but the additional capability brought about by looping the system will increase the effective capacity of the existing Hwy 290 pipeline and allow it to serve more of the rapid growth along the Hwy 290/RR 1826 corridors nearer Austin.
- Given the projected increase of the number of individual smaller water and wastewater utility systems, LCRA should consider ways to maintain its presence as a regional utility provider, provide regional management and operations for these dispersed systems, and assure itself full cost recovery from each of its defined utility service areas.

4.2.2 Guadalupe Blanco River Authority

Key Facility Plan recommendations for GBRA are:

- About 2025, construct an 18 mile, 16" pipeline from the San Marcos WTP to Wimberley along RR 12 to meet the long-term water supply needs of Wimberley and Woodcreek.
- Continue its efforts to resolve funding issues that would support the expansion of its centralized wastewater service in the Wimberley area.
- Given the projected increase of the number of individual smaller water and wastewater utility systems, GBRA should continue its efforts as a regional utility provider, provide regional management and operations for these dispersed systems, and assure itself full cost recovery from each of its defined utility service areas.

4.2.3 Hays Trinity Groundwater Conservation District

The definition of groundwater supply availability in the HTGCD, described in Section 3.5, are undergoing change as a result of a legislatively-mandated process to re-examine groundwater availability based on both a broader regional Groundwater Management Area (GMA) and desired future conditions (DFC) framework. GMA 9 is a regional entity encompassing all or portions of 10 counties in Central Texas and includes the portion of the Trinity Aquifer in western Hays County. GMA 9 was one of sixteen GMAs that were defined by the TWDB across the State under directives of HB 1763, 79th Texas Legislature to regionalize decisions on groundwater availability and define a permitting cap for well production.

In July 2010, GMA 9 adopted a Desired Future Conditions (DFC) of an average 30-ft drawdown of the aquifer over the 50-year period within the entire GMA boundary. With this DFC, TWDB's modeling indicated an average 19 foot drawdown for Hays County. A total pumping rate of 9,115 ac-ft/yr in western Hays County was modeled that met the DFC condition (TWDBe, 2010). This is approximately 145% higher than the 3,713 ac-ft/yr groundwater availability number shown in the HTGCD's 2005 Management Plan and about 60% greater than the estimated current level of pumping of around 5,700 ac-ft/yr.

The 9,115 ac-ft/yr total pumping is the estimated upper limits of what can be pumped and still not exceed the adopted DFC. However, to determine the Managed Available Groundwater or MAG (i.e. the amount of groundwater available for *permitted* uses), the total maximum pumping amount must be reduced by the forecast of exempt domestic and agricultural pumping. The TWDB is considering a trend forecast of exempt pumping that, over time, consumes much of the increased groundwater availability resulting from the adopted DFC. Once TWDB has provided this data to the HTGCD, the District Board will then face a subsequent decision of whether to reserve that *long-term* exempt pumping increment as a limitation on groundwater availability in the *near-term*. If additional withdrawal permits are granted in the near-term which would encroach on the long-term exempt pumping, then those permits will have to be reduced over time to stay within the maximum overall pumping ceiling of 9,115 ac-ft/yr.

A small portion (3%) of the HTGCD lies within GMA 10. The adopted DFC for this area of the Trinity reflects a regional average well drawdown during average recharge conditions of zero feet. This DFC yields an average maximum rate of pumping of 258 ac-ft/yr, and as exempt uses grow over time, the MAG that can be permitted decreases from 167 ac-ft/yr in 2010 to only 7 ac-ft/yr by 2060 (TWDB, 2010f).

As indicated in 4.1-5, a combination of various water management measures can help avoid future pressure on Trinity water use, and hopefully, stabilize pumping at near current levels. However, as previously discussed, the high cost of developing these alternative water supply measures, that mitigate these growth impacts on the Trinity resource, would fall on the more densely populated communities and subdivisions that can economically afford to access these alternative supplies. Exempt domestic wells, which have created much of the current groundwater problem in the western part of the County, would reap the benefits of accessing the groundwater in the future, but under the current regulatory environment, would pay nothing for the mitigation by others.

4.2.4 Barton Springs/Edwards Aquifer Conservation District

As part of the GMA process, three DFC's were adopted by the GMA 10 Joint Planning Committee in August 2010 that define acceptable management targets for various groundwater resources in the area (BSEACD, 2010). Two DFCs, an upper limit for transient high-flow and lower limit for extreme drought, were adopted for the northern subdivision of the freshwater Edwards Aquifer. An "all-conditions" DFC of 16 cfs (or 1,548 ac-ft/yr) represents the annual aggregate *maximum* of total withdrawals from the northern subdivision of the freshwater Edwards, while 6.5 cfs of pumping (or 629 ac-ft/yr) represents the lower drought condition limit. Practically speaking, the application of these DFCs results in an increased availability only during high-flow conditions. In other words, the additional freshwater Edwards availability resulting from this policy is *interruptible* supply which will not be present, in full, during drought. The City of Kyle has submitted a permit requesting most of this interruptible supply. The District offered a permit with a lesser interruptible amount, and the matter is now in litigation.

For the saline Edwards Aquifer within the northern subdivision, that DFC reflects, a drawdown, at the interface of the saline and fresh Edwards, averaging no more than 5 feet and not exceeding 25 feet at any point along the interface during the 50-year planning period. For the Middle and Lower Trinity Aquifers that underlie the Edwards, a DFC was adopted by GMA 10 that reflects a drawdown not to exceed 25 feet during the 50-year planning period (TWDB, 2010f). The new process has progressed to the point to where a MAG has been determined for the BSEACD portion of the Trinity in the amount of 1,288 ac-ft/yr (TWDB, 2010f).

Similar to the Trinity situation in the HTGCD, the water management plan, reflected in Table 4.1-5, also alleviates pressure on future Edwards pumping by development of a service of alternative water supply measures, including extensions of service from the City of Austin to certain areas, use of potential brackish water desalination supplies, and development of new water supplies from the Trinity Aquifer beneath the Edwards. Again, those entities bearing the cost of developing these alternative supplies and alleviating the potential pressure from future Edwards pumping would not, under the current regulatory environment, bear any of the costs of providing this mitigation.

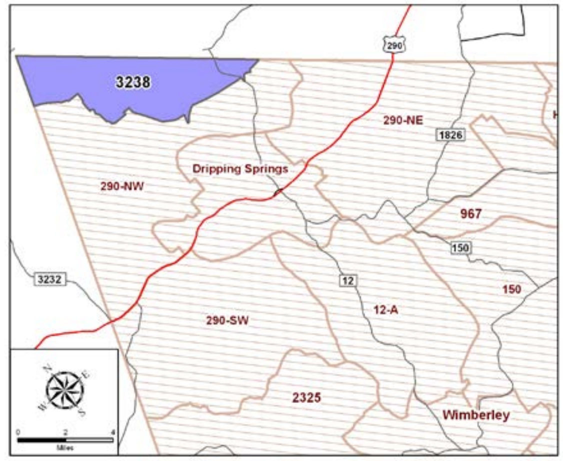
4.2.5 Edwards Aquifer Authority

Desired future conditions and managed available groundwater for the Edwards Aquifer within jurisdiction of the Edwards Aquifer Authority are set by the Texas Legislature. This portion of the aquifer is fully permitted and subject to permitted pumping limits. To obtain a permit for a new well to serve additional water demand essentially means having to purchase someone else's existing permitted Edwards water right. For the most part, a well may qualify for exempt well status if it is capable of producing no more than 25,000 gallons of water a day, used solely for domestic or livestock use, and not within or serving a subdivision requiring platting.

Portions of the southeast portion of the County study area were among the most problematic to address. In the area sufficiently distant from the RR 150 corridor and in the Hilliard Sub-Area, it was not deemed feasible, at this time, to develop significant new water supplies, given the rough terrain, generally low development densities, and low interest by neighboring municipalities in serving this area. As discussed above, the most straightforward method of garnering new water supply for larger developments in this area is to purchase someone else's existing Edwards rights. Some growth will also use supplies from exempt domestic wells.

4.3 PLANNING SUB-AREA MANAGEMENT PLANS

4.3.1 Planning Sub-Area – 3238



Location/Background. This Sub-Area is located in the far northwestern portion of the County and includes land adjoining or near Hamilton Pool Road (RR3238). The LCRA West Travis County Utilities RR 3238 pipeline has extended service just to the east of this Sub-Area. This Sub-Area is approximately one-half subdivided.

Population. As indicated in Table 4.3-1, the 2010 population of this Sub-Area is estimated at 2,490 persons. It is projected to increase to 7,133 persons by 2060 with the High Case trend forecast, an average annual growth rate of about 2.1% over the 50-year planning period. With the presence of existing, near-by water infrastructure, about 90% of the 2060 population is expected to locate in suburban-type developments.

WATER

Water Service Demands. As indicated in Table 4.3-1, the High Case forecast reflects an increase in total water demand in this Sub-Area from 0.326 mgd in 2010 to about 0.887 mgd by 2060, reflecting an average annual increase of 2.0%. Suburban demand is projected to increase from about 0.296 mgd in 2010 to around 0.809 mgd by 2060, an average annual increase of about 2.0%. Rural water use is projected to increase from about 0.030 mgd in 2010 to around 0.078 mgd by 2060, an average annual increase of about 1.9%.

Existing Water Supplies and Use of Supplies. Groundwater from the Trinity Aquifer Group comprises the largest current supply in this area, meeting an estimated 0.173 mgd of local water demand. The water quality is relatively poor and the saturated thickness of the Aquifer in this area is thin, thus exposing it to periods of rapid drawdown, low water levels, and associated well and water supply problems. Prior to the economic slowdown, this area was experiencing noticeable development pressure that, coupled with the limited groundwater supply, resulted in LCRA building the 16" diameter Hamilton Pool Road (HPR) pipeline, to provide additional water supply and help alleviate pumping stress on the Trinity Aquifer. This pipeline also serves land in southwestern Travis County along Hamilton Pool Road. There is currently only one development within the 3238 study area receiving this supply (est. use about 0.118 mgd); mainly due to the economic slowdown that occurred shortly after construction of the line. As such, the HPR line has not extended service very far into far northwestern Hays County. Given the groundwater quantity and quality issues and the limited current span of the HPR line, it is assumed that approximately 0.034 mgd or about 10% of existing water needs are met through rainwater collection systems.

Additional Water Needs. Existing supplies from various sources are meeting current water demands. As growth occurs over time, it is forecast that additional water needs of suburban and rural portions of this Sub-Area will range from 0.062 mgd in 2015 to 0.562 mgd by 2060.

Water Management Recommendations. Additional water conservation and additional rainwater collection systems are first expected to meet a portion of the Sub-Area's increased water demand over time. As new development resumes after the current economic slowdown, it is anticipated that ultimately about 50% of growth will occur in new subdivisions that will access LCRA's HPR pipeline supply. It is also forecast that about 15% of existing water demand will access the surface water supply over time. This will require extensions of the pipeline facility into the Sub-Area. While initially groundwater pumping would slightly increase, the combination of these other water management measures could act to reduce pumping of the Trinity Aquifer by about 50% by 2060.

Sensitivity Analysis. In the Mid Case forecast, growth in this area was slowed, and suburban water use in this Sub-Area is projected to increase to only around 0.630 mgd by 2060, reflecting an average annual increase of about 1.5% versus a 2.0% average annual increase in the High Case Scenario. Rural water use is projected to increase to 0.061 mgd by 2060, an average annual increase of about 1.4% versus an average annual increase of 1.9% in the High Case Scenario. The same management recommendations (most notably the extension of the existing LCRA-HPR pipeline) are warranted as in the High Case Scenario, except that the level of water use would grow more slowly and the timing of implementation of these pipeline extensions could be slowed.

In the No Action Case forecast, growth in this area was even more slowed as significant extensions of the LCRA-HPR line would not be made. Thus, suburban water use in this Sub-Area is projected to increase from only around 0.456 mgd by 2060, an average annual increase of about 0.9% versus 2.0% average annual increase in the High Case Scenario. Rural water use is projected to increase to 0.044 mgd by 2060, an average annual increase of about 0.8% versus an average annual increase of 1.9% in the High case Scenario. Without significant pipeline extensions, a greater reliance on water conservation, rainwater systems, and limited groundwater supplies would be realized.

WASTEWATER

Wastewater Service Demands. As indicated in Table 4.3-2, the High Case forecast reflects an increase in total wastewater service demands in this Sub-Area from 0.178 mgd in 2010 to about 0.479 mgd by 2060, reflecting an average annual increase of 2.0%. Suburban wastewater service demands in this Sub-Area are projected to increase from 0.160 mgd in 2010 to about 0.431 mgd by 2060, reflecting an average annual increase of 2.0%. Rural wastewater service demands are projected to increase from 0.018 mgd in 2010 to about 0.048 mgd by 2060, also reflecting an average annual increase of 2.0%.

Existing Wastewater Capacity and Use of Capacity. Currently, there is no significant centralized wastewater treatment capacity in this Sub-Area with on-site sewerage facilities (OSSFs) meeting almost all service demands.

Unmet Wastewater Capacity Needs. Additional wastewater treatment needs are forecast for the suburban and rural portions of this Sub-Area ranging from 0.037 mgd in 2015 to 0.301 mgd by 2060.

Wastewater Management Recommendations. The suburban growth forecast for this Sub-Area is anticipated to have sufficiently high development densities (arising from allowances in the County's subdivision ordinance for developments with imported water, community wells, or rainwater collection systems) to also accommodate centralized wastewater treatment. It is anticipated that this centralized wastewater treatment will be small subdivision-oriented (package) plants, rather than larger, regional-type plants that face more costly and problematic land application issues. These smaller centralized treatment facilities could accommodate up to 0.054 mgd of the Sub-Area's total wastewater service demand by 2060 with the remainder 0.425 mgd of demand expected to be met by individual on-site septic systems.

Sensitivity Analysis. In the Mid Case and No Action scenarios, wastewater services demands are diminished in about the same proportions as the water demands described previously and the development of both small centralized treatment plants and OSSFs would be slowed.

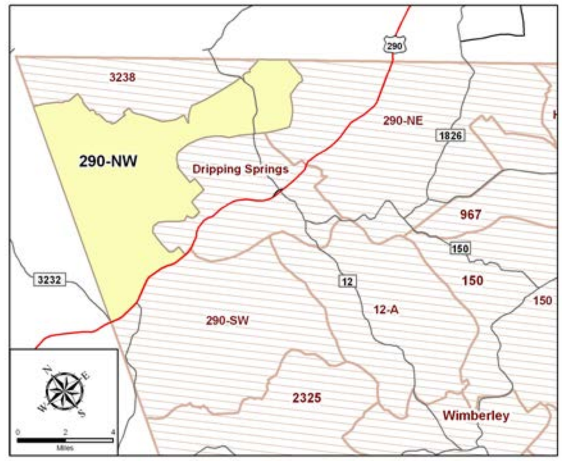
TABLE 4.3-1
WATER MANAGEMENT PLAN
PLANNING AREA 3238
SCENARIO HI

	Estimated	Projected									
Planning Area	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**	**2055**	**2060**
PLANNING FACTORS											
Planning Area Est./Projected Population	2,490	2,998	3,458	3,917	4,377	4,836	5,295	5,755	6,214	6,674	7,133
Annual Growth Rate	2.8%	3.8%	2.9%	2.5%	2.2%	2.0%	1.8%	1.7%	1.5%	1.4%	1.3%
Suburban % of Planning Area Population	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
% of New Growth that is Suburban		90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
% Reduction in Base Water Use		0.50%	1.00%	1.50%	2.00%	2.50%	3.00%	3.50%	4.00%	4.50%	5.00%
% of Growth on Rainwater Systems	10.0%	11.0%	12.0%	13.0%	14.0%	15.0%	16.0%	17.0%	18.0%	19.0%	20.0%
% of Growth on Central Water Systems		25.0%	27.5%	30.0%	32.5%	35.0%	37.5%	40.0%	42.5%	45.0%	50.0%
% of Exist. Demand Converting to Central Wtr Syster	40.0%	7.5%	8.3%	9.0%	9.8%	10.5%	11.3%	12.0%	12.8%	13.5%	15.0%
Rural % of Planning Area Population	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
% of New Growth that is Rural		10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
% Reduction in Base Water Use		1.00%	2.00%	3.00%	4.00%	5.00%	6.00%	7.00%	8.00%	9.00%	10.00%
% of Growth on Rainwater Systems	15.0%	16.5%	18.0%	19.5%	21.0%	22.5%	24.0%	25.5%	27.0%	28.5%	30.0%
SUBURBAN AREA											
Population	2,241	2,698	3,112	3,525	3,939	4,352	4,766	5,179	5,593	6,006	6,420
Base Per Capita Water Use (gpcd)	132	131	129	128	127	127	126	126	126	126	126
Per Capita Water Use w/Addit. Conservation		130	128	126	124	123	122	122	121	120	120
Water Demand											
Annual (ac-ft)	331.4	394.5	449.7	505.5	560.3	616.7	672.6	731.0	789.4	847.7	906.1
Average Day (mgd)	**0.296**	**0.352**	**0.401**	**0.451**	**0.500**	**0.551**	**0.601**	**0.653**	**0.705**	**0.757**	**0.809**
Use of Existing Water Supply (mgd)											
Rainwater Collection Systems	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030
Trinity GW - Suburban	0.148	0.148	0.148	0.148	0.148	0.148	0.148	0.148	0.148	0.148	0.148
LCRA RR3238 Pipeline	0.118	0.118	0.118	0.118	0.118	0.118	0.118	0.118	0.118	0.118	0.118
Total	**0.296**	**0.296**	**0.296**	**0.296**	**0.296**	**0.296**	**0.296**	**0.296**	**0.296**	**0.296**	**0.296**
No Action Surplus or Unmet Need	**0.000**	**(0.056)**	**(0.106)**	**(0.155)**	**(0.204)**	**(0.255)**	**(0.305)**	**(0.357)**	**(0.409)**	**(0.461)**	**(0.513)**
Use of Additional Water Management Measures (mgd)											
Additional Water Conservation		0.002	0.004	0.007	0.010	0.014	0.018	0.023	0.028	0.034	0.040
Rainwater Collection Systems		0.006	0.012	0.019	0.025	0.033	0.041	0.050	0.059	0.069	0.080
Trinity GW - Suburban		0.012	0.015	0.014	0.008	(0.001)	(0.016)	(0.033)	(0.056)	(0.083)	(0.118)
LCRA RR3238 Pipeline		0.036	0.074	0.116	0.161	0.209	0.261	0.318	0.377	0.441	0.511
Total	**0.000**	**0.056**	**0.106**	**0.155**	**0.204**	**0.255**	**0.305**	**0.357**	**0.409**	**0.461**	**0.513**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	249	300	346	392	438	484	530	575	621	667	713
Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
Per Capita Water Use w/Addit. Conservation		118	116	114	111	109	107	105	103	101	99
Water Demand											
Annual (ac-ft)	33.5	40.0	45.7	51.3	56.9	62.3	67.6	72.8	78.0	83.0	87.9
Average Day (mgd)	**0.030**	**0.036**	**0.041**	**0.046**	**0.051**	**0.056**	**0.060**	**0.065**	**0.070**	**0.074**	**0.078**
Existing Water Supply (avg day mgd)											
Rainwater Collection Systems	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004
Trinity GW - Rural	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
Total	**0.030**	**0.030**	**0.030**	**0.030**	**0.030**	**0.030**	**0.030**	**0.030**	**0.030**	**0.030**	**0.030**
No Action Surplus or Unmet Need	**0.000**	**(0.006)**	**(0.011)**	**(0.016)**	**(0.021)**	**(0.026)**	**(0.030)**	**(0.035)**	**(0.040)**	**(0.044)**	**(0.049)**
Use of Additional Water Management Measures (avg day mgd)											
Additional Water Conservation		0.000	0.001	0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.008
Rainwater Collection Systems		0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.009	0.010	0.011
Trinity GW - Rural		0.004	0.008	0.012	0.015	0.018	0.021	0.023	0.026	0.028	0.030
Total	**0.000**	**0.006**	**0.011**	**0.016**	**0.021**	**0.026**	**0.030**	**0.035**	**0.040**	**0.044**	**0.049**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Water Service Demand (avg day mgd)	**0.326**	**0.388**	**0.442**	**0.497**	**0.551**	**0.606**	**0.661**	**0.718**	**0.774**	**0.831**	**0.887**
Use of Existing and New Supply (avg day mgd)											
Additional Water Conservation	-	0.002	0.005	0.008	0.012	0.017	0.022	0.027	0.034	0.041	0.048
Rainwater Collection Systems	0.034	0.041	0.048	0.056	0.063	0.072	0.081	0.091	0.102	0.113	0.125
Trinity GW	0.173	0.190	0.197	0.199	0.197	0.190	0.179	0.163	0.143	0.118	0.085
LCRA RR3238 Pipeline	0.118	0.155	0.193	0.234	0.279	0.328	0.380	0.436	0.496	0.559	0.630
Total Use of Existing & New Supply	**0.326**	**0.388**	**0.442**	**0.497**	**0.551**	**0.606**	**0.661**	**0.718**	**0.774**	**0.831**	**0.887**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE 4.3-2
WASTEWATER MANAGEMENT PLAN
PLANNING AREA 3238
SCENARIO HI

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	2,490	2,998	3,458	3,917	4,377	4,836	5,295	5,755	6,214	6,674	7,133
Annual Growth Rate	2.8%	3.8%	2.9%	2.5%	2.2%	2.0%	1.8%	1.7%	1.5%	1.4%	1.3%
Suburban % of Planning Area Population	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
% of New Growth that is Suburban		90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
% of Growth served by Central Wastewater Systems		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
Rural % of Planning Area Population	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
% of New Growth that is Rural		10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA											
Population	2,241	2,698	3,112	3,525	3,939	4,352	4,766	5,179	5,593	6,006	6,420
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand											
Average Day (mgd)	**0.160**	**0.193**	**0.221**	**0.249**	**0.276**	**0.303**	**0.329**	**0.356**	**0.381**	**0.407**	**0.431**
Existing Wastewater Treatment (mgd)											
OSSFs	0.160	0.160	0.160	0.160	0.160	0.160	0.160	0.160	0.160	0.160	0.160
No-Discharge WWTP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	**0.160**	**0.160**	**0.160**	**0.160**	**0.160**	**0.160**	**0.160**	**0.160**	**0.160**	**0.160**	**0.160**
Suburban - No Action Surplus or Unmet Need	**0.0000**	**(0.033)**	**(0.061)**	**(0.088)**	**(0.116)**	**(0.143)**	**(0.169)**	**(0.195)**	**(0.221)**	**(0.246)**	**(0.271)**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.026	0.049	0.071	0.093	0.114	0.135	0.156	0.177	0.197	0.217
No-Discharge WWTP		0.007	0.012	0.018	0.023	0.029	0.034	0.039	0.044	0.049	0.054
Total	**0.000**	**0.033**	**0.061**	**0.088**	**0.116**	**0.143**	**0.169**	**0.195**	**0.221**	**0.246**	**0.271**
Suburban - Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	249	300	346	392	438	484	530	575	621	667	713
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Wastewater Service Demand											
Average Day (mgd)	**0.018**	**0.021**	**0.025**	**0.028**	**0.031**	**0.034**	**0.037**	**0.040**	**0.042**	**0.045**	**0.048**
Existing Wastewater Treatment (mgd)											
OSSFs	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018
Total	**0.018**	**0.018**	**0.018**	**0.018**	**0.018**	**0.018**	**0.018**	**0.018**	**0.018**	**0.018**	**0.018**
No Action Surplus or Unmet Need	**0.000**	**(0.004)**	**(0.007)**	**(0.010)**	**(0.013)**	**(0.016)**	**(0.019)**	**(0.022)**	**(0.025)**	**(0.027)**	**(0.030)**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.004	0.007	0.010	0.013	0.016	0.019	0.022	0.025	0.027	0.030
Total	**0.000**	**0.004**	**0.007**	**0.010**	**0.013**	**0.016**	**0.019**	**0.022**	**0.025**	**0.027**	**0.030**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Wastewater Service Demand (avg day mgd)	**0.178**	**0.214**	**0.246**	**0.276**	**0.307**	**0.337**	**0.366**	**0.395**	**0.424**	**0.452**	**0.479**
Use of Existing and Capacity (avg day mgd)											
OSSFs	0.178	0.208	0.233	0.259	0.284	0.308	0.332	0.356	0.379	0.402	0.425
No-Discharge WWTP	-	0.007	0.012	0.018	0.023	0.029	0.034	0.039	0.044	0.049	0.054
Total Use of Existing & New Supply	**0.178**	**0.214**	**0.246**	**0.276**	**0.307**	**0.337**	**0.366**	**0.395**	**0.424**	**0.452**	**0.479**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

4.3.2 Planning Sub-Area – 290-NW



Location/Background. This Sub-Area is located in the northwestern portion of the County and includes land alongside of RR12 north and above Hwy 290 outside of Dripping Springs. The LCRA's West Travis County Utilities RR 3238 pipeline has extended service into a limited area in the northern portion of this Sub-Area. This Sub-Area is about one-third subdivided.

Population. As indicated in Table 4.3-3, the 2010 population of this Sub-Area is estimated at 4,434 persons. It is projected to increase to 12,307 persons by 2060 with the High Case trend forecast, an average annual growth rate of about 2.1% over the 50-year planning period. With the anticipated presence of near-by water infrastructure, about 63% of the 2060 population is expected to locate in suburban-type developments.

WATER

Water Service Demands. As indicated in Table 4.3-3, the High Case forecast reflects an increase in total water demand in this Sub-Area from 0.549 mgd in 2010 to about 1.477 mgd by 2060, reflecting an average annual increase of 2.0%. Suburban demand for this Sub-Area is projected to increase from about 0.184 mgd in 2010 to around 0.970 mgd by 2060, an average annual increase of about 3.4%. Rural water use is projected to increase from about 0.364 mgd in 2010 to around 0.507 mgd by 2060, an average annual increase of about 0.7%.

Existing Water Supplies and Use of Supplies. Groundwater from the Trinity Aquifer Group comprises the largest current supply in this area, meeting an estimated 0.476 mgd of local water demand. The water quality is relatively poor and the saturated thickness of the Aquifer in this area is thin, thus exposing it to periods of rapid drawdown, low water levels, and associated well and water supply problems. Prior to the economic slowdown, this area was experiencing noticeable development pressure that, coupled with the limited groundwater supply, resulted in LCRA building the 16" diameter Hamilton Pool Road Pipeline (HPR), to provide additional water supply and help alleviate pumping stress on the Trinity Aquifer. This pipeline also serves land in southwestern Travis County along Hamilton Pool Road. While near-by, there are currently no developments within the northern portion of the 290-NW study Sub-Area receiving this supply, mainly due to the economic slowdown. Given the groundwater quantity and quality issues and the limited current span of the HPR, it is assumed that approximately 0.073 mgd or about 13% of existing local water needs are met through rainwater collection systems.

Additional Water Needs. Existing supplies from various sources are meeting current water demands. As growth occurs over time, it is forecast that additional water needs of suburban and rural portions of this Sub-Area will range from 0.097 mgd in 2015 to 0.928 mgd by 2060.

Water Management Recommendations. Additional water conservation and additional rainwater collection systems are first expected to meet a portion of the Sub-Area's increased water demand over time. As new development resumes after the current economic slowdown, it is anticipated that ultimately about 50% of growth will occur in new subdivisions that will access LCRA's existing HPR pipeline supply in the near-term and RR12 pipeline supplies if they are constructed by 2025-2030. It is also forecast that about 15% of existing water demand will access the surface water supplies over time. This will require extensions of the pipeline further into the study Sub-Area. As these line extensions would likely first serve northeastern portions of the Sub-Area, the western portion of study area will continue to develop on groundwater for a period of time. As a result, pumping on the Trinity is anticipated to first increase for several decades and then, as surface water supplies are further extended into the Sub-Area, ultimately decreases to about current pumping levels by 2060.

Sensitivity Analysis. In the Mid Case forecast, growth in this area was slowed, and suburban water use in this Sub-Area is projected to increase to only around 0.7 mgd by 2060, reflecting an average annual increase of about 2.7% versus a 3.4% average annual increase in the High Case Scenario. Rural water use is projected to increase to 0.448 mgd by 2060, an average annual increase of about 0.4% versus an average annual increase of 0.7% in the High Case Scenario. The same management recommendations (most notably the extension of the existing LCRA-HPR pipeline and a new LCRA-RR12 pipeline) are warranted as in the High Case Scenario, except that the level of water use would grow more slowly and the timing of implementation of these projects could be slowed, unless a growing backlogged developer demand for new water could speed additional action.

In the No Action Case forecast, growth in this area was even more slowed as recommended significant extensions of the LCRA-HPR line would not be made and a new LCRA-RR12 pipeline would not be built. Thus, suburban water use in this Sub-Area is projected to increase to only around 0.438 mgd by 2060, an average annual increase of about 1.7% versus 3.4% average annual increase in the High Case Scenario. Rural water use is projected to increase to 0.391 mgd by 2060, an average annual increase of about 0.1% versus an average annual increase of 0.7% in the High Case Scenario. Without these major pipeline improvements, a greater reliance on water conservation, rainwater systems, and limited groundwater supplies would be realized.

WASTEWATER

Wastewater Service Demands. As indicated in Table 4.3-4, the High Case forecast reflects an increase in total wastewater service demands in this Sub-Area from 0.317 mgd in 2010 to about 0.827 mgd by 2060, reflecting an average annual increase of 1.9%. Suburban wastewater service demands in this Sub-Area are projected to increase from 0.100 mgd in 2010 to about 0.517 mgd by 2060, reflecting an average annual increase of 3.3%. Rural wastewater service demands are projected to increase from 0.217 mgd in 2010 to about 0.310 mgd by 2060, reflecting an average annual increase of 0.7%.

Existing Wastewater Capacity and Use of Capacity. Currently, there is no significant centralized wastewater treatment capacity in this Sub-Area with on-site sewerage facilities (OSSFs) meeting almost all service demands.

Unmet Wastewater Capacity Needs. Additional wastewater treatment needs are forecast for the suburban and rural portions of this Sub-Area ranging from 0.059 mgd in 2015 to 0.510 mgd by 2060.

Wastewater Management Recommendations. The suburban growth forecast for this Sub-Area is anticipated to have sufficiently high development densities (arising from allowances in the County's subdivision ordinance for developments with imported water, community wells, or rainwater collection systems) to also accommodate centralized wastewater treatment. It is anticipated that this centralized wastewater treatment will be small subdivision-oriented (package) plants, rather than larger, regional-type plants that face more costly and problematic land application issues. These smaller centralized treatment facilities could accommodate up to 0.083 mgd of the Sub-Area's total wastewater service demand by 2060 with the remainder 0.744 mgd of demand expected to be met by individual on-site septic systems.

Sensitivity Analysis. In the Mid Case and No Action scenarios, wastewater services demands are diminished in about the same proportions as the water demands described previously, and the development of both small centralized treatment plants and OSSFs would be slowed. In the No Action scenario, lack of construction of the potential RR-12 water pipeline by about 2015-2030 would slow subdivision growth even further after that time and lessen the likelihood of centralized wastewater treatment.

TABLE 4.3-3
WATER MANAGEMENT PLAN
PLANNING AREA **290-NW**
SCENARIO **HI**

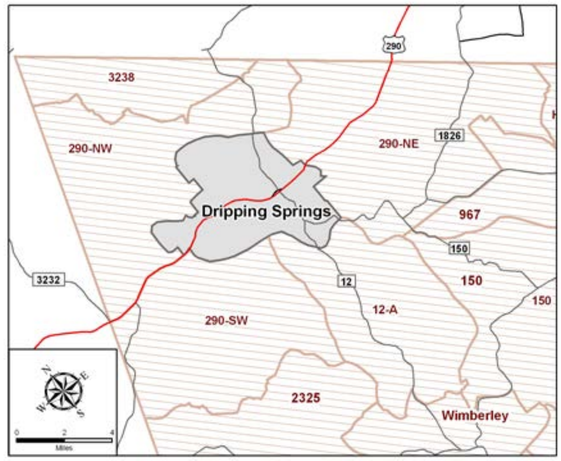
Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	4,434	5,231	6,017	6,803	7,590	8,376	9,162	9,948	10,734	11,521	12,307
Annual Growth Rate	3.2%	3.4%	2.8%	2.5%	2.2%	2.0%	1.8%	1.7%	1.5%	1.4%	1.3%
Suburban % of Planning Area Population	31.5%	38.9%	44.3%	48.4%	51.7%	54.3%	56.5%	58.4%	60.0%	61.3%	62.5%
% of New Growth that is Suburban		80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%
% Reduction in Base Water Use		0.50%	1.00%	1.50%	2.00%	2.50%	3.00%	3.50%	4.00%	4.50%	5.00%
% of Growth on Rainwater Systems	10.0%	11.0%	12.0%	13.0%	14.0%	15.0%	16.0%	17.0%	18.0%	19.0%	20.0%
% of Growth on Central Water Systems		50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
% of Exist. Demand Converting to Central Wtr Syster	0.0%	7.5%	8.3%	9.0%	9.8%	10.5%	11.3%	12.0%	12.8%	13.5%	15.0%
Rural % of Planning Area Population	68.5%	61.1%	55.7%	51.6%	48.3%	45.7%	43.5%	41.6%	40.0%	38.7%	37.5%
% of New Growth that is Rural		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
% Reduction in Base Water Use		1.00%	2.00%	3.00%	4.00%	5.00%	6.00%	7.00%	8.00%	9.00%	10.00%
% of Growth on Rainwater Systems	15.0%	16.5%	18.0%	19.5%	21.0%	22.5%	24.0%	25.5%	27.0%	28.5%	30.0%
SUBURBAN AREA											
Population	1,397	2,035	2,664	3,292	3,921	4,550	5,179	5,808	6,437	7,066	7,695
Base Per Capita Water Use (gpcd)	132	131	129	128	127	127	126	126	126	126	126
Per Capita Water Use w/Addit. Conservation		130	128	126	124	123	122	122	121	120	120
Water Demand											
Annual (ac-ft)	206.6	297.4	384.9	472.1	557.9	644.8	731.0	819.8	908.6	997.3	1,086.1
Average Day (mgd)	**0.184**	**0.266**	**0.344**	**0.421**	**0.498**	**0.576**	**0.653**	**0.732**	**0.811**	**0.890**	**0.970**
Use of Existing Water Supply (mgd)											
Rainwater Collection Systems	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018
Trinity GW - Suburban	0.166	0.166	0.166	0.166	0.166	0.166	0.166	0.166	0.166	0.166	0.166
Total	**0.184**	**0.184**	**0.184**	**0.184**	**0.184**	**0.184**	**0.184**	**0.184**	**0.184**	**0.184**	**0.184**
No Action Surplus or Unmet Need	**0.000**	**(0.081)**	**(0.159)**	**(0.237)**	**(0.314)**	**(0.391)**	**(0.468)**	**(0.548)**	**(0.627)**	**(0.706)**	**(0.785)**
Use of Additional Water Management Measures (mgd)											
Additional Water Conservation		0.001	0.003	0.006	0.010	0.014	0.020	0.026	0.032	0.040	0.048
Rainwater Collection Systems		0.009	0.018	0.028	0.039	0.051	0.063	0.077	0.091	0.106	0.122
Trinity GW - Suburban		0.016	0.029	0.038	0.044	0.047	0.048	0.046	0.041	0.033	0.020
LCRA RR3238 Pipeline		0.054	0.109	0.164	0.175	0.187	0.199	0.211	0.224	0.237	0.250
LCRA RR12 Pipeline					0.045	0.092	0.139	0.188	0.239	0.291	0.344
Total	**0.000**	**0.081**	**0.159**	**0.237**	**0.314**	**0.391**	**0.468**	**0.548**	**0.627**	**0.706**	**0.785**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	3,037	3,196	3,354	3,511	3,668	3,825	3,983	4,140	4,297	4,454	4,612
Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
Per Capita Water Use w/Addit. Conservation		118	116	114	111	109	107	105	103	101	99
Water Demand											
Annual (ac-ft)	408.2	426.1	443.3	460.1	476.6	492.8	508.6	524.0	539.1	553.8	568.2
Average Day (mgd)	**0.364**	**0.380**	**0.396**	**0.411**	**0.426**	**0.440**	**0.454**	**0.468**	**0.481**	**0.494**	**0.507**
Existing Water Supply (avg day mgd)											
Rainwater Collection Systems	0.055	0.055	0.055	0.055	0.055	0.055	0.055	0.055	0.055	0.055	0.055
Trinity GW - Rural	0.310	0.310	0.310	0.310	0.310	0.310	0.310	0.310	0.310	0.310	0.310
Total	**0.364**	**0.364**	**0.364**	**0.364**	**0.364**	**0.364**	**0.364**	**0.364**	**0.364**	**0.364**	**0.364**
No Action Surplus or Unmet Need	**0.000**	**(0.016)**	**(0.031)**	**(0.046)**	**(0.061)**	**(0.075)**	**(0.090)**	**(0.103)**	**(0.117)**	**(0.130)**	**(0.143)**
Use of Additional Water Management Measures (avg day mgd)											
Additional Water Conservation		0.004	0.008	0.012	0.017	0.022	0.027	0.033	0.039	0.045	0.051
Rainwater Collection Systems		0.003	0.005	0.008	0.011	0.015	0.018	0.022	0.025	0.029	0.033
Trinity GW - Rural		0.009	0.018	0.026	0.033	0.039	0.044	0.049	0.053	0.057	0.059
Total	**0.000**	**0.016**	**0.031**	**0.046**	**0.061**	**0.075**	**0.090**	**0.103**	**0.117**	**0.130**	**0.143**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Water Service Demand (avg day mgd)	**0.549**	**0.646**	**0.739**	**0.832**	**0.924**	**1.016**	**1.107**	**1.200**	**1.293**	**1.385**	**1.477**
Use of Existing and New Supply (avg day mgd)											
Additional Water Conservation	-	0.005	0.011	0.019	0.027	0.036	0.047	0.058	0.071	0.085	0.099
Rainwater Collection Systems	0.073	0.085	0.097	0.110	0.124	0.139	0.154	0.171	0.189	0.208	0.228
Trinity GW	0.476	0.502	0.523	0.540	0.553	0.562	0.568	0.571	0.570	0.565	0.556
LCRA RR3238 Pipeline	-	0.054	0.109	0.164	0.175	0.187	0.199	0.211	0.224	0.237	0.250
LCRA RR12 Pipeline	-	-	-	-	0.045	0.092	0.139	0.188	0.239	0.291	0.344
Total Use of Existing & New Supply	**0.549**	**0.646**	**0.739**	**0.832**	**0.924**	**1.016**	**1.107**	**1.200**	**1.293**	**1.385**	**1.477**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE 4.3-4
WASTEWATER MANAGEMENT PLAN
PLANNING AREA 290-NW
SCENARIO HI

Planning Area		Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS												
Planning Area	Est./Projected Population	4,434	5,231	6,017	6,803	7,590	8,376	9,162	9,948	10,734	11,521	12,307
	Annual Growth Rate	3.2%	3.4%	2.8%	2.5%	2.2%	2.0%	1.8%	1.7%	1.5%	1.4%	1.3%
Suburban	% of Planning Area Population	31.5%	38.9%	44.3%	48.4%	51.7%	54.3%	56.5%	58.4%	60.0%	61.3%	62.5%
	% of New Growth that is Suburban		80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%
	% of Growth served by Central Wastewater Systems		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
Rural	% of Planning Area Population	68.5%	61.1%	55.7%	51.6%	48.3%	45.7%	43.5%	41.6%	40.0%	38.7%	37.5%
	% of New Growth that is Rural		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
	% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA												
Population		1,397	2,035	2,664	3,292	3,921	4,550	5,179	5,808	6,437	7,066	7,695
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand												
	Average Day (mgd)	**0.100**	**0.146**	**0.189**	**0.232**	**0.275**	**0.317**	**0.358**	**0.399**	**0.439**	**0.478**	**0.517**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100
	No-Discharge WWTP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Total	**0.100**	**0.100**	**0.100**	**0.100**	**0.100**	**0.100**	**0.100**	**0.100**	**0.100**	**0.100**	**0.100**
Suburban - No Action Surplus or Unmet Need		**0.000**	**(0.046)**	**(0.089)**	**(0.132)**	**(0.175)**	**(0.217)**	**(0.258)**	**(0.299)**	**(0.339)**	**(0.378)**	**(0.417)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.036	0.071	0.106	0.140	0.173	0.206	0.239	0.271	0.303	0.334
	No-Discharge WWTP		0.009	0.018	0.026	0.035	0.043	0.052	0.060	0.068	0.076	0.083
	Total	**0.000**	**0.046**	**0.089**	**0.132**	**0.175**	**0.217**	**0.258**	**0.299**	**0.339**	**0.378**	**0.417**
Suburban - Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA												
Population		3,037	3,196	3,354	3,511	3,668	3,825	3,983	4,140	4,297	4,454	4,612
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Wastewater Service Demand												
	Average Day (mgd)	**0.217**	**0.229**	**0.238**	**0.248**	**0.257**	**0.266**	**0.275**	**0.284**	**0.293**	**0.301**	**0.310**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.217	0.217	0.217	0.217	0.217	0.217	0.217	0.217	0.217	0.217	0.217
	Total	**0.217**	**0.217**	**0.217**	**0.217**	**0.217**	**0.217**	**0.217**	**0.217**	**0.217**	**0.217**	**0.217**
No Action Surplus or Unmet Need		**0.000**	**(0.011)**	**(0.021)**	**(0.031)**	**(0.040)**	**(0.049)**	**(0.058)**	**(0.067)**	**(0.076)**	**(0.084)**	**(0.093)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.011	0.021	0.031	0.040	0.049	0.058	0.067	0.076	0.084	0.093
	Total	**0.000**	**0.011**	**0.021**	**0.031**	**0.040**	**0.049**	**0.058**	**0.067**	**0.076**	**0.084**	**0.093**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA												
Wastewater Service Demand (avg day mgd)		**0.317**	**0.374**	**0.427**	**0.480**	**0.532**	**0.583**	**0.633**	**0.683**	**0.732**	**0.780**	**0.827**
Use of Existing and Capacity (avg day mgd)												
	OSSFs	0.317	0.365	0.410	0.454	0.497	0.540	0.582	0.623	0.664	0.704	0.744
	No-Discharge WWTP	-	0.009	0.018	0.026	0.035	0.043	0.052	0.060	0.068	0.076	0.083
	Total Use of Existing & New Supply	**0.317**	**0.374**	**0.427**	**0.480**	**0.532**	**0.583**	**0.633**	**0.683**	**0.732**	**0.780**	**0.827**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

4.3.3 Planning Sub-Area – Greater Dripping Springs Area

Location/Background. This Sub-Area includes land within the certificated service areas of the City of Dripping Springs and the Dripping Springs WSC, as well as an increment of land around the two service areas reflective of likely future expansion of the urbanized area.



Population. As indicated in Table 4.3-5, the 2010 population of this Sub-Area is estimated at 5,685 persons. It is projected to increase to 18,090 persons by 2060 with the High Case trend forecast, an average annual growth rate of about 3.1% over the 50-year planning period. With the presence of existing and future water infrastructure, almost 100% of the 2060 population is expected to locate in suburban-type developments.

WATER

Water Service Demands. As indicated in Table 4.3-5, the High Case forecast reflects an increase in total water demand in this Sub-Area from 0.880 mgd in 2010 to about 3.403 mgd by 2060, reflecting an average annual increase of 2.7%. Suburban demand for this Sub-Area is projected to increase from about 0.669 mgd in 2010 to around 3.403 mgd by 2060, an average annual increase of about 3.3%. Rural water use is projected to decrease from about 0.211 mgd in 2010 to near zero by 2060 as the rural area is absorbed into the metropolitan area.

Existing Water Supplies and Use of Supplies. Groundwater from the Trinity Aquifer Group comprises the largest current supply in the suburban and rural portions of this Sub-Area, meeting an approximate 0.550 mgd of local water demand. Surface water from the existing 24"/20"/16" diameter LCRA Hwy 290 pipeline has provided an alternative supply with current use around 0.261 mgd. The relative amount of groundwater versus surface water used varies from year-to-year. Due to on-going litigation, the Dripping Springs Water Supply Corporation (DSWSC) does not currently have a pumping permit from the HTGCD, although a permit application is currently pending. Given no current permit limit, this study used the 0.218 mgd supply availability identified in the Region K Water Plan as a target goal for use of the resource. The City of Dripping Springs has certificated areas that lie outside of DSWSC's CCN, as well as a large area nearby that includes the planned Headwaters development project, which has a surface water supply under a LCRA contract. Given the presence of centralized water supplies, it is assumed that only about 0.069 mgd or 8% of existing local water needs are met through rainwater collection systems.

Additional Water Needs. Existing supplies from various sources are meeting current water demands. As growth occurs over time, it is forecast that additional water needs of suburban and rural portions of this Sub-Area will range from 0.477 mgd in 2015 to 2.523 mgd by 2060.

Water Management Recommendations. Additional water conservation and some additional rainwater collection systems are first expected to meet a portion of the Sub-Area's increased water demand over time. As new development resumes after the current economic slowdown, it is anticipated that existing groundwater supplies of the WSC and City (as defined by the TWDB) will be quickly exceeded. It is anticipated that much of the future growth will be met with additional LCRA surface water supplies, first from current contracts for LCRA Hwy 290 pipeline supplies, and then after 2025-2030, with additional supplies from a new LCRA RR-12 pipeline. Also, the WSC has a permit pending before the HTGCD that, if approved, could increase the available groundwater supply beyond that estimated by the TWDB. If this occurs, it might extend the timeframe in which the WSC and City would need additional surface water, although the timing of securing additional supplies will also be affected by other entities' demands for new surface water. If this scenario unfolds, overall pumping on the Trinity Aquifer in this Sub-Area is forecast to decline by about 50%.

Sensitivity Analysis. In the Mid Case forecast, growth in this area was slowed, and suburban water use in this Sub-Area is projected to increase to only around 3.065 mgd by 2060, reflecting an average annual increase of about

3.1% versus a 3.3% average annual increase in the High Case Scenario. Rural water use is projected to decrease from about 0.211 mgd in 2010 to near zero by 2060 as the rural area is absorbed into the metropolitan area. The same management recommendations are still warranted, but the timing of implementation of a new RR-12 line project could be slowed, unless a growing backlogged developer demand for new water would speed additional action.

In the No Action Case forecast, growth in this area would still occur because of existing unutilized contract commitments in the LCRA-Hwy 290 pipeline. However, longer-term growth would be slowed as a new LCRA-RR12 pipeline would not be built. Thus, suburban water use in this Sub-Area is projected to increase to only around 2.420 mgd by 2060, an average annual increase of about 2.6% versus 3.3% average annual increase in the High Case Scenario. Rural water use is projected to decrease from about 0.211 mgd in 2010 to near zero by 2060 as the rural area is absorbed into the metropolitan area. Without the LCRA-RR12 pipeline improvements, a greater reliance on water conservation, rainwater systems, and limited groundwater supplies would be realized in the long-term.

WASTEWATER

Wastewater Service Demands. As indicated in Table 4.3-6, the High Case forecast reflects an increase in total wastewater service demands in this Sub-Area from 0.404 mgd in 2010 to about 1.124 mgd by 2060, reflecting an average annual increase of 2.1%. Suburban wastewater service demands in this Sub-Area are projected to increase from 0.279 mgd in 2010 to about 1.124 mgd by 2060, reflecting an average annual increase of 2.8%. Rural wastewater service demands are projected to decrease from 0.125 mgd in 2010 to near zero as the fringe rural area is absorbed into the City.

Existing Wastewater Capacity and Use of Capacity. Currently, there is 0.65 mgd in permitted centralized wastewater treatment capacity for the City's treatment plant and small facilities for individual developments in this Sub-Area. On-site sewerage facilities (OSSFs) are meeting nearly 50% of existing service demands.

Unmet Wastewater Capacity Needs. Additional wastewater treatment needs are forecast for the suburban and rural portions of this Sub-Area ranging from 0.090 mgd in 2015 to 0.806 mgd by 2060.

Wastewater Management Recommendations. The suburban growth forecast for this Sub-Area is anticipated to have sufficiently high development densities to accommodate additional centralized wastewater treatment. It is anticipated that this centralized wastewater treatment will be generally one or more small plants, rather than a large, regional-type plant that faces more costly and problematic land application issues. These smaller centralized treatment facilities could accommodate up to 1.012 mgd of the Sub-Area's total wastewater service demand by 2060 with the remainder 0.112 mgd of demand expected to be met by individual on-site septic systems. This planning sub-area includes both the area within the City and the area served water by the WSC that is currently outside the City limits. As the City grows and annexes adjacent areas, it is expected that much of this planning sub-area will become part of Drippings Springs and be ultimately provided centralized wastewater treatment services by the City. As discussed in Section 3.7, the City has developed plans for expansion of its existing treatment service, but this potential long-range service area is not currently reflected to any great extent in the City's more near-term service planning.

Sensitivity Analysis. In the Mid Case and No Action scenarios, wastewater services demands are diminished in about the same proportions as the water demands described previously. In the No Action scenario, wastewater service demand would likely be further slowed as there would be no new RR-12 water line built to Dripping Springs, which would likely diminish the number of new subdivision-type developments more suitable for being served with centralized wastewater treatment.

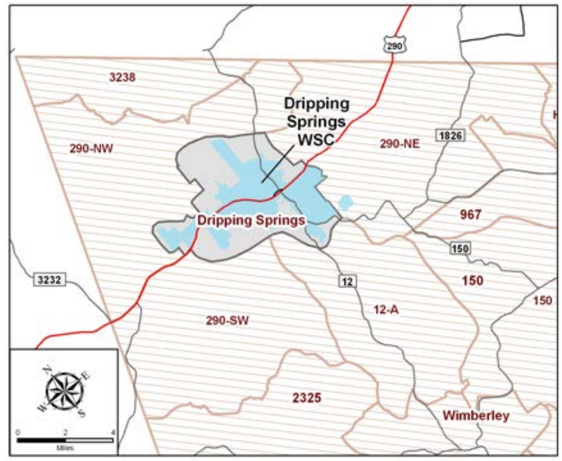
TABLE 4.3-5
WATER MANAGEMENT PLAN
PLANNING AREA **DRIPPING SPRINGS AREA**
SCENARIO **HI**

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	5,685	8,089	10,307	11,280	12,253	13,226	14,199	15,171	16,144	17,117	18,090
Annual Growth Rate	2.5%	7.3%	5.0%	1.8%	1.7%	1.5%	1.4%	1.3%	1.3%	1.2%	1.1%
Suburban % of Planning Area Population	69.1%	71.6%	74.6%	77.8%	81.0%	84.2%	87.4%	90.5%	93.7%	96.9%	100.0%
Rural % of Planning Area Population	30.9%	28.4%	25.4%	22.2%	19.0%	15.8%	12.6%	9.5%	6.3%	3.1%	0.0%
SUBURBAN AREA											
Population	3,926	5,792	7,686	8,776	9,926	11,136	12,407	13,737	15,128	16,579	18,090
Base Per Capita Water Use (gpcd)	170	187	211	220	213	207	202	198	194	191	188
Per Capita Water Use w/Addit. Conservation		186	208	215	207	200	193	188	183	179	175
Water Demand											
Annual (ac-ft)	749	1,213	1,819	2,164	2,366	2,581	2,805	3,042	3,289	3,546	3,811
Average Day (mgd)	**0.669**	**1.083**	**1.624**	**1.932**	**2.113**	**2.305**	**2.504**	**2.716**	**2.937**	**3.166**	**3.403**
Use of Existing Water Supply (mgd)											
Rainwater Collection Systems	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037
Trinity GW - Suburban	0.371	0.371	0.371	0.371	0.371	0.371	0.371	0.371	0.371	0.371	0.371
LCRA US290 Pipeline	0.261	0.261	0.261	0.261	0.261	0.261	0.261	0.261	0.261	0.261	0.261
Total	**0.669**	**0.669**	**0.669**	**0.669**	**0.669**	**0.669**	**0.669**	**0.669**	**0.669**	**0.669**	**0.669**
No Action Surplus or Unmet Need	**0.000**	**(0.414)**	**(0.955)**	**(1.263)**	**(1.444)**	**(1.636)**	**(1.835)**	**(2.047)**	**(2.268)**	**(2.497)**	**(2.734)**
Use of Additional Water Management Measures (mgd)											
Additional Water Conservation		0.008	0.024	0.042	0.060	0.081	0.105	0.131	0.161	0.193	0.229
Rainwater Collection Systems		0.028	0.064	0.085	0.097	0.112	0.128	0.145	0.165	0.186	0.209
Trinity GW - Suburban		(0.079)	(0.030)	0.014	0.013	0.008	(0.002)	(0.018)	(0.040)	(0.072)	(0.105)
LCRA US290 Pipeline		0.457	0.896	1.123	1.191	1.191	1.191	1.191	1.191	1.191	1.191
LCRA RR12 Pipeline		0.000	0.000	0.000	0.082	0.243	0.414	0.597	0.791	0.998	1.210
Total	**0.000**	**0.414**	**0.955**	**1.263**	**1.444**	**1.636**	**1.835**	**2.048**	**2.268**	**2.497**	**2.734**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	1,760	2,298	2,621	2,504	2,327	2,089	1,792	1,434	1,016	538	-
Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
Per Capita Water Use w/Addit. Conservation		118	116	114	113	111	109	107	105	104	-
Water Demand											
Annual (ac-ft)	236.5	306.3	346.5	328.2	302.3	269.1	228.9	181.6	127.5	66.9	-
Average Day (mgd)	**0.211**	**0.273**	**0.309**	**0.293**	**0.270**	**0.240**	**0.204**	**0.162**	**0.114**	**0.060**	**-**
Existing Water Supply (avg day mgd)											
Rainwater Collection Systems	0.032	0.032	0.032	0.032	0.032	0.032	0.032	0.032	0.032	0.032	0.032
Trinity GW - Rural	0.180	0.180	0.180	0.180	0.180	0.180	0.180	0.180	0.180	0.180	0.180
Total	**0.211**	**0.211**	**0.211**	**0.211**	**0.211**	**0.211**	**0.211**	**0.211**	**0.211**	**0.211**	**0.211**
No Action Surplus or Unmet Need	**0.000**	**(0.062)**	**(0.098)**	**(0.082)**	**(0.059)**	**(0.029)**	**0.007**	**0.049**	**0.097**	**0.151**	**0.211**
Use of Additional Water Management Measures (avg day mgd)											
Additional Water Conservation		0.002	0.005	0.007	0.008	0.009	0.009	0.009	0.007	0.004	0.000
Rainwater Collection Systems		0.010	0.017	0.014	0.009	0.002	(0.007)	(0.017)	(0.030)	(0.035)	(0.039)
Trinity GW - Rural		0.050	0.077	0.062	0.042	0.018	(0.009)	(0.040)	(0.074)	(0.121)	(0.172)
Total	**0.000**	**0.062**	**0.098**	**0.082**	**0.059**	**0.029**	**(0.007)**	**(0.049)**	**(0.097)**	**(0.151)**	**(0.211)**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Water Service Demand (avg day mgd)	**0.880**	**1.357**	**1.933**	**2.225**	**2.383**	**2.545**	**2.709**	**2.878**	**3.051**	**3.226**	**3.403**
Use of Existing and New Supply (avg day mgd)											
Additional Water Conservation	-	0.010	0.029	0.048	0.068	0.090	0.114	0.140	0.168	0.197	0.229
Rainwater Collection Systems	0.069	0.107	0.150	0.167	0.175	0.183	0.190	0.197	0.204	0.221	0.240
Trinity GW	0.550	0.521	0.597	0.626	0.605	0.577	0.539	0.492	0.436	0.358	0.273
LCRA US290 Pipeline	0.261	0.718	1.157	1.384	1.452	1.452	1.452	1.452	1.452	1.452	1.452
LCRA RR12 Pipeline	-	-	-	-	0.082	0.243	0.414	0.597	0.791	0.998	1.210
Total Use of Existing & New Supply	**0.880**	**1.357**	**1.933**	**2.225**	**2.383**	**2.545**	**2.709**	**2.879**	**3.051**	**3.226**	**3.403**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE 4.3-6
WASTEWATER MANAGEMENT PLAN
PLANNING AREA DRIPPING SPRINGS AREA
SCENARIO HI

	Estimated	Projected									
Planning Area	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**	**2055**	**2060**
PLANNING FACTORS											
Planning Area Est./Projected Population	5,685	8,089	10,307	11,280	12,253	13,226	14,199	15,171	16,144	17,117	18,090
Annual Growth Rate	13.3%	42.3%	27.4%	9.4%	8.6%	7.9%	7.4%	6.9%	6.4%	6.0%	5.7%
Suburban % of Planning Area Population	69.1%	71.6%	74.6%	77.8%	81.0%	84.2%	87.4%	90.5%	93.7%	96.9%	100.0%
Rural % of Planning Area Population	30.9%	28.4%	25.4%	22.2%	19.0%	15.8%	12.6%	9.5%	6.3%	3.1%	0.0%
SUBURBAN AREA											
Population	3,926	5,792	7,686	8,776	9,926	11,136	12,407	13,737	15,128	16,579	18,090
Wastewater Return Flow (gpcd)	71	71	70	69	68	67	66	65	64	63	62
Suburban - Wastewater Service Demand											
Average Day (mgd)	**0.279**	**0.411**	**0.538**	**0.606**	**0.675**	**0.746**	**0.819**	**0.894**	**0.970**	**1.046**	**1.124**
Existing Wastewater Treatment (mgd)											
OSSFs	0.073	0.073	0.073	0.073	0.073	0.073	0.073	0.073	0.073	0.073	0.073
No-Discharge WWTP	0.206	0.206	0.206	0.206	0.206	0.206	0.206	0.206	0.206	0.206	0.206
Total	**0.279**	**0.279**	**0.279**	**0.279**	**0.279**	**0.279**	**0.279**	**0.279**	**0.279**	**0.279**	**0.279**
Suburban - No Action Surplus or Unmet Need	**0.000**	**(0.132)**	**(0.259)**	**(0.327)**	**(0.396)**	**(0.467)**	**(0.540)**	**(0.615)**	**(0.691)**	**(0.767)**	**(0.845)**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.042	0.067	0.072	0.075	0.076	0.074	0.070	0.063	0.053	0.039
No-Discharge WWTP		0.090	0.192	0.254	0.321	0.391	**0.466**	0.545	0.628	0.715	0.806
Total	**0.000**	**0.132**	**0.259**	**0.327**	**0.396**	**0.467**	**0.540**	**0.615**	**0.691**	**0.767**	**0.845**
Suburban - Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	1,760	2,298	2,621	2,504	2,327	2,089	1,792	1,434	1,016	538	-
Wastewater Return Flow (gpcd)	71	71	70	69	68	67	66	66	65	64	0
Wastewater Service Demand											
Average Day (mgd)	**0.125**	**0.163**	**0.184**	**0.173**	**0.159**	**0.141**	**0.119**	**0.094**	**0.066**	**0.034**	**0.000**
Existing Wastewater Treatment (mgd)											
OSSFs	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125
Total	**0.125**	**0.125**	**0.125**	**0.125**	**0.125**	**0.125**	**0.125**	**0.125**	**0.125**	**0.125**	**0.125**
No Action Surplus or Unmet Need	**0.000**	**(0.038)**	**(0.059)**	**(0.048)**	**(0.034)**	**(0.016)**	**0.006**	**0.031**	**0.059**	**0.091**	**0.125**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.038	0.059	0.048	0.034	0.016	(0.006)	(0.031)	(0.059)	(0.091)	(0.125)
Total	**0.000**	**0.038**	**0.059**	**0.048**	**0.034**	**0.016**	**(0.006)**	**(0.031)**	**(0.059)**	**(0.091)**	**(0.125)**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Wastewater Service Demand (avg day mgd)	**0.404**	**0.575**	**0.722**	**0.779**	**0.834**	**0.887**	**0.939**	**0.988**	**1.035**	**1.081**	**1.124**
Use of Existing and Capacity (avg day mgd)											
OSSFs	0.198	0.278	0.324	0.319	0.308	0.290	0.267	0.237	0.201	0.160	0.112
No-Discharge WWTP	0.206	0.296	0.398	0.460	0.527	0.597	0.672	0.751	0.834	0.921	1.012
Total Use of Existing & New Supply	**0.404**	**0.575**	**0.722**	**0.779**	**0.834**	**0.887**	**0.939**	**0.988**	**1.035**	**1.081**	**1.124**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

4.3.3.1 Planning Sub-Area - Dripping Springs WSC



Location/Background. While the adjacent map shows the entirety of the WSC's certificated area, this Sub-Area only includes land within the certificated service area that lies outside the city limits of Dripping Springs (consistent with TWDB planning) and an increment of land around the WSC, outside the City, that is reflective of possible future expansion of its service area. This Sub-Area is mostly urbanized.

Population. As indicated in Table 4.3-7, the 2010 population of this Sub-Area is estimated at 1,995 persons. It is projected to increase to 5,378 persons by 2060 with the High Case trend forecast, an average annual growth rate of about 2.0% over the 50-year planning period. With the presence of existing and future water infrastructure, almost 100% of the 2060 population is expected to locate in suburban-type developments.

WATER

Water Service Demands. As indicated in Table 4.3-7, the High Case forecast reflects an increase in total water demand in this Sub-Area from 0.673 mgd in 2010 to about 1.903 mgd by 2060, reflecting an average annual increase of 2.1%. Suburban demand for this Sub-Area is projected to increase from about 0.613 mgd in 2010 to around 1.903 mgd by 2060, an average annual increase of about 2.3%. Rural water use is projected to decrease from about 0.061 mgd in 2010 to near zero by 2060 as the rural area is absorbed into the metropolitan area.

Existing Water Supplies and Use of Supplies. Groundwater from the Trinity Aquifer Group comprises the largest current supply in the suburban and rural portions of this Sub-Area, meeting an approximate 0.388 mgd of local water demand. Surface water from the existing 24"/20"/16" diameter LCRA Hwy 290 pipeline has provided an alternative supply with current use around 0.261 mgd. The relative amount of groundwater versus surface water used varies from year-to-year. Due to on-going litigation, the Dripping Springs Water Supply Corporation (DSWSC) does not currently have a pumping permit from the HTGCD, although a permit application is currently pending. Given no current permit limit, this study used the 0.214 mgd supply availability identified in the Region K Water Plan as a target goal for use of the resource. Given the presence of centralized water supplies, it is assumed that only about 0.024 mgd or 4% of existing local water needs are met through rainwater collection systems.

Additional Water Needs. Existing supplies from various sources are meeting current water demands. As growth occurs over time, it is forecast that additional water needs of suburban and rural portions of this Sub-Area will range from 0.252 mgd in 2015 to 1.230 mgd by 2060.

Water Management Recommendations. Additional water conservation and some additional rainwater collection systems are first expected to meet a portion of the Sub-Area's increased water demand over time. As new development resumes after the current economic slowdown, it is anticipated that existing groundwater supplies (as defined by the TWDB) will be quickly exceeded. It is anticipated that future growth will be met with additional LCRA surface water supplies, first from the WSC's current contract for LCRA Hwy 290 pipeline supplies, and then after 2025-2030, with additional supplies from a new LCRA RR-12 pipeline. Also, the WSC has a permit pending before the HTGCD that, if approved, could increase the available groundwater supply beyond that estimated by the TWDB. If this occurs, it would extend the timeframe in which the WSC would need additional surface water, although the timing of a new pipeline would also be affected by other entities' demands for the new surface water. In this scenario, overall pumping on the Trinity Aquifer in this Sub-Area is forecast to stabilize between 0.269 and 0.225 mgd over time.

Sensitivity Analysis. In the Mid Case forecast, growth in this area was slowed, and suburban water use in this Sub-Area is projected to increase to only around 1.744 mgd by 2060, reflecting an average annual increase of about 2.1% versus a 2.3% average annual increase in the High Case Scenario. Rural water use is projected to decrease from about 0.061 mgd in 2010 to near zero by 2060 as the rural area is absorbed into the metropolitan area. The same management recommendations, most notably a new LCRA-RR12 pipeline, are warranted as in the High Case Scenario. In the Mid Case Scenario, the timing of implementation of a new RR-12 line could be slowed, unless a growing backlogged developer demand for new water could speed additional action.

In the No Action Case forecast, growth in this area would still occur because of the existing unutilized contract commitment in the LCRA-Hwy 290 pipeline. However, longer-term growth would be slowed as a new LCRA-RR12 pipeline would not be built. Thus, suburban water use in this Sub-Area is projected to increase to only around 1.314 mgd by 2060, an average annual increase of about 1.5% versus 2.3% average annual increase in the High Case Scenario. Rural water use is projected to decrease from about 0.061 mgd in 2010 to near zero by 2060 as the rural area is absorbed into the metropolitan area. Without the LCRA-RR12 pipeline improvements, a greater reliance on water conservation, rainwater systems, and limited groundwater supplies would be realized in the long-term.

WASTEWATER

Wastewater Service Demands. As indicated in Table 4.3-8, the High Case forecast reflects an increase in total wastewater service demands in this Sub-Area from 0.142 mgd in 2010 to about 0.361 mgd by 2060, reflecting an average annual increase of 1.9%. Suburban wastewater service demands in this Sub-Area are projected to increase from 0.107 mgd in 2010 to about 0.361 mgd by 2060, reflecting an average annual increase of 2.5%. Rural wastewater service demands are projected to decrease from 0.036 mgd in 2010 to near zero as the fringe rural area is absorbed into the City.

Existing Wastewater Capacity and Use of Capacity. Currently, there is 0.339 mgd in permitted centralized wastewater treatment capacity for small developments in this Sub-Area. On-site sewerage facilities (OSSFs) are meeting the remaining service demands.

Unmet Wastewater Capacity Needs. Additional wastewater treatment needs are forecast for the suburban and rural portions of this Sub-Area ranging from 0.005 mgd in 2015 to 0.255 mgd by 2060.

Wastewater Management Recommendations. The suburban growth forecast for this Sub-Area is anticipated to have sufficiently high development densities to accommodate additional centralized wastewater treatment. It is anticipated that this centralized wastewater treatment will be generally one or more small plants, rather than a large, regional-type plant that faces more costly and problematic land application issues. These smaller centralized treatment facilities could accommodate up to 0.325 mgd of the Sub-Area's total wastewater service demand by 2060 with the remainder 0.036 mgd of demand expected to be met by individual on-site septic systems. This planning sub-area is generally the area served water by the WSC that is currently outside the City limits. As the City grows and annexes adjacent areas, it is expected that much of this planning sub-area will become part of Drippings Springs and be ultimately provided centralized wastewater treatment services by the City. As discussed in Section 3.7, the City has developed plans for expansion of its existing treatment service, but this potential long-range service area is not currently reflected to any great extent in the City's more near-term service planning.

Sensitivity Analysis. In the Mid Case and No Action scenarios, wastewater services demands are diminished in about the same proportions as the water demands described previously. In the No Action scenario, wastewater service demand would likely be further slowed as there would be no new RR-12 water line built to Dripping Springs, which would likely diminish the number of new subdivision-type developments more suitable for being served with centralized wastewater treatment.

TABLE 4.3-7
WATER MANAGEMENT PLAN
PLANNING AREA DRIPPING SPRINGS WSC
SCENARIO HI

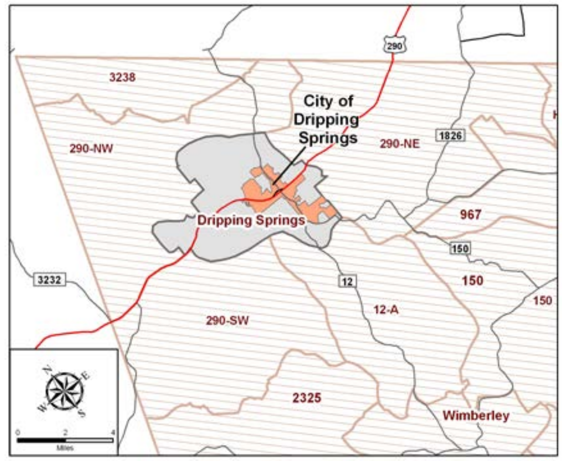
		Estimated	Projected									
	Planning Area	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**	**2055**	**2060**
PLANNING FACTORS												
Planning Area	Est./Projected Population (inside Planning Area)	1,995	2,273	2,618	2,963	3,308	3,653	3,998	4,343	4,688	5,033	5,378
	Annual Growth Rate	4.1%	2.6%	2.9%	2.5%	2.2%	2.0%	1.8%	1.7%	1.5%	1.4%	1.3%
	Est. Wholesale (Outside P.A.) Population	2,530	3,987	5,271	5,702	6,132	6,562	6,993	7,423	7,854	8,284	8,715
	Annual Growth Rate		9.5%	5.7%	1.6%	1.5%	1.4%	1.3%	1.2%	1.1%	1.1%	1.0%
Suburban	% of Planning Area Population	74.7%	77.2%	79.8%	82.3%	84.8%	87.4%	89.9%	92.4%	94.9%	97.5%	100.0%
	% of New Growth that is Suburban		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% Reduction in Base Water Use		0.50%	1.00%	1.50%	2.00%	2.50%	3.00%	3.50%	4.00%	4.50%	5.00%
	% of Growth on Rainwater Systems	2.5%	2.8%	3.0%	3.3%	3.5%	3.8%	4.0%	4.3%	4.5%	4.8%	5.0%
	% of Growth on LCRA 290 Line	42.6%	138.4%	86.8%	71.9%	52.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	% of Growth on LCRA RR12 Line		0.0%	0.0%	0.0%	16.8%	66.5%	63.0%	61.0%	57.0%	55.0%	50.0%
	% of Exist. Demand Converting to Central Wtr Systems		2.5%	2.8%	3.0%	3.3%	3.5%	3.8%	4.0%	4.3%	4.5%	5.0%
Rural	% of Planning Area Population	25.3%	22.8%	20.2%	17.7%	15.2%	12.7%	10.1%	7.6%	5.1%	2.5%	0.0%
	% of New Growth that is Rural		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	% Reduction in Base Water Use		0.75%	1.50%	2.25%	3.00%	3.75%	4.50%	5.25%	6.00%	6.75%	7.50%
	% of Growth on Rainwater Systems	15.0%	16.5%	18.0%	19.5%	21.0%	22.5%	24.0%	25.5%	27.0%	28.5%	30.00%
SUBURBAN AREA												
Population - Outside City		1,490	1,756	2,088	2,439	2,806	3,191	3,594	4,014	4,451	4,906	5,378
	Base Per Capita Water Use (gpcd)	153	150	149	147	145	144	142	140	138	137	135
	Per Capita Water Use w/Addit. Conservation		150	147	145	142	140	138	135	133	131	128
Population - Inside City		2,530	3,987	5,271	5,702	6,132	6,562	6,993	7,423	7,854	8,284	8,715
	Base Per Capita Water Use (gpcd)	152	150	149	147	145	144	142	140	138	137	135
	Per Capita Water Use w/Addit. Conservation		150	147	145	142	140	138	135	133	131	128
Water Demand												
	Annual (ac-ft)	686.1	966.9	1,225.0	1,339.5	1,453.8	1,567.8	1,681.5	1,794.8	1,907.6	2,019.7	2,131.1
	Average Day (mgd)	**0.613**	**0.863**	**1.094**	**1.196**	**1.298**	**1.400**	**1.501**	**1.603**	**1.703**	**1.803**	**1.903**
Use of Existing Water Supply (mgd)												
	Rainwater Collection Systems	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015
	Trinity GW - Suburban	0.336	0.336	0.336	0.336	0.336	0.336	0.336	0.336	0.336	0.336	0.336
	LCRA US290 Pipeline	0.261	0.261	0.261	0.261	0.261	0.261	0.261	0.261	0.261	0.261	0.261
	Total	**0.613**	**0.613**	**0.613**	**0.613**	**0.613**	**0.613**	**0.613**	**0.613**	**0.613**	**0.613**	**0.613**
No Action Surplus or Unmet Need		**0.000**	**(0.251)**	**(0.481)**	**(0.583)**	**(0.685)**	**(0.787)**	**(0.889)**	**(0.990)**	**(1.091)**	**(1.191)**	**(1.290)**
Use of Additional Water Management Measures (mgd)												
	Additional Water Conservation		0.004	0.011	0.018	0.026	0.035	0.045	0.056	0.068	0.081	0.095
	Rainwater Collection Systems		0.007	0.014	0.017	0.021	0.025	0.029	0.033	0.037	0.042	0.047
	Trinity GW - Suburban		(0.123)	(0.123)	(0.123)	(0.122)	(0.123)	(0.122)	(0.123)	(0.122)	(0.122)	(0.122)
	LCRA US290 Pipeline		0.362	0.579	0.671	0.739	0.739	0.739	0.739	0.739	0.739	0.739
	LCRA RR12 Pipeline		0.000	0.000	0.000	0.022	0.111	0.198	0.284	0.368	0.450	0.531
	Total	**0.000**	**0.251**	**0.481**	**0.583**	**0.685**	**0.787**	**0.889**	**0.990**	**1.091**	**1.191**	**1.290**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
	gw supply	0.336	0.214	0.214	0.214	0.214	0.214	0.214	0.214	0.214	0.214	0.214
RURAL AREA												
Population		505	518	530	525	502	462	405	330	237	127	-
	Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
	Per Capita Water Use w/Addit. Conservation		118	116	114	113	111	109	107	105	104	-
Water Demand												
	Annual (ac-ft)	67.9	69.0	70.1	68.8	65.2	59.5	51.7	41.8	29.7	15.8	-
	Average Day (mgd)	**0.061**	**0.062**	**0.063**	**0.061**	**0.058**	**0.053**	**0.046**	**0.037**	**0.027**	**0.014**	**-**
Existing Water Supply (avg day mgd)												
	Rainwater Collection Systems	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009
	Trinity GW - Rural	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052
	Total	**0.061**	**0.061**	**0.061**	**0.061**	**0.061**	**0.061**	**0.061**	**0.061**	**0.061**	**0.061**	**0.061**
No Action Surplus or Unmet Need		**0.000**	**(0.001)**	**(0.002)**	**(0.001)**	**0.002**	**0.007**	**0.014**	**0.023**	**0.034**	**0.047**	**0.061**
Use of Additional Water Management Measures (avg day mgd)												
	Additional Water Conservation		0.000	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.001	0.000
	Rainwater Collection Systems		0.000	0.000	0.000	(0.001)	(0.002)	(0.003)	(0.006)	(0.009)	(0.012)	(0.016)
	Trinity GW - Rural		0.000	0.001	(0.001)	(0.004)	(0.008)	(0.013)	(0.020)	(0.027)	(0.035)	(0.044)
	Total	**0.000**	**0.001**	**0.002**	**0.001**	**(0.002)**	**(0.007)**	**(0.014)**	**(0.023)**	**(0.034)**	**(0.047)**	**(0.061)**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA												
Water Service Demand (avg day mgd)		**0.673**	**0.925**	**1.156**	**1.257**	**1.356**	**1.453**	**1.548**	**1.640**	**1.730**	**1.817**	**1.903**
Use of Existing and New Supply (avg day mgd)												
	Additional Water Conservation	-	0.005	0.012	0.019	0.028	0.037	0.047	0.058	0.070	0.082	0.095
	Rainwater Collection Systems	0.024	0.031	0.039	0.042	0.045	0.047	0.050	0.052	0.053	0.054	0.055
	Trinity GW	0.388	0.265	0.266	0.264	0.262	0.257	0.253	0.246	0.239	0.230	0.222
	LCRA US290 Pipeline	0.261	0.623	0.840	0.932	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	LCRA RR12 Pipeline	-	-	-	-	0.022	0.111	0.198	0.284	0.368	0.450	0.531
	Total Use of Existing & New Supply	**0.673**	**0.925**	**1.156**	**1.257**	**1.356**	**1.453**	**1.548**	**1.640**	**1.730**	**1.817**	**1.903**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE 4.3-8
WASTEWATER MANAGEMENT PLAN
PLANNING AREA DRIPPING SPRINGS WSC
SCENARIO HI

Planning Area		Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS												
Planning Area	Est./Projected Population	1,995	2,273	2,618	2,963	3,308	3,653	3,998	4,343	4,688	5,033	5,378
	Annual Growth Rate	4.1%	2.6%	2.9%	2.5%	2.2%	2.0%	1.8%	1.7%	1.5%	1.4%	1.3%
Suburban	% of Planning Area Population	74.7%	77.2%	79.8%	82.3%	84.8%	87.4%	89.9%	92.4%	94.9%	97.5%	100.0%
	% of New Growth that is Suburban		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Demand served by Central Wastewater Systems	80.0%	72.0%	74.0%	76.0%	78.0%	80.0%	82.0%	84.0%	86.0%	88.0%	90.0%
Rural	% of Planning Area Population	25.3%	22.8%	20.2%	17.7%	15.2%	12.7%	10.1%	7.6%	5.1%	2.5%	0.0%
	% of New Growth that is Rural		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	% of Demand served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA												
Population		1,490	1,756	2,088	2,439	2,806	3,191	3,594	4,014	4,451	4,906	5,378
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand												
	Average Day (mgd)	**0.107**	**0.126**	**0.148**	**0.172**	**0.197**	**0.222**	**0.248**	**0.276**	**0.303**	**0.332**	**0.361**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021
	No-Discharge WWTP	0.085	0.085	0.085	0.085	0.085	0.085	0.085	0.085	0.085	0.085	0.085
	Total	**0.107**	**0.107**	**0.107**	**0.107**	**0.107**	**0.107**	**0.107**	**0.107**	**0.107**	**0.107**	**0.107**
Suburban - No Action Surplus or Unmet Need		**0.000**	**(0.019)**	**(0.042)**	**(0.065)**	**(0.090)**	**(0.116)**	**(0.142)**	**(0.169)**	**(0.197)**	**(0.225)**	**(0.255)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.014	0.017	0.020	0.022	0.023	0.023	0.023	0.021	0.019	0.015
	No-Discharge WWTP		0.005	0.025	0.046	0.068	0.092	0.118	0.146	0.176	0.207	0.240
	Total	**0.000**	**0.019**	**0.042**	**0.065**	**0.090**	**0.116**	**0.142**	**0.169**	**0.197**	**0.225**	**0.255**
Suburban - Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA												
Population		505	518	530	525	502	462	405	330	237	127	-
	Wastewater Return Flow (gpcd)	71	71	70	68	67	66	65	64	62	61	60
Wastewater Service Demand												
	Average Day (mgd)	**0.036**	**0.037**	**0.037**	**0.036**	**0.034**	**0.030**	**0.026**	**0.021**	**0.015**	**0.008**	**0.000**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036
	Total	**0.036**	**0.036**	**0.036**	**0.036**	**0.036**	**0.036**	**0.036**	**0.036**	**0.036**	**0.036**	**0.036**
No Action Surplus or Unmet Need		**0.000**	**(0.001)**	**(0.001)**	**(0.000)**	**0.002**	**0.005**	**0.010**	**0.015**	**0.021**	**0.028**	**0.036**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.001	0.001	0.000	(0.002)	(0.005)	(0.010)	(0.015)	(0.021)	(0.028)	(0.036)
	Total	**0.000**	**0.001**	**0.001**	**0.000**	**(0.002)**	**(0.005)**	**(0.010)**	**(0.015)**	**(0.021)**	**(0.028)**	**(0.036)**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA												
Wastewater Service Demand (avg day mgd)		**0.142**	**0.162**	**0.185**	**0.208**	**0.230**	**0.253**	**0.275**	**0.296**	**0.318**	**0.340**	**0.361**
Use of Existing and Capacity (avg day mgd)												
	OSSFs	0.057	0.072	0.075	0.077	0.077	0.075	0.071	0.065	0.057	0.048	0.036
	No-Discharge WWTP	0.085	0.090	0.110	0.131	0.153	0.178	0.204	0.231	0.261	0.292	0.325
	Total Use of Existing & New Supply	**0.142**	**0.162**	**0.185**	**0.208**	**0.230**	**0.253**	**0.275**	**0.296**	**0.318**	**0.340**	**0.361**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

4.3.3.2 <u>Planning Sub-Area - City Of Dripping Springs</u>

Location/Background. This Sub-Area includes land within the City of Dripping Springs that is both inside and outside of the certificated service area (CCN) of the DSWSC and an increment of land around the current City that is reflective of possible future expansion of its service area. This Sub-Area is mostly urbanized.



Population. As indicated in Table 4.3-9, the 2010 population of this Sub-Area is estimated at 3,690 persons. It is projected to increase to 12,712 persons by 2060 with the High Case trend forecast, an average annual growth rate of about 2.5% over the 50-year planning period. With the presence of existing and future water infrastructure, almost 100% of the 2060 population is expected to locate in suburban-type developments.

WATER

Water Service Demands. As indicated in Table 4.3-9, the High Case forecast reflects an increase in total water demand in this Sub-Area from 0.591 mgd in 2010 to about 2.677 mgd by 2060, reflecting an average annual increase of 3.1%. Suburban demand for this Sub-Area is projected to increase from about 0.441 mgd in 2010 to around 2.677 mgd by 2060, an average annual increase of about 3.7%. Rural water use is projected to decrease from about 0.151 mgd in 2010 to near zero by 2060, as the rural area is absorbed into the metropolitan area.

Existing Water Supplies and Use of Supplies. The Dripping Springs WSC (DSWSC) is the largest water service supplier to this Sub-Area (current use about 0.385 mgd), which in turn uses both Trinity groundwater and LCRA surface water supplies to meet these municipal needs. The relative amount of groundwater versus surface water used varies from year-to-year. A portion of this Sub-Area is not served by the DSWSC and is estimated to use about 0.162 mgd of Trinity groundwater supply from individual well sources. It is assumed that about 0.045 mgd or 7.5% of existing local water needs are met through rainwater collection systems. The City of Dripping Springs has certificated portions of the City that lie outside of the CCN of DSWSC, as well as a large area nearby that includes the planned Headwaters development project, which has a surface water supply under a LCRA contract.

Additional Water Needs. Existing supplies from various sources are meeting current water demands. As growth occurs over time, it is forecast that additional water needs of suburban and rural portions of this Sub-Area will range from 0.440 mgd in 2015 to 2.085 mgd by 2060.

Water Management Recommendations. Additional water conservation and additional rainwater collection systems are first expected to meet a portion of the Sub-Area's increased water demand over time. As new development resumes after the current economic slowdown, it is anticipated that existing groundwater supplies (as defined by the TWDB) will be quickly exceeded. It is anticipated that future growth will be met with additional LCRA surface water supplies, first from the WSC's current contract for LCRA Hwy 290 pipeline supplies, and then after 2025-2030, with additional supplies for the City from a new LCRA RR-12 pipeline. The WSC has a permit pending before the HTGCD that, if approved, could increase the available groundwater supply beyond that estimated by the TWDB. If this occurs, it might extend the timeframe in which the WSC and City would need additional surface water, although the timing of a new RR-12 pipeline would also be affected by other entities' demands for the new surface water. If this scenario unfolds, overall pumping on the Trinity Aquifer in this Sub-Area is forecast to stabilize between 0.269 and 0.225 mgd over time.

Sensitivity Analysis. In the Mid Case forecast, growth in this area was slowed, and suburban water use in this Sub-Area is projected to increase to only around 2.296 mgd by 2060, reflecting an average annual increase of about 3.4% versus a 3.7% average annual increase in the High Case Scenario. Rural water use is projected to decrease from about 0.151 mgd in 2010 to near zero by 2060 as the rural area is absorbed into the metropolitan area. The same management recommendations, most notably a new LCRA-RR12 pipeline, are warranted as in the High Case Scenario. In the Mid Case Scenario, the level of water use grows a little more slowly and the timing of implementation of this project could be slowed, unless a growing backlogged developer demand for new water could act to speed additional action.

In the No Action Case forecast, growth in this area would still occur because of the existing unutilized contract commitment in the LCRA-Hwy 290 pipeline. However, longer-term growth would be slowed as a new LCRA-RR12 pipeline would not be built. Thus, suburban water use in this Sub-Area is projected to increase to only around 1.841 mgd by 2060, an average annual increase of about 2.9% versus 3.7% average annual increase in the High Case Scenario. Rural water use is projected to decrease from about 0.151 mgd in 2010 to near zero by 2060 as the rural area is absorbed into the metropolitan area. Without the LCRA-RR12 pipeline improvements, a greater reliance on water conservation, rainwater systems, and limited groundwater supplies would be realized in the long-term.

WASTEWATER

Wastewater Service Demands. As indicated in Table 4.3-10, the High Case forecast reflects an increase in total wastewater service demands in this Sub-Area from 0.262 mgd in 2010 to about 0.763 mgd by 2060, reflecting an average annual increase of 2.2%. Suburban wastewater service demands in this Sub-Area are projected to increase from 0.172 mgd in 2010 to about 0.763 mgd by 2060, reflecting an average annual increase of 3.0%. Rural wastewater service demands are projected to decrease from 0.089 mgd in 2010 to near zero as the fringe rural area is absorbed into the City.

Existing Wastewater Capacity and Use of Capacity. Currently, there is 0.1625 mgd in permitted and constructed centralized wastewater treatment capacity in this Sub-Area. On-site sewerage facilities (OSSFs) are meeting the large majority of existing service demands.

Unmet Wastewater Capacity Needs. Additional wastewater treatment needs are forecast for the suburban and rural portions of this Sub-Area ranging from 0.151 mgd in 2015 to 0.501 mgd by 2060.

Wastewater Management Recommendations. The suburban growth forecast for this Sub-Area is anticipated to have sufficiently high development densities to accommodate additional centralized wastewater treatment. It is anticipated that this centralized wastewater treatment will be generally one or more small plants, rather than a large, regional-type plant that faces more costly and problematic land application issues. These smaller centralized treatment facilities could accommodate up to 0.686 mgd of the Sub-Area's total wastewater service demand by 2060 with the remainder 0.076 mgd of demand expected to be met by individual on-site septic systems. As discussed in Section 3.7, the City has developed plans for expansion of its existing treatment service.

Sensitivity Analysis. In the Mid Case and No Action scenarios, wastewater services demands are diminished in about the same proportions as the water demands described previously. In the No Action scenario, wastewater service demand would likely be further slowed as there would be no new RR-12 water line built to Dripping Springs, which would likely diminish the number of new subdivision-type developments more suitable for being served with centralized wastewater treatment.

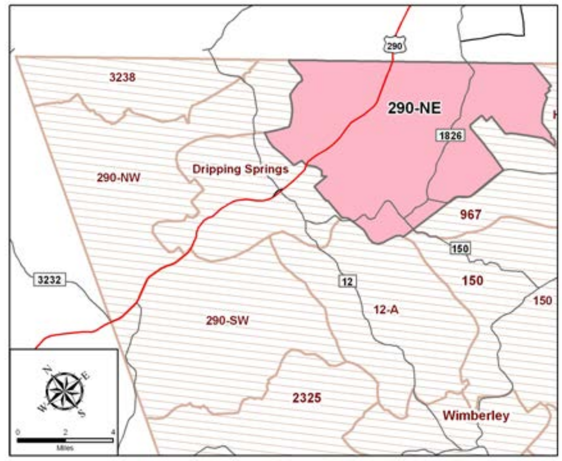
TABLE 4.3-9
WATER MANAGEMENT PLAN
PLANNING AREA CITY OF DRIPPING SPRINGS
SCENARIO HI

	Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS												
Planning Area	Est./Projected Population	3,690	5,816	7,689	8,317	8,944	9,572	10,200	10,828	11,456	12,084	12,712
	Annual Growth Rate	1.7%	9.5%	5.7%	1.6%	1.5%	1.4%	1.3%	1.2%	1.1%	1.1%	1.0%
Suburban	% of Planning Area Population	66.0%	69.4%	72.8%	76.2%	79.6%	83.0%	86.4%	89.8%	93.2%	96.6%	100.0%
	% of New Growth that is Suburban		95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%
	% Reduction in Base Water Use		0.50%	1.00%	1.50%	2.00%	2.50%	3.00%	3.50%	4.00%	4.50%	5.00%
	% of Growth on Rainwater Systems	5.0%	5.5%	6.0%	6.5%	7.0%	7.5%	8.0%	8.5%	9.0%	9.5%	10.0%
	% of Growth on LCRA 290 Line		25.0%	45.0%	51.8%							
	% of Growth on LCRA RR12 Line					35.0%	40.0%	45.0%	50.0%	55.0%	60.0%	60.0%
	% of Exist. Demand Converting to Central Wtr Syster	0.0%	0.0%	0.0%	0.0%	3.3%	3.5%	3.8%	4.0%	4.3%	4.5%	5.0%
Rural	% of Planning Area Population	34.0%	30.6%	27.2%	23.8%	20.4%	17.0%	13.6%	10.2%	6.8%	3.4%	0.0%
	% of New Growth that is Rural		5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
	% Reduction in Base Water Use		0.75%	1.50%	2.25%	3.00%	3.75%	4.50%	5.25%	6.00%	6.75%	7.50%
	% of Growth on Rainwater Systems	15.0%	16.5%	18.0%	19.5%	21.0%	22.5%	24.0%	25.5%	27.0%	28.5%	30.0%
SUBURBAN AREA												
Population - Inside City		2,435	4,036	5,597	6,337	7,120	7,945	8,813	9,724	10,677	11,673	12,712
	Base Per Capita Water Use (gpcd)	181	180	178	177	176	176	175	175	175	175	175
	Per Capita Water Use w/Addit. Conservation	181	202	232	245	235	227	220	214	209	204	200
Population - Outside City		-	527	1,781	2,553	2,567	2,575	2,583	2,583	2,583	2,583	2,583
	Base Per Capita Water Use (gpcd)	181	180	178	177	176	176	175	175	175	175	175
	Per Capita Water Use w/Addit. Conservation		202	232	245	235	227	220	214	209	204	200
Water Demand												
	Annual (ac-ft)	493.8	917.5	1,471.2	1,762.5	1,909.7	2,068.1	2,233.9	2,412.4	2,599.3	2,794.5	2,998.1
	Average Day (mgd)	**0.441**	**0.819**	**1.314**	**1.574**	**1.705**	**1.847**	**1.995**	**2.154**	**2.321**	**2.495**	**2.677**
Use of Existing Water Supply (mgd)												
	Rainwater Collection Systems	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022
	Trinity GW - Suburban	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034
	DS WSC	0.385	0.385	0.385	0.385	0.385	0.385	0.385	0.385	0.385	0.385	0.385
	LCRA US290 Pipeline	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Total	**0.441**	**0.441**	**0.441**	**0.441**	**0.441**	**0.441**	**0.441**	**0.441**	**0.441**	**0.441**	**0.441**
No Action Surplus or Unmet Need		**0.000**	**(0.378)**	**(0.873)**	**(1.133)**	**(1.264)**	**(1.406)**	**(1.554)**	**(1.713)**	**(1.880)**	**(2.054)**	**(2.236)**
Use of Additional Water Management Measures (mgd)												
	Additional Water Conservation		0.004	0.013	0.024	0.034	0.046	0.060	0.075	0.093	0.112	0.134
	Rainwater Collection Systems		0.021	0.050	0.067	0.077	0.087	0.099	0.113	0.128	0.144	0.162
	Trinity GW - Suburban		0.044	0.093	0.137	0.136	0.131	0.120	0.105	0.082	0.050	0.017
	DS WSC		0.215	0.399	0.453	0.506	0.557	0.607	0.655	0.702	0.748	0.792
	LCRA US290 Pipeline		0.095	0.317	0.452	0.452	0.452	0.452	0.452	0.452	0.452	0.452
	LCRA RR12 Pipeline		0.000	0.000	0.000	0.060	0.132	0.215	0.313	0.423	0.548	0.679
	Total	**0.000**	**0.378**	**0.873**	**1.133**	**1.264**	**1.406**	**1.554**	**1.713**	**1.880**	**2.054**	**2.236**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA												
Population		1,255	1,780	2,091	1,979	1,825	1,627	1,387	1,104	779	411	-
	Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
	Per Capita Water Use w/Addit. Conservation		118	116	114	113	111	109	107	105	104	-
Water Demand												
	Annual (ac-ft)	168.6	237.2	276.4	259.4	237.1	209.6	177.1	139.8	97.7	51.1	-
	Average Day (mgd)	**0.151**	**0.212**	**0.247**	**0.232**	**0.212**	**0.187**	**0.158**	**0.125**	**0.087**	**0.046**	**-**
Existing Water Supply (avg day mgd)												
	Rainwater Collection Systems	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023
	Trinity GW - Rural	0.128	0.128	0.128	0.128	0.128	0.128	0.128	0.128	0.128	0.128	0.128
	Total	**0.151**	**0.151**	**0.151**	**0.151**	**0.151**	**0.151**	**0.151**	**0.151**	**0.151**	**0.151**	**0.151**
No Action Surplus or Unmet Need		**0.000**	**(0.061)**	**(0.096)**	**(0.081)**	**(0.061)**	**(0.037)**	**(0.008)**	**0.026**	**0.063**	**0.105**	**0.151**
Use of Additional Water Management Measures (avg day mgd)												
	Additional Water Conservation		0.002	0.004	0.005	0.006	0.007	0.007	0.007	0.005	0.003	0.000
	Rainwater Collection Systems		0.010	0.016	0.013	0.009	0.004	(0.003)	(0.012)	(0.022)	(0.023)	(0.023)
	Trinity GW - Rural		0.050	0.076	0.062	0.046	0.026	0.004	(0.021)	(0.047)	(0.085)	(0.128)
	Total	**0.000**	**0.061**	**0.096**	**0.081**	**0.061**	**0.037**	**0.008**	**(0.026)**	**(0.063)**	**(0.105)**	**(0.151)**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA												
Water Service Demand (avg day mgd)		**0.591**	**1.031**	**1.560**	**1.805**	**1.917**	**2.034**	**2.153**	**2.279**	**2.408**	**2.541**	**2.677**
Use of Existing and New Supply (avg day mgd)												
	Additional Water Conservation	-	0.006	0.017	0.029	0.040	0.053	0.067	0.082	0.098	0.115	0.134
	Rainwater Collection Systems	0.045	0.076	0.112	0.125	0.130	0.136	0.140	0.145	0.150	0.166	0.184
	Trinity GW	0.162	0.256	0.332	0.362	0.343	0.319	0.286	0.247	0.198	0.127	0.052
	DS WSC	0.385	0.599	0.783	0.838	0.890	0.942	0.992	1.040	1.087	1.132	1.176
	LCRA US290 Pipeline	-	0.095	0.317	0.452	0.452	0.452	0.452	0.452	0.452	0.452	0.452
	LCRA RR12 Pipeline	-	-	-	-	0.060	0.132	0.215	0.313	0.423	0.548	0.679
	Total Use of Existing & New Supply	**0.591**	**1.031**	**1.560**	**1.805**	**1.917**	**2.034**	**2.153**	**2.279**	**2.408**	**2.541**	**2.677**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE 4.3-10
WASTEWATER MANAGEMENT PLAN
PLANNING AREA CITY OF DRIPPING SPRINGS
SCENARIO HI

Planning Area		Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS												
Planning Area	Est./Projected Population	3,690	5,816	7,689	8,317	8,944	9,572	10,200	10,828	11,456	12,084	12,712
	Annual Growth Rate	1.7%	9.5%	5.7%	1.6%	1.5%	1.4%	1.3%	1.2%	1.1%	1.1%	1.0%
Suburban	% of Planning Area Population	66.0%	69.4%	72.8%	76.2%	79.6%	83.0%	86.4%	89.8%	93.2%	96.6%	100.0%
	% of New Growth that is Suburban		95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%
	% of Demand served by Central Wastewater Systems	70.0%	72.0%	74.0%	76.0%	78.0%	80.0%	82.0%	84.0%	86.0%	88.0%	90.0%
Rural	% of Planning Area Population	34.0%	30.6%	27.2%	23.8%	20.4%	17.0%	13.6%	10.2%	6.8%	3.4%	0.0%
	% of New Growth that is Rural		5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
	% of Demand served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA												
Population		2,435	4,036	5,597	6,337	7,120	7,945	8,813	9,724	10,677	11,673	12,712
	Wastewater Return Flow (gpcd)	71	71	70	68	67	66	65	64	62	61	60
Suburban - Wastewater Service Demand												
	Average Day (mgd)	**0.172**	**0.286**	**0.390**	**0.433**	**0.478**	**0.524**	**0.571**	**0.618**	**0.666**	**0.714**	**0.763**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052
	No-Discharge WWTP	0.121	0.121	0.121	0.121	0.121	0.121	0.121	0.121	0.121	0.121	0.121
	Total	**0.172**	**0.172**	**0.172**	**0.172**	**0.172**	**0.172**	**0.172**	**0.172**	**0.172**	**0.172**	**0.172**
Suburban - No Action Surplus or Unmet Need		**0.000**	**(0.113)**	**(0.217)**	**(0.261)**	**(0.306)**	**(0.352)**	**(0.399)**	**(0.446)**	**(0.494)**	**(0.542)**	**(0.590)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.028	0.050	0.052	0.054	0.053	0.051	0.047	0.042	0.034	0.025
	No-Discharge WWTP		0.085	0.168	0.209	0.252	0.299	0.348	0.399	0.452	0.508	0.566
	Total	**0.000**	**0.113**	**0.217**	**0.261**	**0.306**	**0.352**	**0.399**	**0.446**	**0.494**	**0.542**	**0.590**
Suburban - Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA												
Population		1,255	1,780	2,091	1,979	1,825	1,627	1,387	1,104	779	411	-
	Wastewater Return Flow (gpcd)	71	71	70	69	69	68	67	66	65	64	64
Wastewater Service Demand												
	Average Day (mgd)	**0.089**	**0.127**	**0.147**	**0.138**	**0.125**	**0.110**	**0.093**	**0.073**	**0.051**	**0.026**	**0.000**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089
	Total	**0.089**	**0.089**	**0.089**	**0.089**	**0.089**	**0.089**	**0.089**	**0.089**	**0.089**	**0.089**	**0.089**
No Action Surplus or Unmet Need		**0.000**	**(0.037)**	**(0.058)**	**(0.048)**	**(0.036)**	**(0.021)**	**(0.004)**	**0.016**	**0.038**	**0.063**	**0.089**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.037	0.058	0.048	0.036	0.021	0.004	(0.016)	(0.038)	(0.063)	(0.089)
	Total	**0.000**	**0.037**	**0.058**	**0.048**	**0.036**	**0.021**	**0.004**	**(0.016)**	**(0.038)**	**(0.063)**	**(0.089)**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA												
Wastewater Service Demand (avg day mgd)		**0.262**	**0.412**	**0.537**	**0.571**	**0.604**	**0.635**	**0.664**	**0.691**	**0.717**	**0.741**	**0.763**
Use of Existing and Capacity (avg day mgd)												
	OSSFs	0.141	0.207	0.248	0.242	0.231	0.215	0.196	0.172	0.144	0.112	0.076
	No-Discharge WWTP	0.121	0.206	0.288	0.329	0.373	0.419	0.468	0.519	0.573	0.629	0.686
	Total Use of Existing & New Supply	**0.262**	**0.412**	**0.537**	**0.571**	**0.604**	**0.635**	**0.664**	**0.691**	**0.717**	**0.741**	**0.763**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

4.3.4 Planning Sub-Area – 290-NE



Location/Background. This Sub-Area includes land within along the Hwy 290 to Dripping Springs, alongside RR1826 and some land to the east of RR1826. Much of this area contains certificated service area of the LCRA West Travis County Regional Utilities. This Sub-Area is already about two-thirds subdivided and fairly well developed.

Population. As indicated in Table 4.3-11, the 2010 population of this Sub-Area is estimated at 15,234 persons. It is projected to increase to 47,475 persons by 2060 with the High Case trend forecast, an average annual growth rate of about 2.2% over the 50-year planning period. With the presence of existing and future water infrastructure, about 90% of the 2060 population is expected to locate in suburban-type developments.

WATER

Water Service Demands. As indicated in Table 4.3-11, the High Case forecast reflects an increase in total water demand in this Sub-Area from 1.953 mgd in 2010 to about 5.854 mgd by 2060, reflecting an average annual increase of 2.2%. Suburban demand for this Sub-Area is projected to increase from about 1.374 mgd in 2010 to around 4.968 mgd by 2060, an average annual increase of about 2.6%. Rural water use is projected to increase from about 0.580 mgd in 2010 to around 0.886 mgd by 2060, an average annual increase of about 0.9%.

Existing Water Supplies and Use of Supplies. The West Travis County Regional Utility of LCRA is the largest water supplier in this Sub-Area, currently delivering about 0.938 mgd to the area. Wells in the Trinity Aquifer Group comprise the largest groundwater supply in this area, although the water quality is relatively poor and the saturated thickness of the Aquifer in this area is thin, thus exposing it to periods of rapid drawdown, low water levels, and associated well and water supply problems. About 0.738 mgd of water demand is currently met by Trinity Aquifer supply, and a small portion (0.053 mgd) of current water use in the eastern portion of the Sub-Area is met from the Barton-Springs portion of the Edwards Aquifer. It is assumed that about 0.224 mgd or 11.5% of existing local water needs are met through rainwater collection systems. There are many individual on-site systems still present in the LCRA service area, a legacy of the land development occurring before surface water supplies were available and only portions of some existing developments being currently served.

Additional Water Needs. Existing supplies from various sources are meeting current water demands. As growth occurs over time, it is forecast that additional water needs of suburban and rural portions of this Sub-Area will range from 0.389 mgd in 2015 to 3.901 mgd by 2060.

Water Management Recommendations. Additional water conservation and additional rainwater collection systems are first expected to meet a portion of the Sub-Area's increased water demand over time. As new development resumes after the current economic slowdown, it is anticipated that ultimately about 50% of growth will occur in new subdivisions that will access LCRA's Hwy 290 existing pipeline supply. It is also forecast that about 10% of existing demand will convert to the surface water supply over time. This will require pipeline extensions further into the study Sub-Area. In the longer-term, the increased demand for surface water in the northwestern County will exceed the capacity of the existing Hwy 290 pipeline, such that the construction of a new LCRA-RR12 pipeline will be needed to alleviate demands on the existing Hwy 290 pipeline and provide additional capacity from "looping" the transmission system with the new lines. The combination of these other water management measures could act to reduce pumping of the Trinity Aquifer by about two-thirds in this Sub-Area by 2060.

Sensitivity Analysis. In the Mid Case forecast, growth in this area was slowed, and suburban water use in this Sub-Area is projected to increase to only around 4.419 mgd by 2060, reflecting an average annual increase of about 2.4% versus a 2.6% average annual increase in the High Case Scenario. Rural water use is projected to increase to about 0.833 mgd by 2060, reflecting an average annual increase of about 0.7% versus a 0.9% average annual increase in the High Case Scenario. In the Mid Case Scenario, the same management recommendations are warranted as in the High Case Scenario, except the level of water use grows a little more slowly, the available capacity of the Hwy 290 pipeline would last longer and the timing of need of the companion RR-12 pipeline (which adds additional capacity to the Hwy 290 pipeline through looping) could be slowed, unless a growing backlogged developer demand for new water could speed additional action.

In the No Action Case forecast, growth in this area would still occur because of the existing unutilized contract commitment in the LCRA-Hwy 290 pipeline. However, longer-term growth would be slowed as a new LCRA-RR12 pipeline would not be built. Thus, suburban water use in this Sub-Area is projected to increase to only around 3.609 mgd by 2060, an average annual increase of about 1.9% versus 2.6% average annual increase in the High Case Scenario. Rural water use is projected to increase to about 0.754 mgd by 2060, reflecting an average annual increase of about 0.5% versus a 0.9% average annual increase in the High Case Scenario. Without a new LCRA-RR12 pipeline providing looping benefits and additional delivery capacity to the existing Hwy 290 pipeline, a greater reliance on water conservation, rainwater systems, and limited groundwater supplies would be realized in the long-term once the “stand-alone” capacity of the Hwy. 290 line is reached part-way through the planning period.

WASTEWATER

Wastewater Service Demands. As indicated in Table 4.3-12, the High Case forecast reflects an increase in total wastewater service demands in this Sub-Area from 1.090 mgd in 2010 to about 3.190 mgd by 2060, reflecting an average annual increase of 2.2%. Suburban wastewater service demands in this Sub-Area are projected to increase from 0.744 mgd in 2010 to about 2.649 mgd by 2060, reflecting an average annual increase of 2.6%. Rural wastewater service demands are projected to increase from 0.345 mgd in 2010 to about 0.541 mgd by 2060, reflecting an average annual increase of 0.9%.

Existing Wastewater Capacity and Use of Capacity. Currently, there is 0.950 mgd in several small permitted and constructed centralized WWTPs in this Sub-Area with estimated total current use of about 0.223 mgd. On-site sewerage facilities (OSSFs), however, are addressing an estimated 0.866 mgd of wastewater flows, the large majority of current wastewater service demand.

Unmet Wastewater Capacity Needs. Additional wastewater treatment needs are forecast for the suburban and rural portions of this Sub-Area ranging from 0.227 mgd in 2015 to 2.101 mgd by 2060.

Wastewater Management Recommendations. The suburban growth forecast for this Sub-Area is anticipated to have sufficiently high development densities (arising from allowances in the County’s subdivision ordinance for developments with imported water, community wells, or rainwater collection systems) to also accommodate centralized wastewater treatment. It is anticipated that this centralized wastewater treatment will be small subdivision-oriented (package) plants, rather than larger, regional-type plants that face more costly and problematic land application issues. These smaller centralized treatment facilities could accommodate up to 1.652 mgd of the Sub-Area’s total wastewater service demand by 2060 with the remainder 1.538 mgd of demand expected to be met by individual on-site septic systems.

Sensitivity Analysis. In the Mid Case and No Action scenarios, wastewater services demands are diminished in about the same proportions as the water demands described previously, and the development of both small centralized treatment plants and OSSFs would be slowed. In the No Action scenario, lack of construction of the potential RR-12 water pipeline at about 2015-2030, as it affects the ability of the existing Hwy 290 pipeline to expand service, would slow subdivision growth even further after that time and lessen the likelihood of centralized wastewater treatment.

TABLE 4.3-11
WATER MANAGEMENT PLAN
PLANNING AREA 290-NE
SCENARIO HI

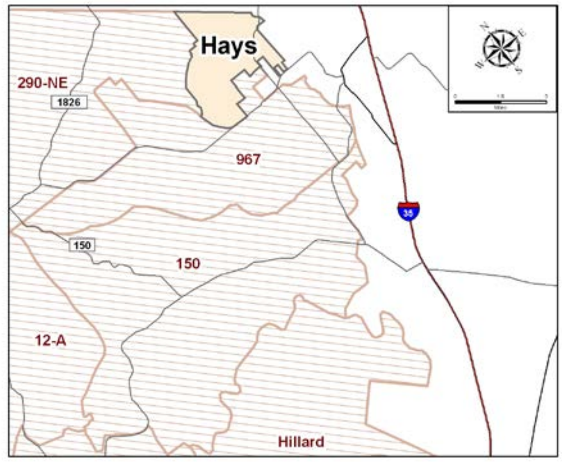
Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	15,234	18,402	21,633	24,863	28,093	31,323	34,554	37,784	41,014	44,244	47,475
Annual Growth Rate	5.0%	3.9%	3.3%	2.8%	2.5%	2.2%	2.0%	1.8%	1.7%	1.5%	1.4%
Suburban % of Planning Area Population	68.3%	72.0%	74.7%	76.7%	78.2%	79.4%	80.4%	81.3%	81.9%	82.5%	83.0%
% of New Growth that is Suburban		90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
% Reduction in Base Water Use		0.50%	1.00%	1.50%	2.00%	2.50%	3.00%	3.50%	4.00%	4.50%	5.00%
% of Growth on Rainwater Systems	10.0%	11.0%	12.0%	13.0%	14.0%	15.0%	16.0%	17.0%	18.0%	19.0%	20.0%
% of Growth on Central Water Systems (LCRA)		40.0%	40.0%	40.0%	35.0%	35.0%	35.0%	35.0%	30.0%	30.0%	20.0%
% of Exist. Demand Converting to Central Wtr Syster	68.3%	5.0%	5.5%	6.0%	6.5%	7.0%	7.5%	8.0%	8.5%	9.0%	0.0%
Rural % of Planning Area Population	31.7%	28.0%	25.3%	23.3%	21.8%	20.6%	19.6%	18.7%	18.1%	17.5%	17.0%
% of New Growth that is Rural		10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
% Reduction in Base Water Use		0.75%	1.50%	2.25%	3.00%	3.75%	4.50%	5.25%	6.00%	6.75%	7.50%
% of Growth on Rainwater Systems	15.0%	16.5%	18.0%	19.5%	21.0%	22.5%	24.0%	25.5%	27.0%	28.5%	30.0%
SUBURBAN AREA											
Population	10,405	13,257	16,164	19,071	21,978	24,886	27,793	30,700	33,607	36,514	39,422
Base Per Capita Water Use (gpcd)	132	131	129	128	127	127	126	126	126	126	126
Per Capita Water Use w/Addit. Conservation		130	128	126	124	123	122	122	121	120	120
Water Demand											
Annual (ac-ft)	1,538.5	1,937.8	2,335.7	2,734.4	3,126.6	3,526.2	3,922.6	4,332.9	4,743.3	5,153.6	5,563.9
Average Day (mgd)	**1.374**	**1.730**	**2.085**	**2.441**	**2.792**	**3.148**	**3.502**	**3.869**	**4.235**	**4.601**	**4.968**
Use of Existing Water Supply (mgd)											
Rainwater Collection Systems	0.137	0.137	0.137	0.137	0.137	0.137	0.137	0.137	0.137	0.137	0.137
Trinity GW - Suburban	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
Barton-Edwards GW	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020
LCRA US290 Pipeline	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938
Total	**1.374**	**1.374**	**1.374**	**1.374**	**1.374**	**1.374**	**1.374**	**1.374**	**1.374**	**1.374**	**1.374**
No Action Surplus or Unmet Need	**0.000**	**(0.357)**	**(0.712)**	**(1.068)**	**(1.418)**	**(1.775)**	**(2.129)**	**(2.495)**	**(2.861)**	**(3.228)**	**(3.594)**
Use of Additional Water Management Measures (mgd)											
Additional Water Conservation		0.009	0.021	0.037	0.056	0.079	0.105	0.135	0.169	0.207	0.248
Rainwater Collection Systems		0.039	0.082	0.128	0.177	0.231	0.287	0.350	0.416	0.485	0.558
Trinity GW - Suburban		(0.181)	(0.494)	(0.739)	(0.857)	(0.801)	(0.760)	(0.727)	(0.690)	(0.666)	(0.500)
Barton-Edwards GW		(0.013)	(0.036)	(0.053)	(0.062)	(0.058)	(0.055)	(0.052)	(0.050)	(0.048)	(0.036)
LCRA US290 Pipeline		0.211	0.429	0.654	0.866	1.087	1.314	1.552	1.778	2.012	2.085
City of Dripping Springs		0.095	0.317	0.452	0.452	0.452	0.452	0.452	0.452	0.452	0.452
City of Austin (80% of Spillar ranch)		0.197	0.393	0.590	0.786	0.786	0.786	0.786	0.786	0.786	0.786
Total	**0.000**	**0.357**	**0.712**	**1.068**	**1.418**	**1.775**	**2.129**	**2.495**	**2.861**	**3.228**	**3.594**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	4,829	5,146	5,469	5,792	6,115	6,438	6,761	7,084	7,407	7,730	8,053
Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
Per Capita Water Use w/Addit. Conservation		118	116	114	113	111	109	107	105	104	102
Water Demand											
Annual (ac-ft)	649.1	685.9	722.9	759.1	794.6	829.3	863.4	896.7	929.3	961.1	992.3
Average Day (mgd)	**0.580**	**0.612**	**0.645**	**0.678**	**0.709**	**0.740**	**0.771**	**0.801**	**0.830**	**0.858**	**0.886**
Existing Water Supply (avg day mgd)											
Rainwater Collection Systems	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087
Trinity GW - Rural	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
Barton-Edwards GW	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033
Total	**0.580**	**0.580**	**0.580**	**0.580**	**0.580**	**0.580**	**0.580**	**0.580**	**0.580**	**0.580**	**0.580**
No Action Surplus or Unmet Need	**0.000**	**(0.033)**	**(0.066)**	**(0.098)**	**(0.130)**	**(0.161)**	**(0.191)**	**(0.221)**	**(0.250)**	**(0.279)**	**(0.306)**
Use of Additional Water Management Measures (avg day mgd)											
Additional Water Conservation		0.005	0.010	0.015	0.021	0.028	0.035	0.042	0.050	0.058	0.066
Rainwater Collection Systems		0.005	0.011	0.018	0.024	0.031	0.039	0.046	0.054	0.062	0.070
Trinity GW - Rural		0.021	0.042	0.061	0.079	0.095	0.110	0.124	0.136	0.148	0.158
Barton-Edwards GW		0.002	0.003	0.004	0.006	0.007	0.008	0.009	0.010	0.011	0.011
Total	**0.000**	**0.033**	**0.066**	**0.098**	**0.130**	**0.161**	**0.191**	**0.221**	**0.250**	**0.279**	**0.306**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Water Service Demand (avg day mgd)	**1.953**	**2.343**	**2.731**	**3.119**	**3.501**	**3.889**	**4.273**	**4.669**	**5.065**	**5.460**	**5.854**
Use of Existing and New Supply (avg day mgd)											
Additional Water Conservation	-	0.013	0.031	0.052	0.077	0.106	0.140	0.177	0.219	0.265	0.315
Rainwater Collection Systems	0.224	0.269	0.318	0.370	0.426	0.486	0.550	0.620	0.694	0.772	0.853
Trinity GW	0.738	0.578	0.285	0.060	(0.041)	0.031	0.087	0.134	0.184	0.219	0.396
Barton-Edwards GW	0.053	0.042	0.021	0.004	(0.003)	0.002	0.006	0.010	0.013	0.016	0.029
LCRA US290 Pipeline	0.938	1.150	1.367	1.592	1.804	2.025	2.252	2.490	2.717	2.950	3.023
City of Dripping Springs	-	0.095	0.317	0.452	0.452	0.452	0.452	0.452	0.452	0.452	0.452
City of Austin (80% of Spillar ranch)	-	0.197	0.393	0.590	0.786	0.786	0.786	0.786	0.786	0.786	0.786
Total Use of Existing & New Supply	**1.953**	**2.343**	**2.731**	**3.119**	**3.501**	**3.889**	**4.273**	**4.669**	**5.065**	**5.460**	**5.854**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE 4.3-12
WASTEWATER MANAGEMENT PLAN
PLANNING AREA 290-NE
SCENARIO HI

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	15,234	18,402	21,633	24,863	28,093	31,323	34,554	37,784	41,014	44,244	47,475
Annual Growth Rate	5.0%	3.9%	3.3%	2.8%	2.5%	2.2%	2.0%	1.8%	1.7%	1.5%	1.4%
Suburban % of Planning Area Population	68.3%	72.0%	74.7%	76.7%	78.2%	79.4%	80.4%	81.3%	81.9%	82.5%	83.0%
% of New Growth that is Suburban		90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
% of Growth served by Central Wastewater Systems		75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%
Rural % of Planning Area Population	31.7%	28.0%	25.3%	23.3%	21.8%	20.6%	19.6%	18.7%	18.1%	17.5%	17.0%
% of New Growth that is Rural		10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA											
Population	10,405	13,257	16,164	19,071	21,978	24,886	27,793	30,700	33,607	36,514	39,422
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand											
Average Day (mgd)	**0.744**	**0.948**	**1.148**	**1.346**	**1.540**	**1.732**	**1.921**	**2.107**	**2.291**	**2.471**	**2.649**
Existing Wastewater Treatment (mgd)											
OSSFs	0.521	0.521	0.521	0.521	0.521	0.521	0.521	0.521	0.521	0.521	0.521
No-Discharge WWTP	0.223	0.223	0.223	0.223	0.223	0.223	0.223	0.223	0.223	0.223	0.223
Total	**0.744**	**0.744**	**0.744**	**0.744**	**0.744**	**0.744**	**0.744**	**0.744**	**0.744**	**0.744**	**0.744**
Suburban - No Action Surplus or Unmet Need	**0.000**	**(0.204)**	**(0.404)**	**(0.601)**	**(0.796)**	**(0.988)**	**(1.177)**	**(1.363)**	**(1.546)**	**(1.727)**	**(1.905)**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.051	0.101	0.150	0.199	0.247	0.294	0.341	0.387	0.432	0.476
No-Discharge WWTP		0.153	0.303	0.451	0.597	0.741	0.883	1.022	1.160	**1.295**	1.429
Total	**0.000**	**0.204**	**0.404**	**0.601**	**0.796**	**0.988**	**1.177**	**1.363**	**1.546**	**1.727**	**1.905**
Suburban - Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	4,829	5,146	5,469	5,792	6,115	6,438	6,761	7,084	7,407	7,730	8,053
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Wastewater Service Demand											
Average Day (mgd)	**0.345**	**0.368**	**0.389**	**0.409**	**0.429**	**0.448**	**0.467**	**0.486**	**0.505**	**0.523**	**0.541**
Existing Wastewater Treatment (mgd)											
OSSFs	0.345	0.345	0.345	0.345	0.345	0.345	0.345	0.345	0.345	0.345	0.345
Total	**0.345**	**0.345**	**0.345**	**0.345**	**0.345**	**0.345**	**0.345**	**0.345**	**0.345**	**0.345**	**0.345**
No Action Surplus or Unmet Need	**0.000**	**(0.023)**	**(0.043)**	**(0.063)**	**(0.083)**	**(0.103)**	**(0.122)**	**(0.141)**	**(0.159)**	**(0.178)**	**(0.196)**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.023	0.043	0.063	0.083	0.103	0.122	0.141	0.159	0.178	0.196
Total	**0.000**	**0.023**	**0.043**	**0.063**	**0.083**	**0.103**	**0.122**	**0.141**	**0.159**	**0.178**	**0.196**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Wastewater Service Demand (avg day mgd)	**1.090**	**1.316**	**1.537**	**1.754**	**1.969**	**2.180**	**2.388**	**2.593**	**2.796**	**2.994**	**3.190**
Use of Existing and Capacity (avg day mgd)											
OSSFs	0.866	0.940	1.010	1.080	1.148	1.216	1.282	1.348	1.412	1.476	1.538
No-Discharge WWTP	0.223	0.376	0.526	0.674	0.820	0.964	1.106	1.246	1.383	1.519	1.652
Total Use of Existing & New Supply	**1.090**	**1.316**	**1.537**	**1.754**	**1.969**	**2.180**	**2.388**	**2.593**	**2.796**	**2.994**	**3.190**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

4.3.5 Planning Sub-Area – Hays

Location/Background. This Sub-Area includes land within and around the community of Hays in the northeastern portion of the County study area. A large portion of this Sub-Area is certificated for water service by Hays, but some remaining portions are served by other small utilities. This Sub-Area is about two-third subdivided and fairly intensely developed.



Population. As indicated in Table 4.3-13, the 2010 population of this Sub-Area is estimated at 4,443 persons. It is projected to increase to 12,008 persons by 2060 with the High Case trend forecast, an average annual growth rate of about 2.0% over the 50-year planning period. With the presence of existing and future water infrastructure, about 92% of the 2060 population is expected to locate in suburban-type developments.

WATER

Water Service Demands. As indicated in Table 4.3-13, the High Case forecast reflects an increase in total water demand in this Sub-Area from 0.584 mgd in 2010 to about 1.498 mgd by 2060, reflecting an average annual increase of 1.9%. Suburban demand for this Sub-Area is projected to increase from about 0.561 mgd in 2010 to around 1.394 mgd by 2060, an average annual increase of about 1.8%. Rural water use is projected to increase from about 0.023 mgd in 2010 to around 0.104 mgd by 2060, an average annual increase of about 3.1%.

Existing Water Supplies and Use of Supplies. The Barton-Edwards segment of the Edwards Aquifer is the main source of water supply in this Sub-Area with current aquifer demands at about 0.554 mgd. The existing Barton-Edwards supplies are essentially fully permitted (from a more firm yield perspective preferred by municipal users). Domestic wells are exempt from permitting, but do not comprise a noticeable portion of use in this area. Given the presence of developable groundwater for domestic wells, it is assumed that only about 0.030 mgd or 5.2% of current needs are met with rainwater collection systems.

Additional Water Needs. Existing supplies from various sources are meeting current water demands. As growth occurs over time, it is forecast that additional water needs of suburban and rural portions of this Sub-Area will range from 0.121 mgd in 2015 to 0.914 mgd by 2060.

Water Management Recommendations. Additional water conservation and additional rainwater collection systems are first expected to meet a portion of the Sub-Area's increased water demand over time. It is anticipated that through use of current permits and expansion of exempt domestic pumping, Barton-Edwards groundwater will continue to meet the remainder of increased water demand until alternative supplies are developed. It is likely that a larger scale project to desalinate brackish groundwater supplies (recommended in the Region K water plan) would take about 10 years to implement and could begin providing service around 2020. Another supply that is likely less expensive is the development of Middle and Lower Trinity groundwater that lies below the Edwards Aquifer. This is also recommended to meet a portion of the water needs in this area.

Sensitivity Analysis. In the Mid Case forecast, growth in this area was slowed, and suburban water use in this Sub-Area is projected to increase to only around 1.102 mgd by 2060, reflecting an average annual increase of about 1.4% versus a 1.8% average annual increase in the High Case Scenario. Rural water use is projected to increase to about 0.076 mgd by 2060, reflecting an average annual increase of about 2.4% versus a 3.1% average annual increase in the High Case Scenario. In the Mid Case Scenario, the same management recommendations are warranted as in the High Case Scenario, except the level of water use grows a little more slowly and timing of implementation of brackish water desalination supplies could be delayed.

In the No Action Case forecast, growth in this area would be even more slowed from lack of new imported water supplies. Thus, suburban water use in this Sub-Area is projected to increase to only around 0.819 mgd by 2060, an average annual increase of about 0.8% versus 1.8% average annual increase in the High Case Scenario. Rural water use is projected to increase to about 0.048 mgd by 2060, reflecting an average annual increase of about 1.5% versus a 3.1% average annual increase in the High Case Scenario. Without the additional brackish water desalination supplies, a greater reliance on water conservation, rainwater systems, and exempt domestic groundwater pumping of the Edwards would be realized in the long-term.

WASTEWATER

Wastewater Service Demands. As indicated in Table 4.3-14, the High Case forecast reflects an increase in total wastewater service demands in this Sub-Area from 0.318 mgd in 2010 to about 0.807 mgd by 2060, reflecting an average annual increase of 1.9%. Suburban wastewater service demands in this Sub-Area are projected to increase from 0.304 mgd in 2010 to about 0.743 mgd by 2060, reflecting an average annual increase of 1.8%. Rural wastewater service demands are projected to increase from 0.014 mgd in 2010 to about 0.064 mgd by 2060, reflecting an average annual increase of 3.1%.

Existing Wastewater Capacity and Use of Capacity. Currently, there is no significant centralized wastewater treatment capacity in this Sub-Area with on-site sewerage facilities (OSSFs) meeting almost all service demands.

Unmet Wastewater Capacity Needs. Additional wastewater treatment needs are forecast for the suburban and rural portions of this Sub-Area ranging from 0.070 mgd in 2015 to 0.489 mgd by 2060.

Wastewater Management Recommendations. The suburban growth forecast for this Sub-Area is anticipated to have sufficiently high development densities (arising from allowances in the County's subdivision ordinance for developments with imported water, community wells, or rainwater collection systems) to also accommodate centralized wastewater treatment. It is anticipated that this centralized wastewater treatment will be small subdivision-oriented (package) plants, rather than larger, regional-type plants that face more costly and problematic land application issues. These smaller centralized treatment facilities could accommodate up to 0.220 mgd of the Sub-Area's total wastewater service demand by 2060 with the remainder 0.587 mgd of demand expected to be met by individual on-site septic systems.

Sensitivity Analysis. In the Mid Case and No Action scenarios, wastewater services demands are diminished in about the same proportions as the water demands described previously.

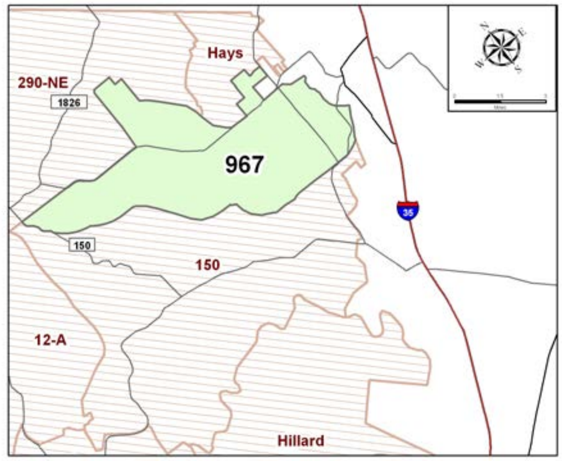
TABLE 4.3-13
WATER MANAGEMENT PLAN
PLANNING AREA **HAYS AREA**
SCENARIO **HI**

	Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS												
Planning Area	Est./Projected Population	4,443	5,427	6,158	6,890	7,621	8,352	9,083	9,814	10,545	11,276	12,008
	Annual Growth Rate	2.0%	4.1%	2.6%	2.3%	2.0%	1.8%	1.7%	1.6%	1.4%	1.3%	1.3%
Suburban	% of Planning Area Population	95.7%	94.7%	94.1%	93.7%	93.3%	93.0%	92.8%	92.6%	92.4%	92.2%	92.1%
	% of New Growth that is Suburban		90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
	% Reduction in Base Water Use		0.50%	1.00%	1.50%	2.00%	2.50%	3.00%	3.50%	4.00%	4.50%	5.00%
	% of Growth on Rainwater Systems	5.0%	5.5%	6.0%	6.5%	7.0%	7.5%	8.0%	8.5%	9.0%	9.5%	10.0%
	% of Growth on Central Water Systems			30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%
	% of Exist. Demand Converting to Central Wtr Systems			2.8%	3.0%	3.3%	3.5%	3.8%	4.0%	4.3%	4.5%	5.0%
Rural	% of Planning Area Population	4.3%	5.3%	5.9%	6.3%	6.7%	7.0%	7.2%	7.4%	7.6%	7.8%	7.9%
	% of New Growth that is Rural		10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
	% Reduction in Base Water Use		0.75%	1.50%	2.25%	3.00%	3.75%	4.50%	5.25%	6.00%	6.75%	7.50%
	% of Growth on Rainwater Systems	10.0%	11.0%	12.0%	13.0%	14.0%	15.0%	16.0%	17.0%	18.0%	19.0%	20.0%
SUBURBAN AREA												
Population		4,252	5,138	5,796	6,454	7,112	7,770	8,428	9,086	9,744	10,402	11,060
	Base Per Capita Water Use (gpcd)	132	131	129	128	127	127	126	126	126	126	126
	Per Capita Water Use w/Addit. Conservation		130	128	126	124	123	122	122	121	120	120
Water Demand												
	Annual (ac-ft)	628.7	751.0	837.5	925.3	1,011.7	1,101.0	1,189.5	1,282.4	1,375.2	1,468.1	1,561.0
	Average Day (mgd)	**0.561**	**0.671**	**0.748**	**0.826**	**0.903**	**0.983**	**1.062**	**1.145**	**1.228**	**1.311**	**1.394**
Use of Existing Water Supply (mgd)												
	Rainwater Collection Systems	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028
	Barton-Edwards GW	0.533	0.533	0.533	0.533	0.533	0.533	0.533	0.533	0.533	0.533	0.533
	Total	**0.561**	**0.561**	**0.561**	**0.561**	**0.561**	**0.561**	**0.561**	**0.561**	**0.561**	**0.561**	**0.561**
No Action Surplus or Unmet Need		**0.000**	**(0.109)**	**(0.186)**	**(0.265)**	**(0.342)**	**(0.422)**	**(0.501)**	**(0.584)**	**(0.667)**	**(0.749)**	**(0.832)**
Use of Additional Water Management Measures (mgd)												
	Additional Water Conservation		0.003	0.007	0.012	0.018	0.025	0.032	0.040	0.049	0.059	0.070
	Rainwater Collection Systems		0.006	0.011	0.016	0.021	0.027	0.033	0.040	0.048	0.056	0.064
	Barton-Edwards GW		0.080	0.090	0.098	0.102	0.106	0.107	0.107	0.105	0.100	0.091
	BE Brackish Water Desal		0.000	0.039	0.079	0.120	0.164	0.209	0.256	0.305	0.355	0.408
	Trinity GW - Suburban		0.020	0.040	0.060	0.080	0.100	0.120	0.140	0.160	0.180	0.200
	Total	**0.000**	**0.089**	**0.146**	**0.205**	**0.262**	**0.322**	**0.381**	**0.444**	**0.507**	**0.569**	**0.632**
Surplus or Unmet Need		**0.000**	**0.020**	**0.040**	**0.060**	**0.080**	**0.100**	**0.120**	**0.140**	**0.160**	**0.180**	**0.200**
RURAL AREA												
Population		191	289	363	436	509	582	655	728	801	874	947
	Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
	Per Capita Water Use w/Addit. Conservation		118	116	114	113	111	109	107	105	104	102
Water Demand												
	Annual (ac-ft)	25.7	38.6	47.9	57.1	66.1	75.0	83.6	92.2	100.5	108.7	116.7
	Average Day (mgd)	**0.023**	**0.034**	**0.043**	**0.051**	**0.059**	**0.067**	**0.075**	**0.082**	**0.090**	**0.097**	**0.104**
Existing Water Supply (avg day mgd)												
	Rainwater Collection Systems	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
	Barton-Edwards GW	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021
	Total	**0.023**	**0.023**	**0.023**	**0.023**	**0.023**	**0.023**	**0.023**	**0.023**	**0.023**	**0.023**	**0.023**
No Action Surplus or Unmet Need		**0.000**	**(0.012)**	**(0.020)**	**(0.028)**	**(0.036)**	**(0.044)**	**(0.052)**	**(0.059)**	**(0.067)**	**(0.074)**	**(0.081)**
Use of Additional Water Management Measures (avg day mgd)												
	Additional Water Conservation		0.000	0.001	0.001	0.002	0.003	0.003	0.004	0.005	0.007	0.008
	Rainwater Collection Systems		0.001	0.002	0.003	0.004	0.006	0.007	0.008	0.010	0.011	0.012
	Barton-Edwards GW		0.010	0.017	0.024	0.030	0.036	0.042	0.047	0.052	0.057	0.061
	Total	**0.000**	**0.012**	**0.020**	**0.028**	**0.036**	**0.044**	**0.052**	**0.059**	**0.067**	**0.074**	**0.081**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA												
Water Service Demand (avg day mgd)		**0.584**	**0.705**	**0.791**	**0.877**	**0.962**	**1.050**	**1.137**	**1.227**	**1.318**	**1.408**	**1.498**
Use of Existing and New Supply (avg day mgd)												
	Additional Water Conservation	-	0.004	0.008	0.014	0.020	0.027	0.035	0.044	0.055	0.066	0.078
	Rainwater Collection Systems	0.030	0.038	0.043	0.049	0.056	0.063	0.071	0.079	0.088	0.097	0.107
	Barton-Edwards GW	0.554	0.644	0.661	0.675	0.686	0.696	0.702	0.708	0.711	0.710	0.706
	BE Brackish Water Desal	-	-	0.039	0.079	0.120	0.164	0.209	0.256	0.305	0.355	0.408
	Trinity GW - Suburban	-	0.020	0.040	0.060	0.080	0.100	0.120	0.140	0.160	0.180	0.200
	Total Use of Existing & New Supply	**0.584**	**0.705**	**0.791**	**0.877**	**0.962**	**1.050**	**1.137**	**1.227**	**1.318**	**1.408**	**1.498**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE 4.3-14
WASTEWATER MANAGEMENT PLAN
PLANNING AREA HAYS AREA
SCENARIO HI

	Estimated	Projected									
Planning Area	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**	**2055**	**2060**
PLANNING FACTORS											
Planning Area Est./Projected Population	4,443	5,427	6,158	6,890	7,621	8,352	9,083	9,814	10,545	11,276	12,008
Annual Growth Rate	2.0%	4.1%	2.6%	2.3%	2.0%	1.8%	1.7%	1.6%	1.4%	1.3%	1.3%
Suburban % of Planning Area Population	95.7%	94.7%	94.1%	93.7%	93.3%	93.0%	92.8%	92.6%	92.4%	92.2%	92.1%
% of New Growth that is Suburban		90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
% of Growth served by Central Wastewater Systems		50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Rural % of Planning Area Population	4.3%	5.3%	5.9%	6.3%	6.7%	7.0%	7.2%	7.4%	7.6%	7.8%	7.9%
% of New Growth that is Rural		10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA											
Population	4,252	5,138	5,796	6,454	7,112	7,770	8,428	9,086	9,744	10,402	11,060
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand											
Average Day (mgd)	**0.304**	**0.367**	**0.412**	**0.455**	**0.498**	**0.541**	**0.583**	**0.624**	**0.664**	**0.704**	**0.743**
Existing Wastewater Treatment (mgd)											
OSSFs	0.304	0.304	0.304	0.304	0.304	0.304	0.304	0.304	0.304	0.304	0.304
No-Discharge WWTP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	**0.304**	**0.304**	**0.304**	**0.304**	**0.304**	**0.304**	**0.304**	**0.304**	**0.304**	**0.304**	**0.304**
Suburban - No Action Surplus or Unmet Need	**0.000**	**(0.063)**	**(0.108)**	**(0.151)**	**(0.194)**	**(0.237)**	**(0.278)**	**(0.320)**	**(0.360)**	**(0.400)**	**(0.439)**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.032	0.054	0.076	0.097	0.118	0.139	0.160	0.180	0.200	0.220
No-Discharge WWTP		0.032	0.054	0.076	0.097	0.118	0.139	0.160	0.180	0.200	0.220
Total	**0.000**	**0.063**	**0.108**	**0.151**	**0.194**	**0.237**	**0.278**	**0.320**	**0.360**	**0.400**	**0.439**
Suburban - Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	191	289	363	436	509	582	655	728	801	874	947
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Wastewater Service Demand											
Average Day (mgd)	**0.014**	**0.021**	**0.026**	**0.031**	**0.036**	**0.040**	**0.045**	**0.050**	**0.055**	**0.059**	**0.064**
Existing Wastewater Treatment (mgd)											
OSSFs	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014
Total	**0.014**	**0.014**	**0.014**	**0.014**	**0.014**	**0.014**	**0.014**	**0.014**	**0.014**	**0.014**	**0.014**
No Action Surplus or Unmet Need	**0.000**	**(0.007)**	**(0.012)**	**(0.017)**	**(0.022)**	**(0.027)**	**(0.032)**	**(0.036)**	**(0.041)**	**(0.046)**	**(0.050)**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.007	0.012	0.017	0.022	0.027	0.032	0.036	0.041	0.046	0.050
Total	**0.000**	**0.007**	**0.012**	**0.017**	**0.022**	**0.027**	**0.032**	**0.036**	**0.041**	**0.046**	**0.050**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Wastewater Service Demand (avg day mgd)	**0.318**	**0.388**	**0.437**	**0.486**	**0.534**	**0.581**	**0.628**	**0.674**	**0.719**	**0.763**	**0.807**
Use of Existing and Capacity (avg day mgd)											
OSSFs	0.318	0.356	0.384	0.410	0.437	0.463	0.489	0.514	0.539	0.563	0.587
No-Discharge WWTP	-	0.032	0.054	0.076	0.097	0.118	0.139	0.160	0.180	0.200	0.220
Total Use of Existing & New Supply	**0.318**	**0.388**	**0.437**	**0.486**	**0.534**	**0.581**	**0.628**	**0.674**	**0.719**	**0.763**	**0.807**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

4.3.6 Planning Sub-Area – 967



Location/Background. This Sub-Area includes land alongside RR 967 between Buda and land currently served on the western end by LCRA. This Sub-Area is only about one-tenth subdivided and lightly developed. Noticeable portions of this Sub-Area have been dedicated to various forms of conservation reserves.

Population. As indicated in Table 4.3-15, the 2010 population of this Sub-Area is estimated at 3,138 persons. It is projected to increase to 7,964 persons by 2060 with the High Case trend forecast, an average annual growth rate of about 1.9% over the 50-year planning period. With the presence of anticipated water infrastructure, about 82% of the 2060 population is expected to locate in suburban-type developments.

WATER

Water Service Demands. As indicated in Table 4.3-15, the High Case forecast reflects an increase in total water demand in this Sub-Area from 0.403 mgd in 2010 to about 1.034 mgd by 2060, reflecting an average annual increase of 1.9%. Suburban demand for this Sub-Area is projected to increase from about 0.290 mgd in 2010 to around 0.824 mgd by 2060, an average annual increase of about 2.1%. Rural water use is projected to increase from about 0.113 mgd in 2010 to around 0.210 mgd by 2060, an average annual increase of about 1.2%.

Existing Water Supplies and Use of Supplies. The Barton-Edwards segment of the Edwards Aquifer is the main source of water supply in this Sub-Area with current aquifer demands at about 0.307 mgd. The existing Barton-Edwards supplies are essentially fully permitted (from a more firm yield perspective preferred by municipal users). A portion of the western reach of this Sub-Area is supplied from the Trinity Aquifer with current use estimated at 0.070 mgd. Domestic wells in both groundwater districts are exempt from permitting, but do not comprise a noticeable portion of overall aquifer use. As productive exempt domestic wells can be developed in the Edwards, it is assumed that only about 0.026 mgd or 6.4% of current needs are met with rainwater collection systems.

Additional Water Needs. Existing supplies from various sources are meeting current water demands. As growth occurs over time, it is forecast that additional water needs of suburban and rural portions of this Sub-Area will range from 0.014 mgd in 2015 to 0.631 mgd by 2060.

Water Management Recommendations. Additional water conservation and additional rainwater collection systems are first expected to meet a portion of the Sub-Area's increased water demand over time. It is anticipated that through use of current permits and expansion of exempt domestic pumping, Barton-Edwards and Trinity groundwater will continue to meet the remainder of increased water demand until alternative supplies are developed. While much of this Sub-Area has been placed into conservation reserve land, there is a planned large development that anticipates receiving service from the LCRA Hwy 290/RR1826 pipeline facilities. It is unlikely that the existing LCRA facilities would be extended without some amount of oversizing that would allow for additional service capability in this Sub-Area. It is also possible that the City of Buda will increase its ETJ over time and may extend some municipal service into the eastern portions of this Sub-Area, although this was not accounted for. The combination of the recommended water management measures, if implemented, eventually could act to reduce pumping of the Edwards and Trinity aquifers in this Sub-Area after about 2035.

Sensitivity Analysis. In the Mid Case forecast, growth in this area was slowed, and suburban water use in this Sub-Area is projected to increase to only around 0.742 mgd by 2060, reflecting an average annual increase of about 1.9% versus a 2.1% average annual increase in the High Case Scenario. Rural water use is projected to increase to about 0.194 mgd by 2060, reflecting an average annual increase of about 1.1% versus a 1.2% average annual increase in the High Case Scenario. In the Mid Case Scenario, the same management recommendations are warranted as in the High Case Scenario, except the level of water use grows a little more slowly and timing of implementation of the LCRA extension could be delayed.

In the No Action Case forecast, growth in this area would be even more slowed from lack of any new water supply beyond a pending LCRA contract commitment to a project on RR 967. Thus, suburban water use in this Sub-Area is projected to increase to only around 0.670 mgd by 2060, an average annual increase of about 1.7% versus 2.1% average annual increase in the High Case Scenario. Rural water use is projected to increase to about 0.180 mgd by 2060, reflecting an average annual increase of about 0.9% versus a 1.2% average annual increase in the High Case Scenario. Without the additional imported water supply, a greater reliance on water conservation, rainwater systems, and exempt domestic groundwater pumping of the Edwards would be realized in the long-term.

WASTEWATER

Wastewater Service Demands. As indicated in Table 4.3-16, the High Case forecast reflects an increase in total wastewater service demands in this Sub-Area from 0.224 mgd in 2010 to about 0.568 mgd by 2060, reflecting an average annual increase of 1.9%. Suburban wastewater service demands in this Sub-Area are projected to increase from 0.157 mgd in 2010 to about 0.440 mgd by 2060, reflecting an average annual increase of 2.1%. Rural wastewater service demands are projected to increase from 0.067 mgd in 2010 to about 0.128 mgd by 2060, reflecting an average annual increase of 1.3%.

Existing Wastewater Capacity and Use of Capacity. Currently, there is only one significant centralized wastewater treatment permit in this Sub-Area totaling 0.330 mgd with on-site sewerage facilities (OSSFs) meeting all remaining service demands.

Unmet Wastewater Capacity Needs. Additional wastewater treatment needs are forecast for the suburban and rural portions of this Sub-Area ranging from 0.010 mgd in 2015 to 0.343 mgd by 2060.

Wastewater Management Recommendations. The suburban growth forecast for this Sub-Area is anticipated to have sufficiently high development densities (arising from allowances in the County's subdivision ordinance for developments with imported water, community wells, or rainwater collection systems) to also accommodate centralized wastewater treatment. It is anticipated that this centralized wastewater treatment will be small subdivision-oriented (package) plants, rather than larger, regional-type plants that face more costly and problematic land application issues. These smaller centralized treatment facilities could accommodate up to 0.212 mgd of the Sub-Area's total wastewater service demand by 2060 with the remainder 0.356 mgd of demand expected to be met by individual on-site septic systems.

Sensitivity Analysis. In the Mid Case and No Action scenarios, wastewater services demands are diminished slightly in about the same proportions as the water demands described previously. With the likely LCRA commitment of surface water to a development located in this study area and the extent of projected growth, the water supply and wastewater forecasts for both the MID Case and No Action scenarios will not be much affected by any limitation of water supply.

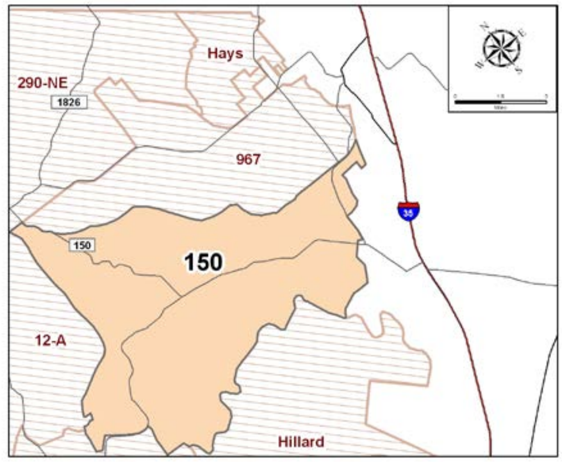
TABLE 4.3-15
WATER MANAGEMENT PLAN
PLANNING AREA 967
SCENARIO HI

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	3,138	3,270	3,792	4,313	4,835	5,357	5,878	6,400	6,921	7,443	7,964
Annual Growth Rate	6.5%	0.8%	3.0%	2.6%	2.3%	2.1%	1.9%	1.7%	1.6%	1.5%	1.4%
Suburban % of Planning Area Population	70.0%	70.8%	73.5%	75.5%	77.0%	78.3%	79.3%	80.2%	80.9%	81.6%	82.1%
% of New Growth that is Suburban		90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
% Reduction in Base Water Use		0.50%	1.00%	1.50%	2.00%	2.50%	3.00%	3.50%	4.00%	4.50%	5.00%
% of Growth on Rainwater Systems	5.0%	5.5%	6.0%	6.5%	7.0%	7.5%	8.0%	8.5%	9.0%	9.5%	10.0%
% of Growth on Central Water Systems			85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	0.0%
% of Exist. Demand Converting to Central Wtr Systems			2.8%	3.0%	3.3%	3.5%	3.8%	4.0%	4.3%	4.5%	0.0%
Rural % of Planning Area Population	30.0%	29.2%	26.5%	24.5%	23.0%	21.7%	20.7%	19.8%	19.1%	18.4%	17.9%
% of New Growth that is Rural		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
% Reduction in Base Water Use		0.75%	1.50%	2.25%	3.00%	3.75%	4.50%	5.25%	6.00%	6.75%	7.50%
% of Growth on Rainwater Systems	10.0%	11.0%	12.0%	13.0%	14.0%	15.0%	16.0%	17.0%	18.0%	19.0%	20.0%
SUBURBAN AREA											
Population	2,197	2,316	2,785	3,255	3,724	4,194	4,663	5,132	5,602	6,071	6,541
Base Per Capita Water Use (gpcd)	132	131	129	128	127	127	126	126	126	126	126
Per Capita Water Use w/Addit. Conservation		130	128	126	124	123	122	122	121	120	120
Water Demand											
Annual (ac-ft)	324.8	338.5	402.5	466.7	529.8	594.2	658.1	724.4	790.6	856.9	923.1
Average Day (mgd)	**0.290**	**0.302**	**0.359**	**0.417**	**0.473**	**0.531**	**0.588**	**0.647**	**0.706**	**0.765**	**0.824**
Use of Existing Water Supply (mgd)											
Rainwater Collection Systems	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015
Barton-Edwards GW	0.224	0.224	0.224	0.224	0.224	0.224	0.224	0.224	0.224	0.224	0.224
Trinity GW - Suburban	0.051	0.051	0.051	0.051	0.051	0.051	0.051	0.051	0.051	0.051	0.051
Total	**0.290**	**0.290**	**0.290**	**0.290**	**0.290**	**0.290**	**0.290**	**0.290**	**0.290**	**0.290**	**0.290**
No Action Surplus or Unmet Need	**0.000**	**(0.012)**	**(0.069)**	**(0.127)**	**(0.183)**	**(0.241)**	**(0.298)**	**(0.357)**	**(0.416)**	**(0.475)**	**(0.534)**
Use of Additional Water Management Measures (mgd)											
Additional Water Conservation		0.002	0.004	0.006	0.009	0.013	0.018	0.023	0.028	0.034	0.041
Rainwater Collection Systems		0.001	0.004	0.008	0.012	0.016	0.021	0.026	0.031	0.037	0.043
Barton-Edwards GW		0.008	0.004	(0.001)	(0.008)	(0.016)	(0.025)	(0.035)	(0.047)	(0.060)	(0.022)
Trinity GW - Suburban		0.002	0.001	(0.000)	(0.002)	(0.004)	(0.006)	(0.008)	(0.011)	(0.014)	(0.005)
LCRA US290 Pipeline		0.000	0.057	0.114	0.171	0.230	0.290	0.352	0.414	0.477	0.477
Total	**0.000**	**0.012**	**0.069**	**0.127**	**0.183**	**0.241**	**0.298**	**0.357**	**0.416**	**0.475**	**0.534**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	941	967	1,072	1,176	1,280	1,385	1,489	1,593	1,698	1,802	1,906
Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
Per Capita Water Use w/Addit. Conservation		118	116	114	113	111	109	107	105	104	102
Water Demand											
Annual (ac-ft)	126.5	129.0	141.7	154.1	166.4	178.4	190.1	201.7	213.0	224.0	234.9
Average Day (mgd)	**0.113**	**0.115**	**0.126**	**0.138**	**0.149**	**0.159**	**0.170**	**0.180**	**0.190**	**0.200**	**0.210**
Existing Water Supply (avg day mgd)											
Rainwater Collection Systems	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011
Barton-Edwards GW	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083
Trinity GW - Rural	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019
Total	**0.113**	**0.113**	**0.113**	**0.113**	**0.113**	**0.113**	**0.113**	**0.113**	**0.113**	**0.113**	**0.113**
No Action Surplus or Unmet Need	**0.000**	**(0.002)**	**(0.014)**	**(0.025)**	**(0.036)**	**(0.046)**	**(0.057)**	**(0.067)**	**(0.077)**	**(0.087)**	**(0.097)**
Use of Additional Water Management Measures (avg day mgd)											
Additional Water Conservation		0.001	0.002	0.003	0.004	0.006	0.008	0.009	0.011	0.014	0.016
Rainwater Collection Systems		0.000	0.002	0.003	0.005	0.006	0.008	0.010	0.011	0.013	0.015
Barton-Edwards GW		0.001	0.008	0.015	0.022	0.028	0.034	0.039	0.044	0.049	0.054
Trinity GW - Rural		0.000	0.002	0.003	0.005	0.006	0.008	0.009	0.010	0.011	0.012
Total	**0.000**	**0.002**	**0.014**	**0.025**	**0.036**	**0.046**	**0.057**	**0.067**	**0.077**	**0.087**	**0.097**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Water Service Demand (avg day mgd)	**0.403**	**0.417**	**0.486**	**0.554**	**0.622**	**0.690**	**0.757**	**0.827**	**0.896**	**0.965**	**1.034**
Use of Existing and New Supply (avg day mgd)											
Additional Water Conservation	-	0.002	0.005	0.009	0.014	0.019	0.025	0.032	0.040	0.048	0.057
Rainwater Collection Systems	0.026	0.027	0.031	0.037	0.042	0.048	0.054	0.061	0.068	0.076	0.084
Barton-Edwards GW	0.307	0.316	0.319	0.321	0.321	0.319	0.316	0.311	0.304	0.296	0.339
Trinity GW	0.070	0.072	0.073	0.073	0.073	0.073	0.072	0.071	0.070	0.068	0.077
LCRA US290 Pipeline	-	-	0.057	0.114	0.171	0.230	0.290	0.352	0.414	0.477	0.477
Total Use of Existing & New Supply	**0.403**	**0.417**	**0.486**	**0.554**	**0.622**	**0.690**	**0.757**	**0.827**	**0.896**	**0.965**	**1.034**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE 4.3-16
WASTEWATER MANAGEMENT PLAN
PLANNING AREA 967
SCENARIO HI

	Estimated	Projected									
Planning Area	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**	**2055**	**2060**
PLANNING FACTORS											
Planning Area Est./Projected Population	3,138	3,270	3,792	4,313	4,835	5,357	5,878	6,400	6,921	7,443	7,964
Annual Growth Rate	6.5%	0.8%	3.0%	2.6%	2.3%	2.1%	1.9%	1.7%	1.6%	1.5%	1.4%
Suburban % of Planning Area Population	70.0%	70.8%	73.5%	75.5%	77.0%	78.3%	79.3%	80.2%	80.9%	81.6%	82.1%
% of New Growth that is Suburban		90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
% of Growth served by Central Wastewater Systems		75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%
Rural % of Planning Area Population	30.0%	29.2%	26.5%	24.5%	23.0%	21.7%	20.7%	19.8%	19.1%	18.4%	17.9%
% of New Growth that is Rural		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA											
Population	2,197	2,316	2,785	3,255	3,724	4,194	4,663	5,132	5,602	6,071	6,541
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand											
Average Day (mgd)	**0.157**	**0.166**	**0.198**	**0.230**	**0.261**	**0.292**	**0.322**	**0.352**	**0.382**	**0.411**	**0.440**
Existing Wastewater Treatment (mgd)											
OSSFs	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157
No-Discharge WWTP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	**0.157**	**0.157**	**0.157**	**0.157**	**0.157**	**0.157**	**0.157**	**0.157**	**0.157**	**0.157**	**0.157**
Suburban - No Action Surplus or Unmet Need	**0.000**	**(0.009)**	**(0.041)**	**(0.073)**	**(0.104)**	**(0.135)**	**(0.165)**	**(0.195)**	**(0.225)**	**(0.254)**	**(0.282)**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.002	0.010	0.018	0.026	0.034	0.041	0.049	0.056	0.063	0.071
No-Discharge WWTP		0.006	0.031	**0.054**	0.078	0.101	0.124	0.146	0.169	0.190	0.212
Total	**0.000**	**0.009**	**0.041**	**0.073**	**0.104**	**0.135**	**0.165**	**0.195**	**0.225**	**0.254**	**0.282**
Suburban - Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	941	967	1,072	1,176	1,280	1,385	1,489	1,593	1,698	1,802	1,906
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Wastewater Service Demand											
Average Day (mgd)	**0.067**	**0.069**	**0.076**	**0.083**	**0.090**	**0.096**	**0.103**	**0.109**	**0.116**	**0.122**	**0.128**
Existing Wastewater Treatment (mgd)											
OSSFs	0.067	0.067	0.067	0.067	0.067	0.067	0.067	0.067	0.067	0.067	0.067
Total	**0.067**	**0.067**	**0.067**	**0.067**	**0.067**	**0.067**	**0.067**	**0.067**	**0.067**	**0.067**	**0.067**
No Action Surplus or Unmet Need	**0.000**	**(0.002)**	**(0.009)**	**(0.016)**	**(0.022)**	**(0.029)**	**(0.036)**	**(0.042)**	**(0.048)**	**(0.055)**	**(0.061)**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.002	0.009	0.016	0.022	0.029	0.036	0.042	0.048	0.055	0.061
Total	**0.000**	**0.002**	**0.009**	**0.016**	**0.022**	**0.029**	**0.036**	**0.042**	**0.048**	**0.055**	**0.061**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Wastewater Service Demand (avg day mgd)	**0.224**	**0.235**	**0.274**	**0.313**	**0.351**	**0.388**	**0.425**	**0.462**	**0.498**	**0.533**	**0.568**
Use of Existing and Capacity (avg day mgd)											
OSSFs	0.224	0.228	0.243	0.258	0.273	0.287	0.301	0.315	0.329	0.343	0.356
No-Discharge WWTP	-	0.006	0.031	0.054	0.078	0.101	0.124	0.146	0.169	0.190	0.212
Total Use of Existing & New Supply	**0.224**	**0.235**	**0.274**	**0.313**	**0.351**	**0.388**	**0.425**	**0.462**	**0.498**	**0.533**	**0.568**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

4.3.7 Planning Sub-Area – 150



Location/Background. This Sub-Area includes land alongside RR 150 and 3237 from the City of Kyle on the east and extending to the periphery of Wimberley on the west. This Sub-Area is about one-quarter subdivided, but lightly developed in the remaining portion.

Population. As indicated in Table 4.3-17, the 2010 population of this Sub-Area is estimated at 6,117 persons. It is projected to increase to 16,902 persons by 2060 with the High Case trend forecast, an average annual growth rate of about 2.1% over the 50-year planning period. With the presence of anticipated water infrastructure, about 71% of the 2060 population is expected to locate in suburban-type developments.

WATER

Water Service Demands. As indicated in Table 4.3-17, the High Case forecast reflects an increase in total water demand in this Sub-Area from 0.774 mgd in 2010 to about 2.051 mgd by 2060, reflecting an average annual increase of 2.0%. Suburban demand for this Sub-Area is projected to increase from about 0.443 mgd in 2010 to around 1.510 mgd by 2060, an average annual increase of about 2.5%. Rural water use is projected to increase from about 0.331 mgd in 2010 to around 0.541 mgd by 2060, an average annual increase of about 1.0%.

Existing Water Supplies and Use of Supplies. The San Antonio segment of the Edwards Aquifer is the main source of water supply in this Sub-Area with current aquifer demands at about 0.371 mgd. The Barton-Edwards segment of the Edwards Aquifer provides an estimated 0.141 mgd of supply to areas generally north of RR 150. The existing Edwards and Barton-Edwards supplies are essentially fully permitted (from a more firm yield perspective preferred by municipal users). A portion of the western reach of this Sub-Area is supplied from the Trinity Aquifer with current use estimated at 0.207 mgd. Domestic wells are exempt from permitting in both Edwards groundwater districts in this Sub-Area. Given the presence of developable groundwater for domestic wells in the Edwards, it is assumed that only about 0.055 mgd or 7.1% of current needs are met with rainwater collection systems.

Additional Water Needs. Existing supplies from various sources are meeting current water demands. As growth occurs over time, it is forecast that additional water needs of suburban and rural portions of this Sub-Area will range from 0.138 mgd in 2015 to 1.277 mgd by 2060.

Water Management Recommendations. Additional water conservation and additional rainwater collection systems are first expected to meet a portion of the Sub-Area's increased water demand over time. It is anticipated that through use of current permits and expansion of exempt domestic pumping, Edwards, Barton-Edwards and Trinity groundwater will continue to meet the remainder of increased water demand until alternative supplies are developed. It is also anticipated that the City of Kyle will extend its municipal service into the eastern portions of this Sub-Area, initially meeting about 20% of additional suburban water demands and then tapering off about 2035-2040 to 5% of new suburban growth at its reaches a preferred western service area along RR150 out to its intersection with RR3237. The contributions of additional conservation, rainwater systems, and westward extension of service by Kyle would help offset some of the projected increase in groundwater pumping, but are not sufficient to avoid a projected doubling of pumping on the three aquifers. No new imported water supply is shown, as these remaining areas would be difficult to economically serve.

Sensitivity Analysis. In the Mid Case forecast, growth in this area was slowed, and suburban water use in this Sub-Area is projected to increase to only around 1.141 mgd by 2060, reflecting an average annual increase of about 1.9% versus a 2.5% average annual increase in the High Case Scenario. Rural water use is projected to increase to about 0.460 mgd by 2060, reflecting an average annual increase of about 0.7% versus a 1.0% average annual increase in the High Case Scenario. In the Mid Case Scenario, the same management recommendations are warranted as in the High Case Scenario, except the level of water use grows a little less quickly and the timing of implementation of extension of City of Kyle municipal supplies could be slowed.

In the No Action Case forecast, growth in this area would be even more slowed from lack of any new water supply, even from the City of Kyle. Thus, suburban water use in this Sub-Area is projected to increase to only around 0.782 mgd by 2060, an average annual increase of about 1.1% versus 2.5% average annual increase in the High Case Scenario. Rural water use is projected to increase to about 0.382 mgd by 2060, reflecting an average annual increase of about 0.3% versus a 1.0% average annual increase in the High Case Scenario. Without the extension of the additional municipal water supply, a greater reliance on water conservation, rainwater systems, and exempt domestic groundwater pumping of the Edwards would be realized in the long-term.

WASTEWATER

Wastewater Service Demands. As indicated in Table 4.3-18, the High Case forecast reflects an increase in total wastewater service demands in this Sub-Area from 0.437 mgd in 2010 to about 1.136 mgd by 2060, reflecting an average annual increase of 1.9%. Suburban wastewater service demands in this Sub-Area are projected to increase from 0.240 mgd in 2010 to about 0.805 mgd by 2060, reflecting an average annual increase of 2.4%. Rural wastewater service demands are projected to increase from 0.197 mgd in 2010 to about 0.330 mgd by 2060, reflecting an average annual increase of 1.0%.

Existing Wastewater Capacity and Use of Capacity. Currently, there is no significant centralized wastewater treatment capacity in this Sub-Area with on-site sewerage facilities (OSSFs) meeting almost all service demands.

Unmet Wastewater Capacity Needs. Additional wastewater treatment needs are forecast for the suburban and rural portions of this Sub-Area ranging from 0.081 mgd in 2015 to 0.698 mgd by 2060.

Wastewater Management Recommendations. The suburban growth forecast for this Sub-Area is anticipated to have sufficiently high development densities (arising from allowances in the County's subdivision ordinance for developments with imported water, community wells, or rainwater collection systems) to also accommodate centralized wastewater treatment. It is anticipated that this centralized wastewater treatment will be small subdivision-oriented (package) plants, rather than larger, regional-type plants that face more costly and problematic land application issues. These smaller centralized treatment facilities could accommodate up to 0.113 mgd of the Sub-Area's total wastewater service demand by 2060 with the remainder 1.023 mgd of demand expected to be met by individual on-site septic systems. Additional centralized treatment could be accomplished if the City of Kyle were to extend municipal sewer service into the Sub-Area.

Sensitivity Analysis. In the Mid Case and No Action scenarios, wastewater services demands are diminished in about the same proportions as the water demands described previously. Provision of small centralized wastewater treatment facilities for new subdivisions would be slowed even more as the City of Kyle would not extend water service westward in the No Action scenario.

TABLE 4.3-17
WATER MANAGEMENT PLAN
PLANNING AREA 150
SCENARIO HI

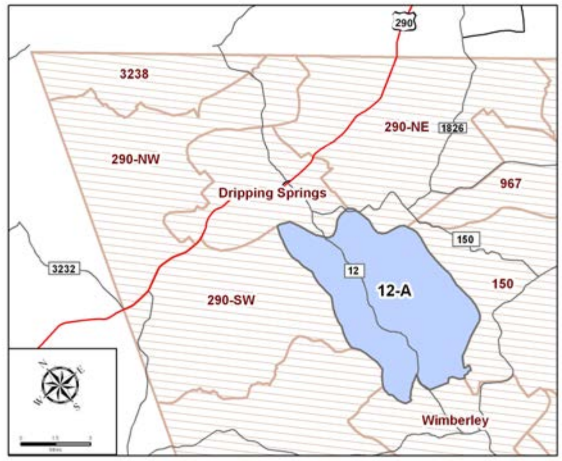
Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	6,117	7,256	8,328	9,399	10,471	11,543	12,615	13,687	14,759	15,831	16,902
Annual Growth Rate	3.0%	3.5%	2.8%	2.5%	2.2%	2.0%	1.8%	1.6%	1.5%	1.4%	1.3%
Suburban % of Planning Area Population	54.9%	58.8%	61.6%	63.7%	65.3%	66.7%	67.8%	68.8%	69.6%	70.3%	70.9%
% of New Growth that is Suburban		80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%
% Reduction in Base Water Use		0.75%	1.50%	2.25%	3.00%	3.75%	4.50%	5.25%	6.00%	6.75%	7.50%
% of Growth on Rainwater Systems	5.0%	5.5%	6.0%	6.5%	7.0%	7.5%	8.0%	8.5%	9.0%	9.5%	10.0%
% of Growth on Central Water Systems		20.0%	20.0%	20.0%	20.0%	10.0%	5.0%	5.0%	5.0%	5.0%	5.0%
% of Exist. Demand Converting to Central Wtr Systems		2.5%	2.8%	3.0%	3.3%	3.5%	3.8%	4.0%	4.3%	4.5%	5.0%
Rural % of Planning Area Population	45.1%	41.2%	38.4%	36.3%	34.7%	33.3%	32.2%	31.2%	30.4%	29.7%	29.1%
% of New Growth that is Rural		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
% Reduction in Base Water Use		1.00%	2.00%	3.00%	4.00%	5.00%	6.00%	7.00%	8.00%	9.00%	10.00%
% of Growth on Rainwater Systems	10.0%	11.0%	12.0%	13.0%	14.0%	15.0%	16.0%	17.0%	18.0%	19.0%	20.0%
SUBURBAN AREA											
Population	3,358	4,269	5,126	5,984	6,841	7,699	8,556	9,414	10,271	11,129	11,986
Base Per Capita Water Use (gpcd)	132	131	129	128	127	127	126	126	126	126	126
Per Capita Water Use w/Addit. Conservation		130	127	125	123	122	120	119	118	118	117
Water Demand											
Annual (ac-ft)	496.5	624.0	740.8	858.0	973.2	1,090.9	1,207.6	1,328.7	1,449.7	1,570.7	1,691.7
Average Day (mgd)	**0.443**	**0.557**	**0.661**	**0.766**	**0.869**	**0.974**	**1.078**	**1.186**	**1.294**	**1.402**	**1.510**
Use of Existing Water Supply (mgd)											
Rainwater Collection Systems	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022
Barton-Edwards GW	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082
Edwards GW	0.217	0.217	0.217	0.217	0.217	0.217	0.217	0.217	0.217	0.217	0.217
Trinity GW - Suburban	0.121	0.121	0.121	0.121	0.121	0.121	0.121	0.121	0.121	0.121	0.121
Total	**0.443**	**0.443**	**0.443**	**0.443**	**0.443**	**0.443**	**0.443**	**0.443**	**0.443**	**0.443**	**0.443**
No Action Surplus or Unmet Need	**0.000**	**(0.114)**	**(0.218)**	**(0.323)**	**(0.426)**	**(0.531)**	**(0.635)**	**(0.743)**	**(0.851)**	**(0.959)**	**(1.067)**
Use of Additional Water Management Measures (mgd)											
Additional Water Conservation		0.004	0.010	0.017	0.026	0.037	0.049	0.062	0.078	0.095	0.113
Rainwater Collection Systems		0.006	0.013	0.019	0.027	0.034	0.043	0.052	0.062	0.072	0.083
Barton-Edwards GW		0.014	0.025	0.036	0.046	0.058	0.070	0.082	0.094	0.105	0.115
Edwards GW		0.036	0.066	0.096	0.122	0.154	0.186	0.218	0.248	0.277	0.303
Trinity GW - Suburban		0.020	0.037	0.053	0.068	0.086	0.104	0.121	0.138	0.154	0.169
City of Kyle		0.034	0.067	0.101	0.136	0.162	0.184	0.207	0.231	0.257	0.284
Total	**0.000**	**0.114**	**0.218**	**0.323**	**0.426**	**0.531**	**0.635**	**0.743**	**0.851**	**0.959**	**1.067**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	2,759	2,987	3,201	3,415	3,630	3,844	4,059	4,273	4,487	4,702	4,916
Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
Per Capita Water Use w/Addit. Conservation		118	116	114	111	109	107	105	103	101	99
Water Demand											
Annual (ac-ft)	370.9	398.1	423.1	447.6	471.7	495.2	518.3	540.9	563.0	584.6	605.7
Average Day (mgd)	**0.331**	**0.355**	**0.378**	**0.400**	**0.421**	**0.442**	**0.463**	**0.483**	**0.503**	**0.522**	**0.541**
Existing Water Supply (avg day mgd)											
Rainwater Collection Systems	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033
Barton-Edwards GW	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058
Edwards GW	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154
Trinity GW - Rural	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086
Total	**0.331**	**0.331**	**0.331**	**0.331**	**0.331**	**0.331**	**0.331**	**0.331**	**0.331**	**0.331**	**0.331**
No Action Surplus or Unmet Need	**0.000**	**(0.024)**	**(0.047)**	**(0.069)**	**(0.090)**	**(0.111)**	**(0.132)**	**(0.152)**	**(0.172)**	**(0.191)**	**(0.210)**
Use of Additional Water Management Measures (avg day mgd)											
Additional Water Conservation		0.004	0.008	0.012	0.017	0.022	0.028	0.034	0.040	0.047	0.054
Rainwater Collection Systems		0.003	0.005	0.008	0.011	0.014	0.018	0.021	0.025	0.028	0.032
Barton-Edwards GW		0.004	0.007	0.009	0.012	0.015	0.017	0.019	0.021	0.023	0.024
Edwards GW		0.009	0.017	0.025	0.032	0.038	0.045	0.050	0.055	0.060	0.064
Trinity GW - Rural		0.005	0.010	0.014	0.018	0.021	0.025	0.028	0.031	0.033	0.036
Total	**0.000**	**0.024**	**0.047**	**0.069**	**0.090**	**0.111**	**0.132**	**0.152**	**0.172**	**0.191**	**0.210**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Water Service Demand (avg day mgd)	**0.774**	**0.913**	**1.039**	**1.166**	**1.290**	**1.416**	**1.541**	**1.669**	**1.797**	**1.924**	**2.051**
Use of Existing and New Supply (avg day mgd)											
Additional Water Conservation	-	0.008	0.017	0.029	0.043	0.059	0.076	0.096	0.118	0.142	0.167
Rainwater Collection Systems	0.055	0.064	0.073	0.083	0.093	0.104	0.116	0.128	0.142	0.155	0.170
Barton-Edwards GW	0.141	0.158	0.172	0.186	0.199	0.213	0.228	0.242	0.255	0.268	0.280
Edwards GW	0.371	0.417	0.455	0.492	0.526	0.563	0.602	0.639	0.674	0.708	0.738
Trinity GW	0.207	0.232	0.254	0.274	0.293	0.314	0.336	0.357	0.376	0.395	0.412
City of Kyle	-	0.034	0.067	0.101	0.136	0.162	0.184	0.207	0.231	0.257	0.284
Total Use of Existing & New Supply	**0.774**	**0.913**	**1.039**	**1.166**	**1.290**	**1.416**	**1.541**	**1.669**	**1.797**	**1.924**	**2.051**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE 4.3-18
WASTEWATER MANAGEMENT PLAN
PLANNING AREA 150
SCENARIO HI

Planning Area		Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS												
Planning Area	Est./Projected Population	6,117	7,256	8,328	9,399	10,471	11,543	12,615	13,687	14,759	15,831	16,902
	Annual Growth Rate	3.0%	3.5%	2.8%	2.5%	2.2%	2.0%	1.8%	1.6%	1.5%	1.4%	1.3%
Suburban	% of Planning Area Population	54.9%	58.8%	61.6%	63.7%	65.3%	66.7%	67.8%	68.8%	69.6%	70.3%	70.9%
	% of New Growth that is Suburban		80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%
	% of Growth served by Central Wastewater Systems		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
Rural	% of Planning Area Population	45.1%	41.2%	38.4%	36.3%	34.7%	33.3%	32.2%	31.2%	30.4%	29.7%	29.1%
	% of New Growth that is Rural		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
	% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA												
Population		3,358	4,269	5,126	5,984	6,841	7,699	8,556	9,414	10,271	11,129	11,986
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand												
	Average Day (mgd)	**0.240**	**0.305**	**0.364**	**0.422**	**0.479**	**0.536**	**0.591**	**0.646**	**0.700**	**0.753**	**0.805**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240
	No-Discharge WWTP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Total	**0.240**	**0.240**	**0.240**	**0.240**	**0.240**	**0.240**	**0.240**	**0.240**	**0.240**	**0.240**	**0.240**
Suburban - No Action Surplus or Unmet Need		**0.000**	**(0.065)**	**(0.124)**	**(0.182)**	**(0.239)**	**(0.296)**	**(0.351)**	**(0.406)**	**(0.460)**	**(0.513)**	**(0.565)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.052	0.099	0.146	0.191	0.237	0.281	0.325	0.368	0.410	0.452
	No-Discharge WWTP		0.013	**0.025**	0.036	0.048	0.059	0.070	0.081	0.092	0.103	0.113
	Total	**0.000**	**0.065**	**0.124**	**0.182**	**0.239**	**0.296**	**0.351**	**0.406**	**0.460**	**0.513**	**0.565**
Suburban - Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA												
Population		2,759	2,987	3,201	3,415	3,630	3,844	4,059	4,273	4,487	4,702	4,916
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Wastewater Service Demand												
	Average Day (mgd)	**0.197**	**0.214**	**0.227**	**0.241**	**0.254**	**0.268**	**0.281**	**0.293**	**0.306**	**0.318**	**0.330**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197
	Total	**0.197**	**0.197**	**0.197**	**0.197**	**0.197**	**0.197**	**0.197**	**0.197**	**0.197**	**0.197**	**0.197**
No Action Surplus or Unmet Need		**0.000**	**(0.016)**	**(0.030)**	**(0.044)**	**(0.057)**	**(0.070)**	**(0.083)**	**(0.096)**	**(0.109)**	**(0.121)**	**(0.133)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.016	0.030	0.044	0.057	0.070	0.083	0.096	0.109	0.121	0.133
	Total	**0.000**	**0.016**	**0.030**	**0.044**	**0.057**	**0.070**	**0.083**	**0.096**	**0.109**	**0.121**	**0.133**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA												
Wastewater Service Demand (avg day mgd)		**0.437**	**0.519**	**0.592**	**0.663**	**0.734**	**0.803**	**0.872**	**0.939**	**1.006**	**1.071**	**1.136**
Use of Existing and Capacity (avg day mgd)												
	OSSFs	0.437	0.506	0.567	0.627	0.686	0.744	0.802	0.858	0.914	0.969	1.023
	No-Discharge WWTP	-	0.013	0.025	0.036	0.048	0.059	0.070	0.081	0.092	0.103	0.113
	Total Use of Existing & New Supply	**0.437**	**0.519**	**0.592**	**0.663**	**0.734**	**0.803**	**0.872**	**0.939**	**1.006**	**1.071**	**1.136**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

4.3.8 Planning Sub-Area – 12-A

Location/Background. This Sub-Area includes land alongside RR 12 between the towns of Dripping Springs and Wimberley/Woodcreek. This Sub-Area is about one-third subdivided and moderately developed elsewhere. Portions of This Sub-Area are being dedicated to some form of conservation reserve.



Population. As indicated in Table 4.3-19, the 2010 population of this Sub-Area is estimated at 3,186 persons. It is projected to increase to 8,521 persons by 2060 with the High Case trend forecast, an average annual growth rate of about 2.0% over the 50-year planning period. With limited water infrastructure, only about 44% of the 2060 population is expected to locate in suburban-type developments.

WATER

Water Service Demands. As indicated in Table 4.3-19, the High Case forecast reflects an increase in total water demand in this Sub-Area from 0.389 mgd in 2010 to about 0.981 mgd by 2060, reflecting an average annual increase of 1.9%. Suburban demand for this Sub-Area is projected to increase from about 0.077 mgd in 2010 to around 0.343 mgd by 2060, an average annual increase of about 3.0%. Rural water use is projected to increase from about 0.312 mgd in 2010 to around 0.638 mgd by 2060, an average annual increase of about 1.4%.

Existing Water Supplies and Use of Supplies. Wells in the Trinity Aquifer Group are the largest water supply in this Sub-Area, meeting an estimated 0.331 mgd of local water demand. The groundwater quality is relatively poor and the saturated thickness of the Aquifer in this area is somewhat thin, thus exposing it to periods of rapid drawdown, low water levels, and associated well and water supply problems. Given the groundwater quantity and quality issues, it is assumed that approximately 0.058 mgd or about 15% of existing local water needs are met through rainwater collection systems.

Additional Water Needs. Existing supplies from various sources are meeting current water demands. As growth occurs over time, it is forecast that additional water needs of suburban and rural portions of this Sub-Area will range from 0.062 mgd in 2015 to 0.592 mgd by 2060.

Water Management Recommendations. Additional water conservation and additional rainwater collection systems are first expected to meet a portion of the Sub-Area's increased water demand over time. Remaining water demands are expected to be met with a doubling of pumping from the Trinity groundwater supply. No new imported water supply is shown, as this Sub-Area would be difficult to economically serve. There may be some limited extension of municipal service into this Sub-Area from the utilities in Dripping Springs on the north or from Wimberley on the south, although this was not accounted for.

Sensitivity Analysis. In the Mid Case forecast, growth in this area was slowed, and suburban water use in this Sub-Area is projected to increase to only around 0.251 mgd by 2060, reflecting an average annual increase of about 2.4% versus a 3.0% average annual increase in the High Case Scenario. Rural water use is projected to increase to about 0.518 mgd by 2060, reflecting an average annual increase of about 1.0% versus a 1.4% average annual increase in the High Case Scenario. In the Mid Case Scenario, the same on-site management recommendations are warranted as in the High Case Scenario, except the level of water use grows less quickly and the timing of implementation of additional on-site supplies measures would be slowed.

In the No Action Case forecast, spin-off growth in this area would be even more slowed from lack of any new water supply in some adjacent areas of the County. Thus, suburban water use in this Sub-Area is projected to increase to only around 0.163 mgd by 2060, an average annual increase of about 1.5% versus 3.0% average annual increase in the High Case Scenario. Rural water use is projected to increase to about 0.364 mgd by 2060, reflecting an average annual increase of about 0.5% versus a 1.4% average annual increase in the High Case Scenario. With a slightly slower growth rate, the implementation of additional on-site supplies would be slowed somewhat more.

WASTEWATER

Wastewater Service Demands. As indicated in Table 4.3-20, the High Case forecast reflects an increase in total wastewater service demands in this Sub-Area from 0.228 mgd in 2010 to about 0.573 mgd by 2060, reflecting an average annual increase of 1.9%. Suburban wastewater service demands in this Sub-Area are projected to increase from 0.042 mgd in 2010 to about 0.183 mgd by 2060, reflecting an average annual increase of 3.0%. Rural wastewater service demands are projected to increase from 0.186 mgd in 2010 to about 0.390 mgd by 2060, reflecting an average annual increase of 1.5%.

Existing Wastewater Capacity and Use of Capacity. Currently, there is no significant centralized wastewater treatment capacity in this Sub-Area with on-site sewerage facilities (OSSFs) meeting almost all service demands.

Unmet Wastewater Capacity Needs. Additional wastewater treatment needs are forecast for the suburban and rural portions of this Sub-Area ranging from 0.201 mgd in 2015 to 0.345 mgd by 2060.

Wastewater Management Recommendations. The suburban growth forecast for this Sub-Area is anticipated to have sufficiently high development densities (arising from allowances in the County's subdivision ordinance for developments with imported water, community wells, or rainwater collection systems) to also accommodate centralized wastewater treatment. However, given that no significant imported water is anticipated for this area in all three scenarios, and denser subdivision growth would be very limited, current and future wastewater demands are expected to be satisfied by OSSFs.

Sensitivity Analysis. In the Mid Case and No Action scenarios, wastewater services demands are diminished in about the same proportions as the water demands described previously, and the rate of implementation of on-site sewer systems would be slowed.

TABLE 4.3-19
WATER MANAGEMENT PLAN
PLANNING AREA 12-A
SCENARIO HI

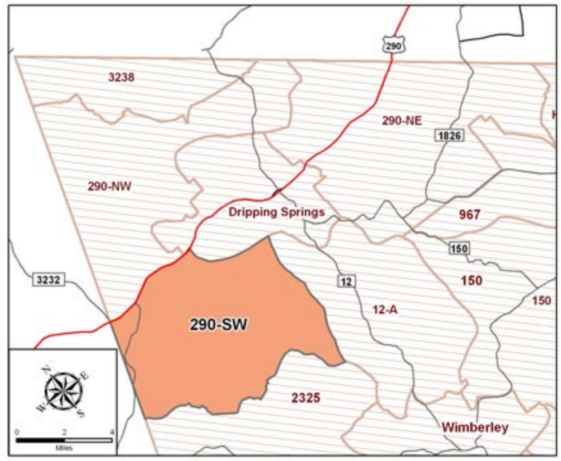
Planning Area		Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS												
Planning Area	Est./Projected Population	3,186	3,719	4,253	4,786	5,320	5,853	6,387	6,921	7,454	7,988	8,521
	Annual Growth Rate	3.3%	3.1%	2.7%	2.4%	2.1%	1.9%	1.8%	1.6%	1.5%	1.4%	1.3%
Suburban	% of Planning Area Population	18.4%	21.5%	23.8%	25.6%	27.1%	28.2%	29.2%	30.1%	30.8%	31.4%	31.9%
	% of New Growth that is Suburban		40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
	% Reduction in Base Water Use		0.75%	1.50%	2.25%	3.00%	3.75%	4.50%	5.25%	6.00%	6.75%	7.50%
	% of Growth on Rainwater Systems	15.0%	16.5%	18.0%	19.5%	21.0%	22.5%	24.0%	25.5%	27.0%	28.5%	30.0%
	% of Growth on Central Water Systems	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	% of Exist. Demand Converting to Central Wtr Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rural	% of Planning Area Population	81.6%	78.5%	76.2%	74.4%	72.9%	71.8%	70.8%	69.9%	69.2%	68.6%	68.1%
	% of New Growth that is Rural		60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
	% Reduction in Base Water Use		1.25%	2.50%	3.75%	5.00%	6.25%	7.50%	8.75%	10.00%	11.25%	12.50%
	% of Growth on Rainwater Systems	15.0%	16.5%	18.0%	19.5%	21.0%	22.5%	24.0%	25.5%	27.0%	28.5%	30.0%
SUBURBAN AREA												
Population		586	799	1,013	1,226	1,440	1,653	1,866	2,080	2,293	2,507	2,720
	Base Per Capita Water Use (gpcd)	132	131	129	128	127	127	126	126	126	126	126
	Per Capita Water Use w/Addit. Conservation		130	127	125	123	122	120	119	118	118	117
Water Demand												
	Annual (ac-ft)	86.6	116.8	146.3	175.8	204.8	234.2	263.4	293.5	323.7	353.8	383.9
	Average Day (mgd)	**0.077**	**0.104**	**0.131**	**0.157**	**0.183**	**0.209**	**0.235**	**0.262**	**0.289**	**0.316**	**0.343**
Use of Existing Water Supply (mgd)												
	Rainwater Collection Systems	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012
	Trinity GW - Suburban	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066
	Total	**0.077**	**0.077**	**0.077**	**0.077**	**0.077**	**0.077**	**0.077**	**0.077**	**0.077**	**0.077**	**0.077**
No Action Surplus or Unmet Need		**0.000**	**(0.027)**	**(0.053)**	**(0.080)**	**(0.105)**	**(0.132)**	**(0.158)**	**(0.185)**	**(0.212)**	**(0.239)**	**(0.265)**
Use of Additional Water Management Measures (mgd)												
	Additional Water Conservation		0.001	0.002	0.004	0.005	0.008	0.011	0.014	0.017	0.021	0.026
	Rainwater Collection Systems		0.004	0.009	0.014	0.020	0.026	0.032	0.039	0.046	0.054	0.062
	Trinity GW - Suburban		0.022	0.042	0.062	0.080	0.098	0.115	0.132	0.148	0.163	0.178
	Total	**0.000**	**0.027**	**0.053**	**0.080**	**0.105**	**0.132**	**0.158**	**0.185**	**0.212**	**0.239**	**0.265**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA												
Population		2,600	2,920	3,240	3,560	3,880	4,200	4,521	4,841	5,161	5,481	5,801
	Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
	Per Capita Water Use w/Addit. Conservation		118	115	113	110	108	105	103	101	99	96
Water Demand												
	Annual (ac-ft)	349.5	389.2	428.3	466.6	504.2	541.1	577.3	612.7	647.5	681.5	714.8
	Average Day (mgd)	**0.312**	**0.348**	**0.382**	**0.417**	**0.450**	**0.483**	**0.515**	**0.547**	**0.578**	**0.608**	**0.638**
Existing Water Supply (avg day mgd)												
	Rainwater Collection Systems	0.047	0.047	0.047	0.047	0.047	0.047	0.047	0.047	0.047	0.047	0.047
	Trinity GW - Rural	0.265	0.265	0.265	0.265	0.265	0.265	0.265	0.265	0.265	0.265	0.265
	Total	**0.312**	**0.312**	**0.312**	**0.312**	**0.312**	**0.312**	**0.312**	**0.312**	**0.312**	**0.312**	**0.312**
No Action Surplus or Unmet Need		**0.000**	**(0.035)**	**(0.070)**	**(0.105)**	**(0.138)**	**(0.171)**	**(0.203)**	**(0.235)**	**(0.266)**	**(0.296)**	**(0.326)**
Use of Additional Water Management Measures (avg day mgd)												
	Additional Water Conservation		0.004	0.010	0.016	0.023	0.030	0.039	0.048	0.058	0.068	0.080
	Rainwater Collection Systems		0.006	0.012	0.019	0.026	0.033	0.041	0.049	0.057	0.066	0.075
	Trinity GW - Rural		0.025	0.049	0.070	0.090	0.108	0.124	0.138	0.151	0.162	0.171
	Total	**0.000**	**0.035**	**0.070**	**0.105**	**0.138**	**0.171**	**0.203**	**0.235**	**0.266**	**0.296**	**0.326**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA												
Water Service Demand (avg day mgd)		**0.389**	**0.452**	**0.513**	**0.574**	**0.633**	**0.692**	**0.751**	**0.809**	**0.867**	**0.924**	**0.981**
Use of Existing and New Supply (avg day mgd)												
	Additional Water Conservation	-	0.005	0.012	0.019	0.028	0.038	0.049	0.062	0.075	0.090	0.105
	Rainwater Collection Systems	0.058	0.069	0.080	0.092	0.104	0.117	0.131	0.146	0.162	0.178	0.195
	Trinity GW	0.331	0.378	0.422	0.463	0.501	0.537	0.570	0.601	0.630	0.656	0.680
	Total Use of Existing & New Supply	**0.389**	**0.452**	**0.513**	**0.574**	**0.633**	**0.692**	**0.751**	**0.809**	**0.867**	**0.924**	**0.981**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE 4.3-20
WASTEWATER MANAGEMENT PLAN
PLANNING AREA 12-A
SCENARIO HI

Planning Area		Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS												
Planning Area	Est./Projected Population	3,186	3,719	4,253	4,786	5,320	5,853	6,387	6,921	7,454	7,988	8,521
	Annual Growth Rate	3.3%	3.1%	2.7%	2.4%	2.1%	1.9%	1.8%	1.6%	1.5%	1.4%	1.3%
Suburban	% of Planning Area Population	18.4%	21.5%	23.8%	25.6%	27.1%	28.2%	29.2%	30.1%	30.8%	31.4%	31.9%
	% of New Growth that is Suburban		40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
	% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rural	% of Planning Area Population	81.6%	78.5%	76.2%	74.4%	72.9%	71.8%	70.8%	69.9%	69.2%	68.6%	68.1%
	% of New Growth that is Rural		60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
	% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA												
Population		586	799	1,013	1,226	1,440	1,653	1,866	2,080	2,293	2,507	2,720
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand												
	Average Day (mgd)	**0.042**	**0.057**	**0.072**	**0.087**	**0.101**	**0.115**	**0.129**	**0.143**	**0.156**	**0.170**	**0.183**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042
	No-Discharge WWTP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Total	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**
Suburban - No Action Surplus or Unmet Need		**0.000**	**(0.015)**	**(0.030)**	**(0.045)**	**(0.059)**	**(0.073)**	**(0.087)**	**(0.101)**	**(0.114)**	**(0.128)**	**(0.141)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.015	0.030	0.045	0.059	0.073	0.087	0.101	0.114	0.128	0.141
	No-Discharge WWTP		0.000	0.000	0.000	0.000	**0.000**	0.000	0.000	0.000	0.000	0.000
	Total	**0.000**	**0.015**	**0.030**	**0.045**	**0.059**	**0.073**	**0.087**	**0.101**	**0.114**	**0.128**	**0.141**
Suburban - Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA												
Population		2,600	2,920	3,240	3,560	3,880	4,200	4,521	4,841	5,161	5,481	5,801
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Wastewater Service Demand												
	Average Day (mgd)	**0.186**	**0.209**	**0.230**	**0.251**	**0.272**	**0.292**	**0.312**	**0.332**	**0.352**	**0.371**	**0.390**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.186	0.186	0.186	0.186	0.186	0.186	0.186	0.186	0.186	0.186	0.186
	Total	**0.186**	**0.186**	**0.186**	**0.186**	**0.186**	**0.186**	**0.186**	**0.186**	**0.186**	**0.186**	**0.186**
No Action Surplus or Unmet Need		**0.000**	**(0.023)**	**(0.044)**	**(0.065)**	**(0.086)**	**(0.106)**	**(0.127)**	**(0.146)**	**(0.166)**	**(0.185)**	**(0.204)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.023	0.044	0.065	0.086	0.106	0.127	0.146	0.166	0.185	0.204
	Total	**0.000**	**0.023**	**0.044**	**0.065**	**0.086**	**0.106**	**0.127**	**0.146**	**0.166**	**0.185**	**0.204**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA												
Wastewater Service Demand (avg day mgd)		**0.228**	**0.266**	**0.302**	**0.338**	**0.373**	**0.407**	**0.441**	**0.475**	**0.508**	**0.541**	**0.573**
Use of Existing and Capacity (avg day mgd)												
	OSSFs	0.228	0.266	0.302	0.338	0.373	0.407	0.441	0.475	0.508	0.541	0.573
	No-Discharge WWTP	-	-	-	-	-	-	-	-	-	-	-
	Total Use of Existing & New Supply	**0.228**	**0.266**	**0.302**	**0.338**	**0.373**	**0.407**	**0.441**	**0.475**	**0.508**	**0.541**	**0.573**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

4.3.9 Planning Sub-Area – 290-SW

Location/Background. This Sub-Area includes land to the south of Dripping Springs, west of RR 12, and north of the Colorado/Guadalupe river basin divide. This Sub-Area contains few existing subdivisions and portions of the Sub-Area are being dedicated to some form of conservation reserve.



Population. As indicated in Table 4.3-21, the 2010 population of this Sub-Area is estimated at 1,300 persons. It is projected to increase to 3,546 persons by 2060 with the High Case trend forecast, an average annual growth rate of about 2.0% over the 50-year planning period. With limited water infrastructure, only about 30% of the 2060 population is expected to locate in suburban-type developments.

WATER

Water Service Demands. As indicated in Table 4.3-21, the High Case forecast reflects an increase in total water demand in this Sub-Area from 0.158 mgd in 2010 to about 0.407 mgd by 2060, reflecting an average annual increase of 1.9%. Suburban demand for this Sub-Area is projected to increase from about 0.022 mgd in 2010 to around 0.135 mgd by 2060, an average annual increase of about 3.6%. Rural water use is projected to increase from about 0.136 mgd in 2010 to around 0.273 mgd by 2060, an average annual increase of about 1.4%.

Existing Water Supplies and Use of Supplies. Wells in the Trinity Aquifer Group comprise the largest water supply in this Sub-Area, meeting an estimated 0.134 mgd of local water demand. The groundwater quality is relatively poor and the saturated thickness of the Aquifer in this area is somewhat thin, thus exposing it to periods of rapid drawdown, low water levels, and associated well and water supply problems. Given the groundwater quantity and quality issues, it is assumed that approximately 0.024 mgd or about 15% of existing local water needs are met through rainwater collection systems.

Additional Water Needs. Existing supplies from various sources are meeting current water demands. As growth occurs over time, it is forecast that additional water needs of suburban and rural portions of this Sub-Area will range from 0.032 mgd in 2015 to 0.249 mgd by 2060.

Water Management Recommendations. Additional water conservation and additional rainwater collection systems are first expected to meet a portion of the Sub-Area's increased water demand over time. Remaining water demands are expected to be met with a doubling of pumping from the Trinity groundwater supply. No new imported water supply is shown, as this Sub-Area would be difficult to economically serve. There may be some limited extension of municipal service into this Sub-Area from the utilities in Dripping Springs on the north, although this was not accounted for.

Sensitivity Analysis. In the Mid Case forecast, growth in this area was slowed, and suburban water use in this Sub-Area is projected to increase to only around 0.096 mgd by 2060, reflecting an average annual increase of about 3.0% versus a 3.7% average annual increase in the High Case Scenario. Rural water use is projected to increase to about 0.222 mgd by 2060, reflecting an average annual increase of about 1.0% versus a 1.4% average annual increase in the High Case Scenario. In the Mid Case Scenario, the same on-site management recommendations are warranted as in the High Case Scenario, except the level of water use grows less quickly and the timing of implementation of additional on-site supplies measures would be slowed.

In the No Action Case forecast, spin-off growth in this area would be even more slowed from lack of any new water supply in some adjacent areas of the County. Thus, suburban water use in this Sub-Area is projected to increase to only around 0.059 mgd by 2060, an average annual increase of about 2.0% versus 3.7% average annual increase in the High Case Scenario. Rural water use is projected to increase to about 0.173 mgd by 2060, reflecting an average annual increase of about 0.5% versus a 1.4% average annual increase in the High Case Scenario. With a slightly slower growth rate, the implementation of additional on-site supplies would be slowed somewhat more.

WASTEWATER

Wastewater Service Demands. As indicated in Table 4.3-22, the High Case forecast reflects an increase in total wastewater service demands in this Sub-Area from 0.093 mgd in 2010 to about 0.238 mgd by 2060, reflecting an average annual increase of 1.9%. Suburban wastewater service demands in this Sub-Area are projected to increase from 0.012 mgd in 2010 to about 0.072 mgd by 2060, reflecting an average annual increase of 3.6%. Rural wastewater service demands are projected to increase from 0.081 mgd in 2010 to about 0.167 mgd by 2060, reflecting an average annual increase of 1.5%.

Existing Wastewater Capacity and Use of Capacity. Currently, there is no significant centralized wastewater treatment capacity in this Sub-Area with on-site sewerage facilities (OSSFs) meeting almost all service demands.

Unmet Wastewater Capacity Needs. Additional wastewater treatment needs are forecast for the suburban and rural portions of this Sub-Area ranging from 0.019 mgd in 2015 to 0.145 mgd by 2060.

Wastewater Management Recommendations. The suburban growth forecast for this Sub-Area is anticipated to have sufficiently high development densities (arising from allowances in the County's subdivision ordinance for developments with imported water, community wells, or rainwater collection systems) to also accommodate centralized wastewater treatment. However, given that no significant imported water is anticipated for this area in all three scenarios, and denser subdivision growth would be very limited, current and future wastewater demands are expected to be satisfied by OSSFs.

Sensitivity Analysis. In the Mid Case and No Action scenarios, wastewater services demands are diminished in about the same proportions as the water demands described previously, and the rate of implementation of on-site sewer systems would be slowed.

TABLE 4.3-21
WATER MANAGEMENT PLAN
PLANNING AREA 290-SW
SCENARIO HI

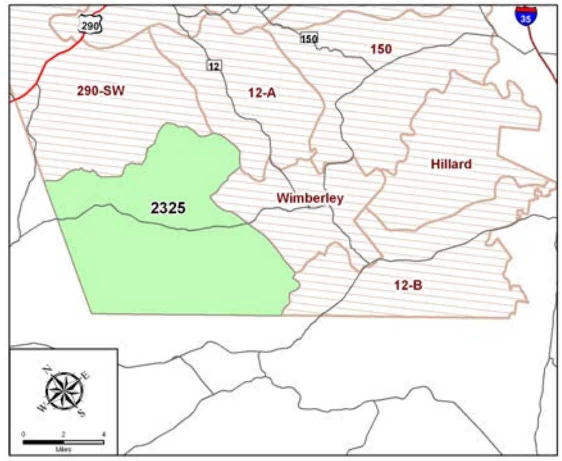
Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	1,300	1,571	1,791	2,010	2,229	2,449	2,668	2,888	3,107	3,327	3,546
Annual Growth Rate	2.3%	3.9%	2.6%	2.3%	2.1%	1.9%	1.7%	1.6%	1.5%	1.4%	1.3%
Suburban % of Planning Area Population	13.1%	17.7%	20.5%	22.6%	24.3%	25.7%	26.9%	27.9%	28.7%	29.5%	30.1%
% of New Growth that is Suburban		40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
% Reduction in Base Water Use		0.75%	1.50%	2.25%	3.00%	3.75%	4.50%	5.25%	6.00%	6.75%	7.50%
% of Growth on Rainwater Systems	15.0%	16.5%	18.0%	19.5%	21.0%	22.5%	24.0%	25.5%	27.0%	28.5%	30.0%
% of Growth on Central Water Systems	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
% of Exist. Demand Converting to Central Wtr Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rural % of Planning Area Population	86.9%	82.3%	79.5%	77.4%	75.7%	74.3%	73.1%	72.1%	71.3%	70.5%	69.9%
% of New Growth that is Rural		60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
% Reduction in Base Water Use		1.25%	2.50%	3.75%	5.00%	6.25%	7.50%	8.75%	10.00%	11.25%	12.50%
% of Growth on Rainwater Systems	15.0%	16.5%	18.0%	19.5%	21.0%	22.5%	24.0%	25.5%	27.0%	28.5%	30.0%
SUBURBAN AREA											
Population	170	278	366	454	542	630	717	805	893	981	1,069
Base Per Capita Water Use (gpcd)	132	131	129	128	127	127	126	126	126	126	126
Per Capita Water Use w/Addit. Conservation		130	127	125	123	122	120	119	118	118	117
Water Demand											
Annual (ac-ft)	25.1	40.7	52.9	65.1	77.1	89.2	101.2	113.6	126.0	138.4	150.8
Average Day (mgd)	**0.022**	**0.036**	**0.047**	**0.058**	**0.069**	**0.080**	**0.090**	**0.101**	**0.113**	**0.124**	**0.135**
Use of Existing Water Supply (mgd)											
Rainwater Collection Systems	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
Trinity GW - Suburban	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019
Total	**0.022**	**0.022**	**0.022**	**0.022**	**0.022**	**0.022**	**0.022**	**0.022**	**0.022**	**0.022**	**0.022**
No Action Surplus or Unmet Need	**0.000**	**(0.014)**	**(0.025)**	**(0.036)**	**(0.046)**	**(0.057)**	**(0.068)**	**(0.079)**	**(0.090)**	**(0.101)**	**(0.112)**
Use of Additional Water Management Measures (mgd)											
Additional Water Conservation		0.000	0.001	0.001	0.002	0.003	0.004	0.005	0.007	0.008	0.010
Rainwater Collection Systems		0.002	0.004	0.006	0.009	0.011	0.014	0.016	0.019	0.023	0.026
Trinity GW - Suburban		0.011	0.020	0.028	0.036	0.043	0.050	0.057	0.064	0.070	0.076
Total	**0.000**	**0.014**	**0.025**	**0.036**	**0.046**	**0.057**	**0.068**	**0.079**	**0.090**	**0.101**	**0.112**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	1,130	1,293	1,424	1,556	1,688	1,819	1,951	2,083	2,214	2,346	2,478
Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
Per Capita Water Use w/Addit. Conservation		118	115	113	110	108	105	103	101	99	96
Water Demand											
Annual (ac-ft)	151.9	172.3	188.3	203.9	219.3	234.4	249.1	263.6	277.8	291.7	305.3
Average Day (mgd)	**0.136**	**0.154**	**0.168**	**0.182**	**0.196**	**0.209**	**0.222**	**0.235**	**0.248**	**0.260**	**0.273**
Existing Water Supply (avg day mgd)											
Rainwater Collection Systems	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020
Trinity GW - Rural	0.115	0.115	0.115	0.115	0.115	0.115	0.115	0.115	0.115	0.115	0.115
Total	**0.136**	**0.136**	**0.136**	**0.136**	**0.136**	**0.136**	**0.136**	**0.136**	**0.136**	**0.136**	**0.136**
No Action Surplus or Unmet Need	**0.000**	**(0.018)**	**(0.032)**	**(0.046)**	**(0.060)**	**(0.074)**	**(0.087)**	**(0.100)**	**(0.112)**	**(0.125)**	**(0.137)**
Use of Additional Water Management Measures (avg day mgd)											
Additional Water Conservation		0.002	0.004	0.007	0.010	0.013	0.017	0.021	0.025	0.029	0.034
Rainwater Collection Systems		0.003	0.006	0.008	0.011	0.014	0.017	0.021	0.024	0.028	0.031
Trinity GW - Rural		0.013	0.023	0.031	0.039	0.046	0.053	0.058	0.064	0.068	0.072
Total	**0.000**	**0.018**	**0.032**	**0.046**	**0.060**	**0.074**	**0.087**	**0.100**	**0.112**	**0.125**	**0.137**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Water Service Demand (avg day mgd)	**0.158**	**0.190**	**0.215**	**0.240**	**0.265**	**0.289**	**0.313**	**0.337**	**0.361**	**0.384**	**0.407**
Use of Existing and New Supply (avg day mgd)											
Additional Water Conservation	-	0.002	0.005	0.008	0.012	0.016	0.021	0.026	0.032	0.038	0.044
Rainwater Collection Systems	0.024	0.029	0.034	0.038	0.044	0.049	0.055	0.061	0.067	0.074	0.081
Trinity GW	0.134	0.159	0.177	0.194	0.209	0.224	0.237	0.250	0.262	0.272	0.282
Total Use of Existing & New Supply	**0.158**	**0.190**	**0.215**	**0.240**	**0.265**	**0.289**	**0.313**	**0.337**	**0.361**	**0.384**	**0.407**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE 4.3-22
WASTEWATER MANAGEMENT PLAN
PLANNING AREA **290-SW**
SCENARIO **HI**

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	1,300	1,571	1,791	2,010	2,229	2,449	2,668	2,888	3,107	3,327	3,546
Annual Growth Rate	2.3%	3.9%	2.6%	2.3%	2.1%	1.9%	1.7%	1.6%	1.5%	1.4%	1.3%
Suburban % of Planning Area Population	13.1%	17.7%	20.5%	22.6%	24.3%	25.7%	26.9%	27.9%	28.7%	29.5%	30.1%
% of New Growth that is Suburban		40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rural % of Planning Area Population	86.9%	82.3%	79.5%	77.4%	75.7%	74.3%	73.1%	72.1%	71.3%	70.5%	69.9%
% of New Growth that is Rural		60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA											
Population	170	278	366	454	542	630	717	805	893	981	1,069
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand											
Average Day (mgd)	**0.012**	**0.020**	**0.026**	**0.032**	**0.038**	**0.044**	**0.050**	**0.055**	**0.061**	**0.066**	**0.072**
Existing Wastewater Treatment (mgd)											
OSSFs	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012
No-Discharge WWTP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	**0.012**	**0.012**	**0.012**	**0.012**	**0.012**	**0.012**	**0.012**	**0.012**	**0.012**	**0.012**	**0.012**
Suburban - No Action Surplus or Unmet Need	**0.000**	**(0.008)**	**(0.014)**	**(0.020)**	**(0.026)**	**(0.032)**	**(0.037)**	**(0.043)**	**(0.049)**	**(0.054)**	**(0.060)**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.008	0.014	0.020	0.026	0.032	0.037	0.043	0.049	0.054	0.060
No-Discharge WWTP		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	**0.000**	**0.008**	**0.014**	**0.020**	**0.026**	**0.032**	**0.037**	**0.043**	**0.049**	**0.054**	**0.060**
Suburban - Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	1,130	1,293	1,424	1,556	1,688	1,819	1,951	2,083	2,214	2,346	2,478
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Wastewater Service Demand											
Average Day (mgd)	**0.081**	**0.092**	**0.101**	**0.110**	**0.118**	**0.127**	**0.135**	**0.143**	**0.151**	**0.159**	**0.167**
Existing Wastewater Treatment (mgd)											
OSSFs	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081
Total	**0.081**	**0.081**	**0.081**	**0.081**	**0.081**	**0.081**	**0.081**	**0.081**	**0.081**	**0.081**	**0.081**
No Action Surplus or Unmet Need	**0.000**	**(0.012)**	**(0.020)**	**(0.029)**	**(0.037)**	**(0.046)**	**(0.054)**	**(0.062)**	**(0.070)**	**(0.078)**	**(0.086)**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.012	0.020	0.029	0.037	0.046	0.054	0.062	0.070	0.078	0.086
Total	**0.000**	**0.012**	**0.020**	**0.029**	**0.037**	**0.046**	**0.054**	**0.062**	**0.070**	**0.078**	**0.086**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Wastewater Service Demand (avg day mgd)	**0.093**	**0.112**	**0.127**	**0.142**	**0.156**	**0.170**	**0.184**	**0.198**	**0.212**	**0.225**	**0.238**
Use of Existing and Capacity (avg day mgd)											
OSSFs	0.093	0.112	0.127	0.142	0.156	0.170	0.184	0.198	0.212	0.225	0.238
No-Discharge WWTP	-	-	-	-	-	-	-	-	-	-	-
Total Use of Existing & New Supply	**0.093**	**0.112**	**0.127**	**0.142**	**0.156**	**0.170**	**0.184**	**0.198**	**0.212**	**0.225**	**0.238**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

4.3.10 Planning Sub-Area – 2325

Location/Background. This Sub-Area includes land alongside RR 2325 from west of Wimberley/Woodcreek to the county line. This Sub-Area is about one-third subdivided with moderate development in remaining portions. A small portion has been dedicated to conservation reserve.



Population. As indicated in Table 4.3-23, the 2010 population of this Sub-Area is estimated at 4,278 persons. It is projected to increase to 11,536 persons by 2060 with the High Case trend forecast, an average annual growth rate of about 2.0% over the 50-year planning period. With future water infrastructure potentially made available to a portion of the area, about 58% of the 2060 population is expected to locate in suburban-type developments.

WATER

Water Service Demands. As indicated in Table 4.3-23, the High Case forecast reflects an increase in total water demand in this Sub-Area from 0.524 mgd in 2010 to about 1.377 mgd by 2060, reflecting an average annual increase of 1.9%. Suburban demand for this Sub-Area is projected to increase from about 0.123 mgd in 2010 to around 0.849 mgd by 2060, an average annual increase of about 3.9%. Rural water use is projected to increase from about 0.402 mgd in 2010 to around 0.528 mgd by 2060, an average annual increase of about 0.5%.

Existing Water Supplies and Use of Supplies. Wells in the Trinity Aquifer Group are the largest water supply in this Sub-Area, meeting an estimated 0.472 mgd of local water demand. The groundwater quality is not high, but the saturated thickness of the Aquifer in this Sub-Area is noticeably greater than in the Trinity Aquifer in the northern portion of the County. Still, the levels of use result in periods of rapid drawdown, lower water levels, and negative effects on localized stream and spring flow. Given the lack of noticeable well problems in this Sub-Area and the exemption of domestic wells, it is assumed that approximately 0.052 mgd or about 10% of existing local water needs are met through rainwater collection systems.

Additional Water Needs. Existing supplies from various sources are meeting current water demands. As growth occurs over time, it is forecast that additional water needs of suburban and rural portions of this Sub-Area will range from 0.099 mgd in 2015 to 0.852 mgd by 2060.

Water Management Recommendations. Additional water conservation and additional rainwater collection systems are first expected to meet a portion of the Sub-Area's increased water demand over time. If the Wimberley area accesses near-term water supplies from Canyon Lake, it is possible that some eastern portions of this Sub-Area could receive surface water supplies. In the longer-term, these interim surface water supplies could be replaced with newly-developed imported water supply by the GBRA. As a large portion of this study area is more distant from these new supplies, a doubling of Trinity groundwater pumping is still forecast by 2060.

Sensitivity Analysis. In the Mid Case forecast, growth in this area was slowed, and suburban water use in this Sub-Area is projected to increase to only around 0.600 mgd by 2060, reflecting an average annual increase of about 3.2% versus a 3.9% average annual increase in the High Case Scenario. Rural water use is projected to increase to about 0.474 mgd by 2060, reflecting an average annual increase of about 0.3% versus a 0.4% average annual increase in the High Case Scenario. In the Mid Case Scenario, the same management recommendations, including some access to the CLWSC supply to Wimberley, are warranted as in the High Case Scenario, except the level of water use grows less quickly and the timing of implementation of additional measures and service extensions would be slowed.

In the No Action Case, there would be no imported water supplies to the adjacent Wimberley area, thus also negating any access to outside water supplies for this Sub-Area as well. Thus, suburban water use in this Sub-Area is projected to increase to only around 0.358 mgd by 2060, an average annual increase of about 2.2% versus 3.9% average annual increase in the High Case Scenario. Rural water use is projected to increase to about 0.421 mgd by 2060, reflecting an average annual increase of about 0.1% versus a 0.4% average annual increase in the High Case Scenario. With the slower growth rate, the implementation of additional on-site supplies would be slowed somewhat more.

WASTEWATER

Wastewater Service Demands. As indicated in Table 4.3-24, the High Case forecast reflects an increase in total wastewater service demands in this Sub-Area from 0.306 mgd in 2010 to about 0.775 mgd by 2060, reflecting an average annual increase of 1.9%. Suburban wastewater service demands in this Sub-Area are projected to increase from 0.066 mgd in 2010 to about 0.453 mgd by 2060, reflecting an average annual increase of 3.9%. Rural wastewater service demands are projected to increase from 0.240 mgd in 2010 to about 0.323 mgd by 2060, reflecting an average annual increase of 0.6%.

Existing Wastewater Capacity and Use of Capacity. Currently, there is no significant centralized wastewater treatment capacity in this Sub-Area with on-site sewerage facilities (OSSFs) meeting almost all service demands.

Unmet Wastewater Capacity Needs. Additional wastewater treatment needs are forecast for the suburban and rural portions of this Sub-Area ranging from 0.058 mgd in 2015 to 0.469 mgd by 2060.

Wastewater Management Recommendations. The suburban growth forecast for this Sub-Area is anticipated to have sufficiently high development densities (arising from allowances in the County's subdivision ordinance for developments with imported water, community wells, or rainwater collection systems) to also accommodate centralized wastewater treatment. It is anticipated that this centralized wastewater treatment will be small subdivision-oriented (package) plants, rather than larger, regional-type plants that face more costly and problematic land application issues. These smaller centralized treatment facilities could accommodate up to 0.077 mgd of the Sub-Area's total wastewater service demand by 2060 with the remainder 0.698 mgd of demand expected to be met by individual on-site septic systems.

Sensitivity Analysis. In the Mid Case and No Action scenarios, wastewater services demands are diminished in about the same proportions as the water demands described previously. In the No Action scenario, lack of development of the CLWSC and GBRA water supplies will slow subdivision growth even further in the eastern portion of this Sub-Area, thus likely further limiting the provision of centralized wastewater treatment facilities.

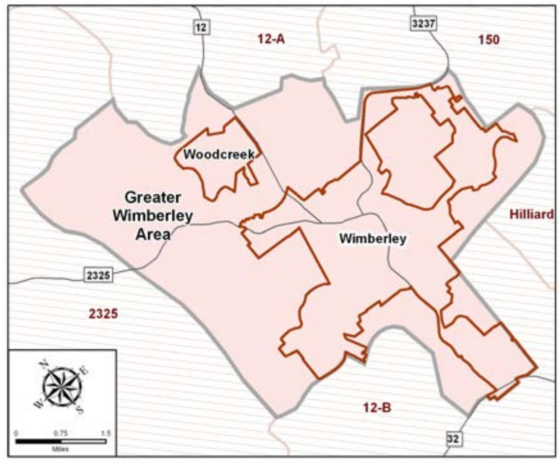
TABLE 4.3-23
WATER MANAGEMENT PLAN
PLANNING AREA 2325
SCENARIO HI

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	4,278	5,085	5,802	6,519	7,236	7,953	8,669	9,386	10,103	10,820	11,536
Annual Growth Rate	2.8%	3.5%	2.7%	2.4%	2.1%	1.9%	1.7%	1.6%	1.5%	1.4%	1.3%
Suburban % of Planning Area Population	21.7%	31.0%	37.0%	41.7%	45.5%	48.6%	51.2%	53.4%	55.3%	56.9%	58.4%
% of New Growth that is Suburban		80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%
% Reduction in Base Water Use		0.75%	1.50%	2.25%	3.00%	3.75%	4.50%	5.25%	6.00%	6.75%	7.50%
% of Growth on Rainwater Systems	10.0%	11.0%	12.0%	13.0%	14.0%	15.0%	16.0%	17.0%	18.0%	19.0%	20.0%
% of Growth on Central Water Systems	0.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%
% of Exist. Demand Converting to Central Wtr Systems		2.5%	2.8%	3.0%	3.3%	3.5%	3.8%	4.0%	4.3%	4.5%	5.0%
Rural % of Planning Area Population	78.3%	69.0%	63.0%	58.3%	54.5%	51.4%	48.8%	46.6%	44.7%	43.1%	41.6%
% of New Growth that is Rural		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
% Reduction in Base Water Use		1.00%	2.00%	3.00%	4.00%	5.00%	6.00%	7.00%	8.00%	9.00%	10.00%
% of Growth on Rainwater Systems	10.0%	11.0%	12.0%	13.0%	14.0%	15.0%	16.0%	17.0%	18.0%	19.0%	20.0%
SUBURBAN AREA											
Population	928	1,574	2,148	2,721	3,295	3,868	4,441	5,015	5,588	6,162	6,735
Base Per Capita Water Use (gpcd)	132	131	129	128	127	127	126	126	126	126	126
Per Capita Water Use w/Addit. Conservation		130	127	125	123	122	120	119	118	118	117
Water Demand											
Annual (ac-ft)	137.2	230.1	310.3	390.2	468.7	548.1	626.9	707.8	788.7	869.7	950.6
Average Day (mgd)	**0.123**	**0.205**	**0.277**	**0.348**	**0.418**	**0.489**	**0.560**	**0.632**	**0.704**	**0.776**	**0.849**
Use of Existing Water Supply (mgd)											
Rainwater Collection Systems	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012
Trinity GW - Suburban	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110
Total	**0.123**	**0.123**	**0.123**	**0.123**	**0.123**	**0.123**	**0.123**	**0.123**	**0.123**	**0.123**	**0.123**
No Action Surplus or Unmet Need	**0.000**	**(0.083)**	**(0.155)**	**(0.226)**	**(0.296)**	**(0.367)**	**(0.437)**	**(0.509)**	**(0.582)**	**(0.654)**	**(0.726)**
Use of Additional Water Management Measures (mgd)											
Additional Water Conservation		0.002	0.004	0.008	0.013	0.018	0.025	0.033	0.042	0.052	0.064
Rainwater Collection Systems		0.009	0.018	0.027	0.037	0.047	0.059	0.071	0.084	0.098	0.112
Trinity GW - Suburban		0.057	0.103	0.147	0.188	0.228	0.265	0.301	0.335	0.367	0.397
Canyon Lake WSC		0.016	0.030	0.044							
GBRA					0.058	0.073	0.089	0.104	0.120	0.137	0.154
Total	**0.000**	**0.083**	**0.155**	**0.226**	**0.296**	**0.367**	**0.437**	**0.509**	**0.582**	**0.654**	**0.726**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	3,349	3,511	3,654	3,797	3,941	4,084	4,227	4,371	4,514	4,657	4,801
Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
Per Capita Water Use w/Addit. Conservation		118	116	114	111	109	107	105	103	101	99
Water Demand											
Annual (ac-ft)	450.2	467.9	483.0	497.7	512.0	526.1	539.8	553.2	566.3	579.1	591.5
Average Day (mgd)	**0.402**	**0.418**	**0.431**	**0.444**	**0.457**	**0.470**	**0.482**	**0.494**	**0.506**	**0.517**	**0.528**
Existing Water Supply (avg day mgd)											
Rainwater Collection Systems	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040
Trinity GW - Rural	0.362	0.362	0.362	0.362	0.362	0.362	0.362	0.362	0.362	0.362	0.362
Total	**0.402**	**0.402**	**0.402**	**0.402**	**0.402**	**0.402**	**0.402**	**0.402**	**0.402**	**0.402**	**0.402**
No Action Surplus or Unmet Need	**0.000**	**(0.016)**	**(0.029)**	**(0.042)**	**(0.055)**	**(0.068)**	**(0.080)**	**(0.092)**	**(0.104)**	**(0.115)**	**(0.126)**
Use of Additional Water Management Measures (avg day mgd)											
Additional Water Conservation		0.004	0.009	0.013	0.018	0.023	0.029	0.035	0.040	0.047	0.053
Rainwater Collection Systems		0.002	0.003	0.005	0.007	0.009	0.011	0.013	0.015	0.017	0.019
Trinity GW - Rural		0.010	0.017	0.024	0.030	0.036	0.040	0.045	0.048	0.052	0.054
Total	**0.000**	**0.016**	**0.029**	**0.042**	**0.055**	**0.068**	**0.080**	**0.092**	**0.104**	**0.115**	**0.126**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Water Service Demand (avg day mgd)	**0.524**	**0.623**	**0.708**	**0.793**	**0.876**	**0.959**	**1.042**	**1.126**	**1.210**	**1.294**	**1.377**
Use of Existing and New Supply (avg day mgd)											
Additional Water Conservation	-	0.006	0.013	0.021	0.031	0.042	0.054	0.068	0.083	0.099	0.116
Rainwater Collection Systems	0.052	0.063	0.074	0.084	0.096	0.109	0.122	0.136	0.151	0.167	0.184
Trinity GW	0.472	0.539	0.592	0.643	0.690	0.735	0.777	0.818	0.856	0.891	0.923
Canyon Lake WSC	-	0.016	0.030	0.044	-	-	-	-	-	-	-
GBRA	-	-	-	-	0.058	0.073	0.089	0.104	0.120	0.137	0.154
Total Use of Existing & New Supply	**0.524**	**0.623**	**0.708**	**0.793**	**0.876**	**0.959**	**1.042**	**1.126**	**1.210**	**1.294**	**1.377**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE 4.3-24
WASTEWATER MANAGEMENT PLAN
PLANNING AREA 2325
SCENARIO HI

	Estimated	Projected									
Planning Area	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**	**2055**	**2060**
PLANNING FACTORS											
Planning Area Est./Projected Population	4,278	5,085	5,802	6,519	7,236	7,953	8,669	9,386	10,103	10,820	11,536
Annual Growth Rate	2.8%	3.5%	2.7%	2.4%	2.1%	1.9%	1.7%	1.6%	1.5%	1.4%	1.3%
Suburban % of Planning Area Population	21.7%	31.0%	37.0%	41.7%	45.5%	48.6%	51.2%	53.4%	55.3%	56.9%	58.4%
% of New Growth that is Suburban		80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%
% of Growth served by Central Wastewater Systems		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
Rural % of Planning Area Population	78.3%	69.0%	63.0%	58.3%	54.5%	51.4%	48.8%	46.6%	44.7%	43.1%	41.6%
% of New Growth that is Rural		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA											
Population	928	1,574	2,148	2,721	3,295	3,868	4,441	5,015	5,588	6,162	6,735
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand											
Average Day (mgd)	**0.066**	**0.113**	**0.153**	**0.192**	**0.231**	**0.269**	**0.307**	**0.344**	**0.381**	**0.417**	**0.453**
Existing Wastewater Treatment (mgd)											
OSSFs	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066
No-Discharge WWTP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	**0.066**	**0.066**	**0.066**	**0.066**	**0.066**	**0.066**	**0.066**	**0.066**	**0.066**	**0.066**	**0.066**
Suburban - No Action Surplus or Unmet Need	**0.000**	**(0.046)**	**(0.086)**	**(0.126)**	**(0.165)**	**(0.203)**	**(0.241)**	**(0.278)**	**(0.315)**	**(0.351)**	**(0.386)**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.037	0.069	0.101	0.132	0.162	0.192	0.222	0.252	0.281	0.309
No-Discharge WWTP		0.009	0.017	0.025	0.033	0.041	0.048	0.056	0.063	0.070	0.077
Total	**0.000**	**0.046**	**0.086**	**0.126**	**0.165**	**0.203**	**0.241**	**0.278**	**0.315**	**0.351**	**0.386**
Suburban - Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	3,349	3,511	3,654	3,797	3,941	4,084	4,227	4,371	4,514	4,657	4,801
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Wastewater Service Demand											
Average Day (mgd)	**0.240**	**0.251**	**0.260**	**0.268**	**0.276**	**0.284**	**0.292**	**0.300**	**0.308**	**0.315**	**0.323**
Existing Wastewater Treatment (mgd)											
OSSFs	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240
Total	**0.240**	**0.240**	**0.240**	**0.240**	**0.240**	**0.240**	**0.240**	**0.240**	**0.240**	**0.240**	**0.240**
No Action Surplus or Unmet Need	**0.000**	**(0.012)**	**(0.020)**	**(0.028)**	**(0.037)**	**(0.045)**	**(0.053)**	**(0.060)**	**(0.068)**	**(0.076)**	**(0.083)**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.012	0.020	0.028	0.037	0.045	0.053	0.060	0.068	0.076	0.083
Total	**0.000**	**0.012**	**0.020**	**0.028**	**0.037**	**0.045**	**0.053**	**0.060**	**0.068**	**0.076**	**0.083**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Wastewater Service Demand (avg day mgd)	**0.306**	**0.364**	**0.412**	**0.460**	**0.507**	**0.553**	**0.599**	**0.644**	**0.689**	**0.732**	**0.775**
Use of Existing and Capacity (avg day mgd)											
OSSFs	0.306	0.354	0.395	0.435	0.474	0.513	0.551	0.589	0.626	0.662	0.698
No-Discharge WWTP	-	0.009	0.017	0.025	0.033	0.041	0.048	0.056	0.063	0.070	0.077
Total Use of Existing & New Supply	**0.306**	**0.364**	**0.412**	**0.460**	**0.507**	**0.553**	**0.599**	**0.644**	**0.689**	**0.732**	**0.775**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

4.3.11 Planning Sub-Area – Greater Wimberley Area



Location/Background. This Sub-Area includes land within the certificated service areas of the Wimberley WSC, Aqua Texas, and an increment of land around the WSC that is reflective of possible future expansion of its service area. This Sub-Area is mostly urbanized.

Population. As indicated in Table 4.3-25, the 2010 population of this Sub-Area is estimated at 10,313 persons. It is projected to increase to 27,862 persons by 2060 with the High Case trend forecast, an average annual growth rate of about 2.0% over the 50-year period. With the presence of existing and future water facilities, almost 100% of the 2060 population is expected to locate in suburban-type developments.

WATER

Water Service Demands. As indicated in Table 4.3-25, the High Case forecast reflects an increase in total water demand in this Sub-Area from 1.872 mgd in 2010 to about 4.063 mgd by 2060, reflecting an average annual increase of 1.6%. Suburban demand for this Sub-Area is projected to increase from about 1.599 mgd in 2010 to around 4.063 mgd by 2060, an average annual increase of about 1.9%. Rural water use is projected to decrease from about 0.273 mgd in 2010 to near zero by 2060, as the rural area is absorbed by the metropolitan area.

Existing Water Supplies and Use of Supplies. Groundwater from the Trinity Aquifer Group comprises the largest current supply in the suburban and rural portions of this Sub-Area, meeting an approximate 1.808 mgd of local water demand. The Wimberley WSC currently holds a permit from the HTGCD to pump 0.620 mgd of groundwater annually. Aqua Texas holds two Trinity permits with a combined maximum pumping amount of 0.589 mgd. For the portions of this Sub-Area that they serve, the utilities are nearing their permit limit. However, both utilities have permit issues pending before the HTGCD to either allow an increase in pumping (WWSC) or to maintain pumping (Aqua Texas). Given the presence of centralized water supplies in this Sub-Area, it is assumed that only about 0.064 mgd or 3% of existing local water needs are met through rainwater collection systems.

Additional Water Needs. Existing supplies from various sources are meeting current water demands. As growth occurs over time, it is forecast that additional water needs of suburban and rural portions of this Sub-Area will range from 0.262 mgd in 2015 to 2.021 mgd by 2060.

Water Management Recommendations. Additional water conservation and some additional rainwater collection systems are first expected to meet a portion of the Sub-Area's increased water demand over time. As the two WSCs' pumping is nearing their permit limits, it is likely that they will need a temporary increase in their groundwater permit to allow them time to make system improvements and develop alternative supplies. A recommended action is that the two utilities pursue additional water supplies from Canyon Lake WSC (CLWSC), who could make excess treated water available on an interim basis for a period of about 15 years. To accomplish this, an 8.2 mile transmission pipeline would need to be constructed from CLWSC's storage tank on RR32 to interconnect with the Wimberley WSC system. It is also recommended that the line be sized sufficiently, at an average delivery capacity of about 1 mgd, to meet the projected additional water needs of both Wimberley WSC and Aqua Texas. An additional smaller interconnect pipeline would be needed to provide increased delivery capacity between the Wimberley WSC and Aqua systems. It is assumed that the two utilities would reduce their Trinity pumping by 50% with the provision of this new supply. At the end of 15 years, the interim supply would revert back to CLWSC, who needs it in the longer-term to meet the needs of its own service area. It is anticipated that, by that time, the GBRA will have completed the development of new water supplies that could serve the Wimberley area on a long-term basis. About 2030, when the interim supply from CLWSC is withdrawn, a new pipeline, delivering GBRA treated water, is recommended that would extend from the San Marcos water treatment plant along RR12 either directly into Wimberley or to the originating point of the initial pipeline terminus at RR32.

It is also assumed that the existing wastewater treatment plant would expand and the anticipated treatment plant in this area would be built and they would be able to deliver a moderate amount of reuse supplies to the golf course and greenbelt areas over time. The combination of these various management actions could act to reduce Trinity pumping in this Sub-Area by about 65% by the year 2060.

Sensitivity Analysis. In the Mid Case forecast, growth in this area was slowed, and suburban water use in this Sub-Area is projected to increase to only around 3.303 mgd by 2060, reflecting an average annual increase of about 1.5% versus a 1.9% average annual increase in the High Case Scenario. Rural water use is projected to decrease from a current level of about 0.273 mgd to near zero by 2060, as the rural portions of the area are subsumed within the growing City. In the Mid Case Scenario, the same management recommendations, including near-term access to the CLWSC supply and longer-term use of GBRA supplies, are warranted as in the High Case Scenario, except the initial use of the longer-term supply could be reduced due to the slower growth.

In the No Action Case, there would be no imported water supplies to the Wimberley area. Thus, suburban water use in this Sub-Area is projected to increase to only around 2.564 mgd by 2060, an average annual increase of about 0.9% versus 1.9% average annual increase in the High Case Scenario. Again, rural water use is projected to decrease from a current level of about 0.273 mgd to near zero by 2060, as the rural portions of the area are subsumed within the City. With the slower growth rate, the implementation of additional supplies would be slowed somewhat more. With no new imported water, water reuse, or implementation of water loss management measures in this No Action scenario, there would be a greater reliance on Trinity Aquifer supplies in the future.

WASTEWATER

Wastewater Service Demands. As indicated in Table 4.3-26, the High Case forecast reflects an increase in total wastewater service demands in this Sub-Area from 0.738 mgd in 2010 to about 1.872 mgd by 2060, reflecting an average annual increase of 1.9%. Suburban wastewater service demands in this Sub-Area are projected to increase from 0.575 mgd in 2010 to about 1.872 mgd by 2060, reflecting an average annual increase of 2.4%. Rural wastewater service demands are projected to decrease from 0.163 mgd in 2010 to near zero as the fringe rural area is absorbed into the City.

Existing Wastewater Capacity and Use of Capacity. Currently, there is 0.4 mgd in permitted existing centralized wastewater treatment capacity, owned and operated by GBRA and Aqua Texas, which provides some service to both this broad planning sub-area. However, on-site sewerage facilities (OSSFs) are meeting a substantial portion of existing service demands.

Unmet Wastewater Capacity Needs. Additional wastewater treatment needs are forecast for the suburban and rural portions of this Sub-Area ranging from 0.153 mgd in 2015 to 1.135 mgd by 2060.

Wastewater Management Recommendations. The suburban growth forecast for this Sub-Area is anticipated to have sufficiently high development densities to accommodate additional centralized wastewater treatment. It is anticipated that this centralized wastewater treatment will be generally one or more small plants, rather than a large, regional-type plant that faces more costly and problematic land application issues. These smaller centralized treatment facilities could accommodate up to 1.648 mgd of the Sub-Area's total wastewater service demand by 2060. As this broader Sub-Area grows, it is expected that much of this development will be of sufficient density to be ultimately provided centralized wastewater treatment services.

Sensitivity Analysis. In the Mid Case and No Action scenarios, wastewater services demands are diminished in about the same proportions as the water demands described previously. In the No Action scenario, wastewater service demand would likely be further slowed as there would be no new CLWSC or GBRA water lines built to the Wimberley/Woodcreek area, which would likely diminish the number of new subdivision-type developments more suitable for being served with centralized wastewater treatment.

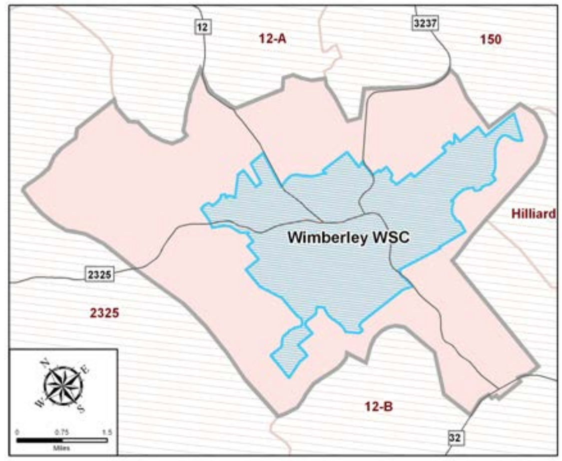
TABLE 4.3-25
WATER MANAGEMENT PLAN
PLANNING AREA **WIMBERLEY AREA**
SCENARIO **HI**

	Estimated					Projected					
Planning Area	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**	**2055**	**2060**
PLANNING FACTORS											
Planning Area Est./Projected Population	10,313	12,452	14,164	15,876	17,589	19,301	21,013	22,725	24,437	26,150	27,862
Annual Growth Rate	2.2%	3.8%	2.6%	2.3%	2.1%	1.9%	1.7%	1.6%	1.5%	1.4%	1.3%
Suburban % of Planning Area Population	77.9%	79.7%	82.0%	84.3%	86.6%	88.8%	91.1%	93.3%	95.5%	97.8%	100.0%
Rural % of Planning Area Population	22.1%	20.3%	18.0%	15.7%	13.4%	11.2%	8.9%	6.7%	4.5%	2.2%	0.0%
SUBURBAN AREA											
Population	8,038	9,929	11,620	13,387	15,229	17,147	19,139	21,207	23,350	25,568	27,862
Base Per Capita Water Use (gpcd)	132	131	129	128	127	127	126	126	126	126	126
Per Capita Water Use w/Addit. Conservation		185	176	168	162	156	152	148	144	141	139
Water Demand											
Annual (ac-ft)	1,790.7	2,067.7	2,308.0	2,557.0	2,813.2	3,078.5	3,350.8	3,638.3	3,934.1	4,238.1	4,550.2
Average Day (mgd)	**1.599**	**1.846**	**2.061**	**2.283**	**2.512**	**2.749**	**2.992**	**3.248**	**3.513**	**3.784**	**4.063**
Use of Existing Water Supply (mgd)											
Rainwater Collection Systems	0.036	0.049	0.060	0.072	0.086	0.102	0.119	0.138	0.159	0.182	0.206
Trinity GW - Suburban	1.562	1.562	1.562	1.562	1.562	1.562	1.562	1.562	1.562	1.562	1.562
Total	**1.599**	**1.611**	**1.622**	**1.635**	**1.649**	**1.664**	**1.682**	**1.701**	**1.722**	**1.744**	**1.769**
No Action Surplus or Unmet Need	**0.000**	**(0.235)**	**(0.439)**	**(0.648)**	**(0.863)**	**(1.084)**	**(1.310)**	**(1.548)**	**(1.791)**	**(2.040)**	**(2.294)**
Use of Additional Water Management Measures (mgd)											
Additional Water Conservation		0.009	0.021	0.034	0.050	0.069	0.090	0.114	0.141	0.170	0.203
Rainwater Collection Systems		0.010	0.018	0.028	0.039	0.051	0.064	0.078	0.093	0.110	0.128
Trinity GW - Suburban		(0.393)	(0.550)	(0.550)	(0.551)	(0.551)	(0.651)	(0.651)	(0.651)	(0.750)	(0.751)
Water Loss Management		0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150
Centralized Reuse		-	0.100	0.100	0.100	0.100	0.200	0.200	0.200	0.300	0.300
Canyon Lake WSC		0.459	0.700	0.886	-	-	-	-	-	-	-
GBRA		0.000	0.000	0.000	1.075	1.266	1.457	1.657	1.857	2.059	2.263
Total	**0.000**	**0.235**	**0.439**	**0.648**	**0.863**	**1.084**	**1.310**	**1.548**	**1.791**	**2.040**	**2.294**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	2,277	2,524	2,545	2,489	2,360	2,154	1,874	1,519	1,087	581	-
Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
Per Capita Water Use w/Addit. Conservation		118	116	114	113	111	109	107	105	104	-
Water Demand											
Annual (ac-ft)	306.0	336.4	336.4	326.2	306.7	277.5	239.2	192.3	136.4	72.3	-
Average Day (mgd)	**0.273**	**0.300**	**0.300**	**0.291**	**0.274**	**0.248**	**0.214**	**0.172**	**0.122**	**0.065**	**-**
Existing Water Supply (avg day mgd)											
Rainwater Collection Systems	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027
Trinity GW - Rural	0.246	0.246	0.246	0.246	0.246	0.246	0.246	0.246	0.246	0.246	0.246
Total	**0.273**	**0.273**	**0.273**	**0.273**	**0.273**	**0.273**	**0.273**	**0.273**	**0.273**	**0.273**	**0.273**
No Action Surplus or Unmet Need	**0.000**	**(0.027)**	**(0.027)**	**(0.018)**	**(0.001)**	**0.025**	**0.060**	**0.102**	**0.151**	**0.209**	**0.273**
Use of Additional Water Management Measures (avg day mgd)											
Additional Water Conservation		0.002	0.005	0.007	0.008	0.009	0.010	0.009	0.007	0.004	0.000
Rainwater Collection Systems		0.003	0.003	0.002	(0.001)	(0.005)	(0.010)	(0.017)	(0.026)	(0.037)	(0.050)
Trinity GW - Rural		0.022	0.020	0.010	(0.007)	(0.030)	(0.059)	(0.093)	(0.133)	(0.176)	(0.223)
Total	**0.000**	**0.027**	**0.027**	**0.018**	**0.001**	**(0.025)**	**(0.060)**	**(0.102)**	**(0.151)**	**(0.209)**	**(0.273)**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Water Service Demand (avg day mgd)	**1.872**	**2.146**	**2.361**	**2.574**	**2.786**	**2.996**	**3.205**	**3.420**	**3.634**	**3.849**	**4.063**
Use of Existing and New Supply (avg day mgd)											
Additional Water Conservation	-	0.011	0.025	0.041	0.058	0.078	0.099	0.123	0.148	0.175	0.203
Rainwater Collection Systems	0.064	0.089	0.108	0.129	0.152	0.175	0.200	0.226	0.254	0.282	0.312
Trinity GW	1.808	1.437	1.278	1.268	1.250	1.227	1.098	1.064	1.025	0.882	0.834
Water Loss Management	-	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150
Centralized Reuse	-	-	0.100	0.100	0.100	0.100	0.200	0.200	0.200	0.300	0.300
Canyon Lake WSC	-	0.459	0.700	0.886	-	-	-	-	-	-	-
GBRA	-	-	-	-	1.075	1.266	1.457	1.657	1.857	2.059	2.263
Total Use of Existing & New Supply	**1.872**	**2.146**	**2.361**	**2.574**	**2.786**	**2.996**	**3.205**	**3.420**	**3.634**	**3.849**	**4.063**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE 4.3-26
WASTEWATER MANAGEMENT PLAN
PLANNING AREA **WIMBERLEY AREA**
SCENARIO **HI**

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	10,313	12,452	14,164	15,876	17,589	19,301	21,013	22,725	24,437	26,150	27,862
Annual Growth Rate	2.2%	3.8%	2.6%	2.3%	2.1%	1.9%	1.7%	1.6%	1.5%	1.4%	1.3%
Suburban % of Planning Area Population	77.9%	79.7%	82.0%	84.3%	86.6%	88.8%	91.1%	93.3%	95.5%	97.8%	100.0%
Rural % of Planning Area Population	22.1%	20.3%	18.0%	15.7%	13.4%	11.2%	8.9%	6.7%	4.5%	2.2%	0.0%
SUBURBAN AREA											
Population	8,038	9,929	11,620	13,387	15,229	17,147	19,139	21,207	23,350	25,568	27,862
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand											
Average Day (mgd)	**0.575**	**0.710**	**0.825**	**0.945**	**1.067**	**1.193**	**1.323**	**1.456**	**1.592**	**1.730**	**1.872**
Existing Wastewater Treatment (mgd)											
OSSFs	0.325	0.325	0.325	0.325	0.325	0.325	0.325	0.325	0.325	0.325	0.325
No-Discharge WWTP	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
Total	**0.575**	**0.575**	**0.575**	**0.575**	**0.575**	**0.575**	**0.575**	**0.575**	**0.575**	**0.575**	**0.575**
Suburban - No Action Surplus or Unmet Need	**0.000**	**(0.135)**	**(0.251)**	**(0.370)**	**(0.492)**	**(0.619)**	**(0.748)**	**(0.881)**	**(1.017)**	**(1.156)**	**(1.297)**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.057	0.079	0.093	0.098	0.093	0.078	0.051	0.013	(0.037)	(0.100)
No-Discharge WWTP		0.079	0.171	0.276	0.394	0.525	0.670	0.830	1.004	1.193	1.397
Total	**0.000**	**0.135**	**0.251**	**0.370**	**0.492**	**0.619**	**0.748**	**0.881**	**1.017**	**1.156**	**1.297**
Suburban - Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	2,277	2,524	2,545	2,489	2,360	2,154	1,874	1,519	1,087	581	-
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	0
Wastewater Service Demand											
Average Day (mgd)	**0.163**	**0.180**	**0.181**	**0.176**	**0.165**	**0.150**	**0.129**	**0.104**	**0.074**	**0.039**	**0.000**
Existing Wastewater Treatment (mgd)											
OSSFs	0.163	0.163	0.163	0.163	0.163	0.163	0.163	0.163	0.163	0.163	0.163
Total	**0.163**	**0.163**	**0.163**	**0.163**	**0.163**	**0.163**	**0.163**	**0.163**	**0.163**	**0.163**	**0.163**
No Action Surplus or Unmet Need	**0.000**	**(0.018)**	**(0.018)**	**(0.013)**	**(0.003)**	**0.013**	**0.033**	**0.059**	**0.089**	**0.123**	**0.163**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.018	0.018	0.013	0.003	(0.013)	(0.033)	(0.059)	(0.089)	(0.123)	(0.163)
Total	**0.000**	**0.018**	**0.018**	**0.013**	**0.003**	**(0.013)**	**(0.033)**	**(0.059)**	**(0.089)**	**(0.123)**	**(0.163)**
Surplus or Unmet Need	**0.000**	**0.000**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Wastewater Service Demand (avg day mgd)	**0.738**	**0.891**	**1.006**	**1.120**	**1.233**	**1.343**	**1.452**	**1.560**	**1.666**	**1.770**	**1.872**
Use of Existing and Capacity (avg day mgd)											
OSSFs	0.487	0.562	0.585	0.594	0.588	0.568	0.532	0.480	0.412	0.327	0.225
No-Discharge WWTP	0.250	0.329	0.422	0.527	0.644	0.776	0.921	1.080	1.254	1.443	1.648
Total Use of Existing & New Supply	**0.738**	**0.891**	**1.006**	**1.120**	**1.233**	**1.343**	**1.452**	**1.560**	**1.666**	**1.770**	**1.872**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

4.3.11.1 Planning Sub-Area – Wimberley WSC



Location/Background. This Sub-Area includes land within the certificated service area of the water supply corporation that lies both inside and outside the city limits of Wimberley and an increment of land around the WSC that is reflective of possible future expansion of its service area. This Sub-Area is mostly urbanized.

Population. As indicated in Table 4.3-27, the 2010 population of this Sub-Area is estimated at 5,642 persons. It is projected to increase to 15,225 persons by 2060 with the High Case trend forecast, an average annual growth rate of about 2.0% over the 50-year period. With the presence of existing and future water facilities, almost 100% of the 2060 population is expected to locate in suburban-type developments.

WATER

Water Service Demands. As indicated in Table 4.3-27, the High Case forecast reflects an increase in total water demand in this Sub-Area from 0.765 mgd in 2010 to about 1.995 mgd by 2060, reflecting an average annual increase of 1.9%. Suburban demand for this Sub-Area is projected to increase from about 0.590 mgd in 2010 to around 1.995 mgd by 2060, an average annual increase of about 2.5%. Rural water use is projected to decrease from about 0.175 mgd in 2010 to near zero by 2060, as the rural area is absorbed by the metropolitan area.

Existing Water Supplies and Use of Supplies. Groundwater from the Trinity Aquifer Group comprises the largest current supply in the suburban and rural portions of this Sub-Area, meeting an approximate 0.718 mgd of local water demand. The Wimberley WSC currently holds a permit from the HTGCD to pump 0.620 mgd of groundwater annually, and for the portion of this Sub-Area that it serves, the WSC is nearing its permit limit. A revised permit application is currently pending before the HTGCD to allow an increase in pumping by the WSC. Given the presence of centralized water supplies, it is assumed that only about 0.047 mgd or 6% of existing local water needs are met through rainwater collection systems.

Additional Water Needs. Existing supplies from various sources are meeting current water demands. As growth occurs over time, it is forecast that additional water needs of suburban and rural portions of this Sub-Area will range from 0.192 mgd in 2015 to 1.230 mgd by 2060.

Water Management Recommendations. Additional water conservation and some additional rainwater collection systems are first expected to meet a portion of the Sub-Area's increased water demand over time. As the WSC is currently pumping near its permit limit, it is likely that it will need a temporary increase in its groundwater permit to allow it time to develop alternative supplies. A recommended action is that the Wimberley WSC pursue additional water supplies from Canyon Lake WSC (CLWSC), who could make excess treated water available on an interim basis for a period of about 15 years. To accomplish this, an 8.2 mile transmission pipeline would need to be constructed from CLWSC's storage tank on RR32 to interconnect with the Wimberley WSC system. It is also recommended that the line be sized sufficiently, at an average delivery capacity of about 1 mgd, to meet the projected additional water needs of Aqua Texas in serving the Woodcreek and Woodcreek North areas. An additional smaller interconnect pipeline would be needed to provide increased delivery capacity between the Wimberley WSC and Aqua systems. It is assumed that Wimberley WSC would reduce its Trinity pumping by 50% with the provision of this new supply. At the end of 15 years, the interim supply would revert back to CLWSC, who needs it in the longer-term to meet the needs of its own service area. It is anticipated that, by that time, the GBRA will have completed the development of new water supplies that could serve the Wimberley area on a long-term basis. About 2030, when the interim supply from CLWSC is withdrawn, a new pipeline, delivering GBRA treated water, is recommended that would extend from the San Marcos water treatment plant along RR12 either directly into Wimberley or to the originating point of the initial pipeline terminus at RR 32. The combination of these various management actions could act to reduce Trinity pumping in this Sub-Area by about 55% by the year 2060.

Sensitivity Analysis. In the Mid Case forecast, growth in this area was slowed, and suburban water use in this Sub-Area is projected to increase to only around 1.569 mgd by 2060, reflecting an average annual increase of about 2.0% versus a 2.5% average annual increase in the High Case Scenario. Rural water use is projected to decrease from a current level of about 0.175 mgd to near zero by 2060, as the rural portions of the area are subsumed within the growing City. In the Mid Case Scenario, the same management recommendations, including near-term access to the CLWSC supply and longer-term use of GBRA supplies, are warranted as in the High Case Scenario, except the initial use of the longer-term supply could be reduced due to the slower growth.

In the No Action Case, there would be no imported water supplies to the Wimberley area. Thus, suburban water use in this Sub-Area is projected to increase to only around 1.154 mgd by 2060, an average annual increase of about 1.4% versus 2.5% average annual increase in the High Case Scenario. Again, rural water use is projected to decrease from a current level of about 0.175 mgd to near zero by 2060, as the rural portions of the area are subsumed within the City. With the slower growth rate, the implementation of additional supplies would be slowed somewhat more. With no new imported water in this No Action scenario, there would be a greater reliance on Trinity Aquifer supplies in the future.

WASTEWATER

Wastewater Service Demands. As indicated in Table 4.3-28, the High Case forecast reflects an increase in total wastewater service demands in this Sub-Area from 0.403 mgd in 2010 to about 1.023 mgd by 2060, reflecting an average annual increase of 1.9%. Suburban wastewater service demands in this Sub-Area are projected to increase from 0.299 mgd in 2010 to about 1.023 mgd by 2060, reflecting an average annual increase of 2.5%. Rural wastewater service demands are projected to decrease from 0.104 mgd in 2010 to near zero as the fringe rural area is absorbed into the City.

Existing Wastewater Capacity and Use of Capacity. Currently, there is 0.025 mgd in permitted centralized wastewater treatment capacity, owned and operated by GBRA, which serves a small development in this Sub-Area. On-site sewerage facilities (OSSFs) are meeting the large majority of existing service demands.

Unmet Wastewater Capacity Needs. Additional wastewater treatment needs are forecast for the suburban and rural portions of this Sub-Area ranging from 0.103 mgd in 2015 to 0.620 mgd by 2060.

Wastewater Management Recommendations. The suburban growth forecast for this Sub-Area is anticipated to have sufficiently high development densities to accommodate additional centralized wastewater treatment. It is anticipated that this centralized wastewater treatment will be generally one or more small plants, rather than a large, regional-type plant that faces more costly and problematic land application issues. These smaller centralized treatment facilities could accommodate up to 0.818 mgd of the Sub-Area's total wastewater service demand by 2060 with the remainder 0.205 mgd of demand expected to be met by individual on-site septic systems. This planning sub-area is the area served water by the WSC, but includes large portions of the City of Wimberley. As the City grows and annexes adjacent areas, it is expected that much of this planning sub-area will become part of Wimberley and be ultimately provided centralized wastewater treatment services by the City. As discussed in Section 3.7, GBRA and the City have developed plans for a new treatment facility that would initially serve areas around the central commercial district. Options have also been examined for long-term expansion of this service area. Currently, negotiations are underway as to some funding issues related to the initial construction.

Sensitivity Analysis. In the Mid Case and No Action scenarios, wastewater services demands are diminished in about the same proportions as the water demands described previously. In the No Action scenario, wastewater service demand would likely be further slowed as there would be no new CLWSC or GBRA water lines built to the Wimberley area, which would likely diminish the number of new subdivision-type developments more suitable for being served with centralized wastewater treatment.

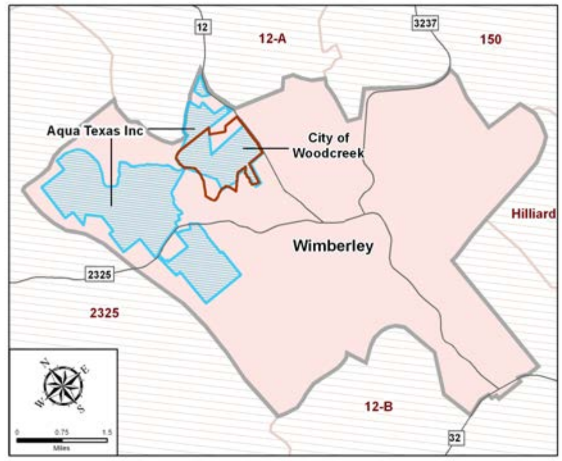
TABLE 4.3-27
WATER MANAGEMENT PLAN
PLANNING AREA **WIMBERLEY WSC**
SCENARIO **HI**

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	5,642	7,078	7,983	8,889	9,794	10,699	11,604	12,509	13,414	14,319	15,225
Annual Growth Rate	1.0%	4.6%	2.4%	2.2%	2.0%	1.8%	1.6%	1.5%	1.4%	1.3%	1.2%
Suburban % of Planning Area Population	74.2%	76.8%	79.4%	81.9%	84.5%	87.1%	89.7%	92.3%	94.8%	97.4%	100.0%
% of New Growth that is Suburban		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
% Reduction in Base Water Use		0.50%	1.00%	1.50%	2.00%	2.50%	3.00%	3.50%	4.00%	4.50%	5.00%
% of Growth on Rainwater Systems	5.0%	5.5%	6.0%	6.5%	7.0%	7.5%	8.0%	8.5%	9.0%	9.5%	10.0%
% of Growth on Central Water Systems		223.4%	67.1%	64.2%	61.3%	58.5%	55.6%	53.0%	50.1%	47.4%	43.7%
% of Exist. Demand Converting to Central Wtr Systems		2.5%	2.8%	3.0%	3.3%	3.5%	3.8%	4.0%	4.3%	4.5%	5.0%
Rural % of Planning Area Population	25.8%	23.2%	20.6%	18.1%	15.5%	12.9%	10.3%	7.7%	5.2%	2.6%	0.0%
% of New Growth that is Rural		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
% Reduction in Base Water Use		0.75%	1.50%	2.25%	3.00%	3.75%	4.50%	5.25%	6.00%	6.75%	7.50%
% of Growth on Rainwater Systems	10.0%	11.0%	12.0%	13.0%	14.0%	15.0%	16.0%	17.0%	18.0%	19.0%	20.0%
SUBURBAN AREA											
Population	4,186	5,434	6,336	7,283	8,278	9,319	10,407	11,541	12,722	13,950	15,225
Base Per Capita Water Use (gpcd)	141	140	139	138	137	136	135	134	133	132	131
Per Capita Water Use w/Addit. Conservation		139	138	136	134	133	131	129	128	126	124
Water Demand											
Annual (ac-ft)	661.2	852.2	986.5	1,125.9	1,270.3	1,419.6	1,573.7	1,732.3	1,895.3	2,062.6	2,234.0
Average Day (mgd)	**0.590**	**0.761**	**0.881**	**1.005**	**1.134**	**1.268**	**1.405**	**1.547**	**1.692**	**1.842**	**1.995**
Use of Existing Water Supply (mgd)											
Rainwater Collection Systems	0.030	0.042	0.053	0.065	0.079	0.095	0.112	0.131	0.152	0.175	0.199
Trinity GW - Suburban	0.561	0.561	0.561	0.561	0.561	0.561	0.561	0.561	0.561	0.561	0.561
Total	**0.590**	**0.603**	**0.614**	**0.626**	**0.640**	**0.656**	**0.673**	**0.692**	**0.713**	**0.736**	**0.760**
No Action Surplus or Unmet Need	**0.000**	**(0.158)**	**(0.267)**	**(0.379)**	**(0.494)**	**(0.612)**	**(0.732)**	**(0.854)**	**(0.979)**	**(1.106)**	**(1.234)**
Use of Additional Water Management Measures (mgd)											
Additional Water Conservation		0.004	0.009	0.015	0.023	0.032	0.042	0.054	0.068	0.083	0.100
Rainwater Collection Systems		0.009	0.017	0.025	0.034	0.044	0.055	0.067	0.080	0.094	0.109
Trinity GW - Suburban		(0.251)	(0.251)	(0.251)	(0.251)	(0.251)	(0.251)	(0.251)	(0.251)	(0.251)	(0.251)
Canyon Lake WSC		0.396	0.493	0.590							
GBRA					0.688	0.787	0.886	0.984	1.082	1.180	1.276
Total	**0.000**	**0.158**	**0.267**	**0.379**	**0.494**	**0.612**	**0.732**	**0.854**	**0.979**	**1.106**	**1.234**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
		0.310	0.310	0.310	0.310	0.310	0.310	0.310	0.310	0.310	0.310
RURAL AREA											
Population	1,456	1,644	1,648	1,605	1,516	1,380	1,198	968	692	369	-
Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
Per Capita Water Use w/Addit. Conservation		118	116	114	113	111	109	107	105	104	-
Water Demand											
Annual (ac-ft)	195.7	219.1	217.8	210.4	197.0	177.8	152.9	122.6	86.8	45.9	-
Average Day (mgd)	**0.175**	**0.196**	**0.194**	**0.188**	**0.176**	**0.159**	**0.137**	**0.109**	**0.078**	**0.041**	**-**
Existing Water Supply (avg day mgd)											
Rainwater Collection Systems	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017
Trinity GW - Rural	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157
Total	**0.175**	**0.175**	**0.175**	**0.175**	**0.175**	**0.175**	**0.175**	**0.175**	**0.175**	**0.175**	**0.175**
No Action Surplus or Unmet Need	**0.000**	**(0.021)**	**(0.020)**	**(0.013)**	**(0.001)**	**0.016**	**0.038**	**0.065**	**0.097**	**0.134**	**0.175**
Use of Additional Water Management Measures (avg day mgd)											
Additional Water Conservation		0.001	0.003	0.004	0.005	0.006	0.006	0.006	0.005	0.003	0.000
Rainwater Collection Systems		0.002	0.002	0.001	(0.000)	(0.003)	(0.006)	(0.011)	(0.017)	(0.024)	(0.032)
Trinity GW - Rural		0.017	0.015	0.008	(0.004)	(0.019)	(0.038)	(0.060)	(0.085)	(0.113)	(0.143)
Total	**0.000**	**0.021**	**0.020**	**0.013**	**0.001**	**(0.016)**	**(0.038)**	**(0.065)**	**(0.097)**	**(0.134)**	**(0.175)**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Water Service Demand (avg day mgd)	**0.765**	**0.957**	**1.075**	**1.193**	**1.310**	**1.426**	**1.542**	**1.656**	**1.770**	**1.883**	**1.995**
Use of Existing and New Supply (avg day mgd)											
Additional Water Conservation	-	0.005	0.012	0.019	0.028	0.038	0.048	0.060	0.072	0.086	0.100
Rainwater Collection Systems	0.047	0.071	0.089	0.109	0.130	0.153	0.178	0.205	0.233	0.263	0.294
Trinity GW	0.718	0.484	0.482	0.475	0.464	0.448	0.430	0.407	0.382	0.355	0.325
Canyon Lake WSC	-	0.396	0.493	0.590	-	-	-	-	-	-	-
GBRA	-	-	-	-	0.688	0.787	0.886	0.984	1.082	1.180	1.276
Total Use of Existing & New Supply	**0.765**	**0.957**	**1.075**	**1.193**	**1.310**	**1.426**	**1.542**	**1.656**	**1.770**	**1.883**	**1.995**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE 4.3-28
WASTEWATER MANAGEMENT PLAN
PLANNING AREA WIMBERLEY WSC
SCENARIO HI

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	5,642	7,078	7,983	8,889	9,794	10,699	11,604	12,509	13,414	14,319	15,225
Annual Growth Rate	1.0%	4.6%	2.4%	2.2%	2.0%	1.8%	1.6%	1.5%	1.4%	1.3%	1.2%
Suburban % of Planning Area Population	74.2%	76.8%	79.4%	81.9%	84.5%	87.1%	89.7%	92.3%	94.8%	97.4%	100.0%
% of New Growth that is Suburban		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
% of Demand served by Central Wastewater Systems	8.3%	15.5%	22.6%	29.8%	37.0%	44.2%	51.3%	58.5%	65.7%	72.8%	80.0%
Rural % of Planning Area Population	25.8%	23.2%	20.6%	18.1%	15.5%	12.9%	10.3%	7.7%	5.2%	2.6%	0.0%
% of New Growth that is Rural		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
% of Demand served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA											
Population	4,186	5,434	6,336	7,283	8,278	9,319	10,407	11,541	12,722	13,950	15,225
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand											
Average Day (mgd)	**0.299**	**0.389**	**0.450**	**0.514**	**0.580**	**0.649**	**0.719**	**0.792**	**0.867**	**0.944**	**1.023**
Existing Wastewater Treatment (mgd)											
OSSFs	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275
No-Discharge WWTP	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
Total	**0.299**	**0.299**	**0.299**	**0.299**	**0.299**	**0.299**	**0.299**	**0.299**	**0.299**	**0.299**	**0.299**
Suburban - No Action Surplus or Unmet Need	**0.000**	**(0.089)**	**(0.151)**	**(0.215)**	**(0.281)**	**(0.349)**	**(0.420)**	**(0.493)**	**(0.568)**	**(0.645)**	**(0.724)**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.054	0.074	0.086	0.091	0.088	0.076	0.054	0.023	(0.018)	(0.070)
No-Discharge WWTP		0.035	0.077	0.128	0.190	0.262	0.344	0.438	0.545	0.663	0.794
Total	**0.000**	**0.089**	**0.151**	**0.215**	**0.281**	**0.349**	**0.420**	**0.493**	**0.568**	**0.645**	**0.724**
Suburban - Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	1,456	1,644	1,648	1,605	1,516	1,380	1,198	968	692	369	-
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Wastewater Service Demand											
Average Day (mgd)	**0.104**	**0.118**	**0.117**	**0.113**	**0.106**	**0.096**	**0.083**	**0.066**	**0.047**	**0.025**	**0.000**
Existing Wastewater Treatment (mgd)											
OSSFs	0.104	0.104	0.104	0.104	0.104	0.104	0.104	0.104	0.104	0.104	0.104
Total	**0.104**	**0.104**	**0.104**	**0.104**	**0.104**	**0.104**	**0.104**	**0.104**	**0.104**	**0.104**	**0.104**
No Action Surplus or Unmet Need	**0.000**	**(0.013)**	**(0.013)**	**(0.009)**	**(0.002)**	**0.008**	**0.021**	**0.038**	**0.057**	**0.079**	**0.104**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.013	0.013	0.009	0.002	(0.008)	(0.021)	(0.038)	(0.057)	(0.079)	(0.104)
Total	**0.000**	**0.013**	**0.013**	**0.009**	**0.002**	**(0.008)**	**(0.021)**	**(0.038)**	**(0.057)**	**(0.079)**	**(0.104)**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Wastewater Service Demand (avg day mgd)	**0.403**	**0.506**	**0.567**	**0.627**	**0.686**	**0.745**	**0.802**	**0.859**	**0.914**	**0.969**	**1.023**
Use of Existing and Capacity (avg day mgd)											
OSSFs	0.379	0.446	0.465	0.474	0.472	0.458	0.433	0.395	0.345	0.282	0.205
No-Discharge WWTP	0.025	0.060	0.102	0.153	0.215	0.286	0.369	0.463	0.569	0.688	0.818
Total Use of Existing & New Supply	**0.403**	**0.506**	**0.567**	**0.627**	**0.686**	**0.745**	**0.802**	**0.859**	**0.914**	**0.969**	**1.023**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

4.3.11.2 Planning Sub-Area – City Of Woodcreek And Golf Course



Location/Background. This Sub-Area includes land within the certificated service area of Aqua Texas, Inc., a water supply corporation, that essentially encompasses the City of Woodcreek, as well as an increment of land around the WSC reflective of possible future expansion of its service area. This Sub-Area is mostly urbanized. This Sub-Area also includes the golf course.

Population. As indicated in Table 4.3-29, the 2010 population of this Sub-Area is estimated at 2,370 persons. It is projected to increase to 6,694 persons by 2060 with the High Case trend forecast, an average annual growth rate of about 2.1% over the 50-year planning period. With the presence of existing and future water infrastructure, almost 100% of the 2060 population is expected to locate in suburban-type developments.

WATER

Water Service Demands. As indicated in Table 4.3-29, the High Case forecast reflects an increase in total water demand in this Sub-Area from 0.806 mgd in 2010 to about 1.319 mgd by 2060, reflecting an average annual increase of 1.0%. Suburban demand for this Sub-Area is projected to increase from about 0.735 mgd in 2010 to around 1.319 mgd by 2060, an average annual increase of about 1.2%. Rural water use is projected to decrease from about 0.071 mgd in 2010 to near zero by 2060, as the rural portion is absorbed by the metropolitan area.

Existing Water Supplies and Use of Supplies. Groundwater from the Trinity Aquifer Group comprises the largest current supply in the suburban and rural portions of this Sub-Area, meeting an approximate 0.799 mgd of local water demand. Aqua Utilities, Inc. is currently meeting about 0.226 mgd of this demand in serving the City of Woodcreek. Aqua currently holds a permit from the HTGCD to pump 0.287 mgd annually. For the portion of this Sub-Area it serves, the utility is nearing its permit limit. A permit issue is currently pending before the HTGCD to avoid a reduction in Aqua's permit as a result of gaining savings from water loss management. The golf course at Woodcreek currently uses about 0.5 mgd of Trinity groundwater supply but does not come under the Aqua permit. Given the presence of centralized water supplies, very little existing local water needs are met through rainwater collection systems.

Additional Water Needs. Existing supplies from various sources are meeting current water demands. As growth occurs over time, it is forecast that additional water needs of suburban and rural portions of this Sub-Area will range from 0.070 mgd in 2015 to 0.513 mgd by 2060.

Water Management Recommendations. Additional water conservation and some additional rainwater collection systems are first expected to meet a portion of the Sub-Area's increased water demand over time. As Aqua is currently pumping near its permit limit, it is likely that it will need a temporary increase in its groundwater permit to allow it time to make system improvements and develop alternative supplies. It is recommended that Aqua first pursue distribution system improvements that will reduce its water loss. It is anticipated that this increase in supply efficiency will defer additional supply needs for a period of about 3-5 years. The next recommended action is that the Aqua Texas, in conjunction with Wimberley WSC, pursue additional water supplies from Canyon Lake WSC (CLWSC), who could make excess treated water available on an interim basis for a period of about 15 years. It is assumed that Aqua Texas would reduce its Trinity pumping by 50% with the provision of this new supply. At the end of 15 years, the interim supply would revert back to CLWSC, who needs it in the longer-term to meet the needs of its own service area. It is anticipated that, by that time, the GBRA will have completed the development of new water supplies that could serve the Wimberley area on a long-term basis. To accomplish this, an 8.2 mile transmission pipeline would need to be constructed from CLWSC's storage tank on RR 32 to interconnect with the Wimberley WSC system. It is also recommended that the line be sized sufficiently, at an average delivery capacity of about 1 mgd, to meet the projected additional water needs of Aqua Texas in serving the Woodcreek and Woodcreek North areas. An additional smaller interconnect pipeline would be needed to provide increased delivery capacity between the Wimberley WSC and Aqua systems. About 2030, when the interim supply from CLWSC is withdrawn, a new pipeline, delivering GBRA treated water, is recommended that would extend from the San Marcos water treatment plant along RR 12 either directly into Wimberley or to the originating point of the initial pipeline terminus at RR 32. Also anticipated is the expansion of the centralized wastewater system and provision of reuse supplies to the Golf Course, beginning with 0.1 mgd by 2020 and increasing to 0.300 mgd by 2055. The combination of these various management actions could act to reduce Trinity pumping in this Sub-Area by about 80% by the year 2060.

Sensitivity Analysis. In the Mid Case forecast, growth in this area was slowed, and suburban water use in this Sub-Area is projected to increase to only around 1.118 mgd by 2060, reflecting an average annual increase of about 0.8% versus a 1.2% average annual increase in the High Case Scenario. Rural water use is projected to decrease from a current level of about 0.071 mgd to near zero by 2060, as the rural portions of the area are subsumed within the growing City. In the Mid Case Scenario, the same management recommendations, including near-term access to the CLWSC supply and longer-term use of GBRA supplies, are warranted as in the High Case Scenario, except the initial use of the longer-term supply could be reduced due to the slower growth.

In the No Action Case, there would be no imported water supplies to the Wimberley area. Thus, suburban water use in this Sub-Area is projected to increase to only around 0.957 mgd by 2060, an average annual increase of about 0.5% versus 1.2% average annual increase in the High Case Scenario. Again, rural water use is projected to decrease from a current level of about 0.071 mgd to near zero by 2060, as the rural portions of the area are subsumed within the City. With the slower growth rate, the implementation of additional supplies would be slowed somewhat more. With no new imported water, water reuse or implementation of water loss management measures in this No Action scenario, there would be a greater reliance on Trinity Aquifer supplies in the future.

WASTEWATER

Wastewater Service Demands. As indicated in Table 4.3-30, the High Case forecast reflects total wastewater service demands in this Sub-Area increasing from 0.170 mgd in 2010 to about 0.450 mgd by 2060, reflecting an average annual growth of 2.0%. Suburban wastewater demands are projected to increase from 0.127 mgd in 2010 to about 0.450 mgd by 2060, reflecting an average annual increase of 2.6%. Rural wastewater service demands are projected to decrease from 0.042 mgd in 2010 to near zero as the fringe rural area is absorbed into the City.

Existing Wastewater Capacity and Use of Capacity. Currently, there is 0.375 mgd in permitted centralized treatment capacity, owned and operated by Aqua Texas, which provides some service to this sub-area and the adjacent Woodcreek North. About 53% of that capacity has been shown available for this City of Woodcreek Sub-Area. However, on-site sewerage facilities (OSSFs) are meeting the large majority of existing service demands.

Unmet Wastewater Capacity Needs. Additional wastewater treatment needs are forecast for the suburban and rural portions of this Sub-Area ranging from 0.042 mgd in 2015 to 0.280 mgd by 2060.

Wastewater Management Recommendations. The suburban growth forecast for this Sub-Area is anticipated to have sufficiently high development densities to accommodate additional centralized wastewater treatment. It is anticipated that this centralized wastewater treatment will be generally one or more small plants, rather than a large, regional-type plant that faces more costly and problematic land application issues. These smaller centralized treatment facilities could accommodate up to 0.450 mgd of the Sub-Area's total wastewater service demand by 2060. As this Sub-Area grows, it is expected that much of this development will be of sufficient density to be ultimately provided centralized wastewater treatment services.

Sensitivity Analysis. In the Mid Case and No Action scenarios, wastewater services demands are diminished in about the same proportions as the water demands described previously. In the No Action scenario, wastewater service demand would likely be further slowed as there would be no new CLWSC or GBRA water lines built to the Wimberley/Woodcreek area, which would likely diminish the number of new subdivision-type developments more suitable for being served with centralized wastewater treatment.

TABLE 4.3-29
WATER MANAGEMENT PLAN
PLANNING AREA **CITY OF WOODCREEK & GOLF COURSE**
SCENARIO **HI**

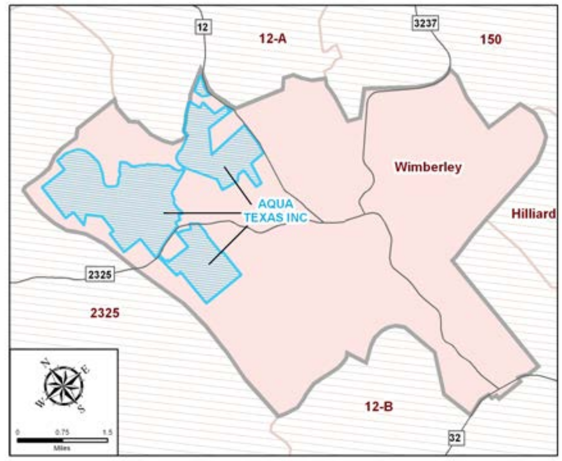
Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	2,370	2,953	3,369	3,784	4,200	4,616	5,031	5,447	5,862	6,278	6,694
Annual Growth Rate	1.8%	4.5%	2.7%	2.4%	2.1%	1.9%	1.7%	1.6%	1.5%	1.4%	1.3%
Suburban % of Planning Area Population	75.0%	77.5%	80.0%	82.5%	85.0%	87.5%	90.0%	92.5%	95.0%	97.5%	100.0%
% of New Growth that is Suburban		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
% Reduction in Base Water Use		0.50%	1.00%	1.50%	2.00%	2.50%	3.00%	3.50%	4.00%	4.50%	5.00%
% of Growth on Rainwater Systems	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
% of Growth on Central Water Systems		100.0%	27.0%	91.0%	90.0%	89.0%	87.0%	88.0%	88.0%	86.0%	86.0%
% of Exist. Demand Converting to Central Wtr Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rural % of Planning Area Population	25.0%	22.5%	20.0%	17.5%	15.0%	12.5%	10.0%	7.5%	5.0%	2.5%	0.0%
% of New Growth that is Rural		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
% Reduction in Base Water Use		0.75%	1.50%	2.25%	3.00%	3.75%	4.50%	5.25%	6.00%	6.75%	7.50%
% of Growth on Rainwater Systems	10.0%	11.0%	12.0%	13.0%	14.0%	15.0%	16.0%	17.0%	18.0%	19.0%	20.0%
SUBURBAN AREA											
Population	1,778	2,289	2,695	3,122	3,570	4,039	4,528	5,038	5,569	6,121	6,694
Base Per Capita Water Use (gpcd)	127	126	125	124	123	122	121	121	121	121	121
Per Capita Water Use w/Addit. Conservation		347	311	283	260	242	226	214	204	195	187
Water Demand											
Annual (ac-ft) also includes golf course demand	822.9	893.1	947.3	1,003.6	1,061.9	1,122.0	1,183.7	1,252.8	1,324.8	1,399.6	1,477.3
Average Day (mgd)	**0.735**	**0.797**	**0.846**	**0.896**	**0.948**	**1.002**	**1.057**	**1.119**	**1.183**	**1.250**	**1.319**
Use of Existing Water Supply (mgd)											
Rainwater Collection Systems	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Trinity GW - Suburban	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735
Total	**0.735**	**0.735**	**0.735**	**0.735**	**0.735**	**0.735**	**0.735**	**0.735**	**0.735**	**0.735**	**0.735**
No Action Surplus or Unmet Need	**0.000**	**(0.063)**	**(0.111)**	**(0.161)**	**(0.213)**	**(0.267)**	**(0.322)**	**(0.384)**	**(0.448)**	**(0.515)**	**(0.584)**
Use of Additional Water Management Measures (mgd)											
Additional Water Conservation		0.004	0.008	0.013	0.019	0.025	0.032	0.039	0.047	0.056	0.066
Rainwater Collection Systems		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Trinity GW - Suburban		(0.114)	(0.183)	(0.184)	(0.184)	(0.184)	(0.284)	(0.284)	(0.284)	(0.384)	(0.384)
Water Loss Management		0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110
Centralized Reuse			0.100	0.100	0.100	0.100	0.200	0.200	0.200	0.300	0.300
Canyon Lake WSC		0.063	0.076	0.121							
GBRA					0.168	0.216	0.264	0.318	0.375	0.432	0.492
Total	**0.000**	**0.063**	**0.111**	**0.161**	**0.213**	**0.267**	**0.322**	**0.384**	**0.448**	**0.515**	**0.584**
		0.121	0.151	0.151	0.151	0.151	0.151	0.151	0.151	0.151	0.151
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	593	664	674	662	630	577	503	409	293	157	-
Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
Per Capita Water Use w/Addit. Conservation		118	116	114	113	111	109	107	105	104	-
Water Demand											
Annual (ac-ft)	79.7	88.5	89.1	86.8	81.9	74.3	64.2	51.8	36.8	19.5	-
Average Day (mgd)	**0.071**	**0.079**	**0.080**	**0.077**	**0.073**	**0.066**	**0.057**	**0.046**	**0.033**	**0.017**	**-**
Existing Water Supply (avg day mgd)											
Rainwater Collection Systems	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007
Trinity GW - Rural	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064
Total	**0.071**	**0.071**	**0.071**	**0.071**	**0.071**	**0.071**	**0.071**	**0.071**	**0.071**	**0.071**	**0.071**
No Action Surplus or Unmet Need	**0.000**	**(0.008)**	**(0.008)**	**(0.006)**	**(0.002)**	**0.005**	**0.014**	**0.025**	**0.038**	**0.054**	**0.071**
Use of Additional Water Management Measures (avg day mgd)											
Additional Water Conservation		0.001	0.001	0.002	0.002	0.002	0.003	0.002	0.002	0.001	0.000
Rainwater Collection Systems		0.001	0.001	0.001	0.000	(0.001)	(0.002)	(0.004)	(0.007)	(0.010)	(0.013)
Trinity GW - Rural		0.006	0.006	0.004	(0.000)	(0.006)	(0.014)	(0.023)	(0.034)	(0.045)	(0.058)
Total	**0.000**	**0.008**	**0.008**	**0.006**	**0.002**	**(0.005)**	**(0.014)**	**(0.025)**	**(0.038)**	**(0.054)**	**(0.071)**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Water Service Demand (avg day mgd)	**0.806**	**0.876**	**0.925**	**0.974**	**1.021**	**1.068**	**1.114**	**1.165**	**1.216**	**1.267**	**1.319**
Use of Existing and New Supply (avg day mgd)											
Additional Water Conservation	-	0.005	0.010	0.015	0.021	0.028	0.034	0.042	0.049	0.057	0.066
Rainwater Collection Systems	0.007	0.008	0.008	0.008	0.007	0.006	0.005	0.003	0.000	(0.003)	(0.006)
Trinity GW	0.799	0.691	0.622	0.619	0.614	0.608	0.501	0.492	0.481	0.370	0.357
Water Loss Management	-	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110
Centralized Reuse	-	-	0.100	0.100	0.100	0.100	0.200	0.200	0.200	0.300	0.300
Canyon Lake WSC	-	0.063	0.076	0.121	-	-	-	-	-	-	-
GBRA	-	-	-	-	0.168	0.216	0.264	0.318	0.375	0.432	0.492
Total Use of Existing & New Supply	**0.806**	**0.876**	**0.925**	**0.974**	**1.021**	**1.068**	**1.114**	**1.165**	**1.216**	**1.267**	**1.319**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE 4.3-30
WASTEWATER MANAGEMENT PLAN
PLANNING AREA CITY OF WOODCREEK
SCENARIO HI

Planning Area		Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS												
Planning Area	Est./Projected Population	2,370	2,953	3,369	3,784	4,200	4,616	5,031	5,447	5,862	6,278	6,694
	Annual Growth Rate	1.8%	4.5%	2.7%	2.4%	2.1%	1.9%	1.7%	1.6%	1.5%	1.4%	1.3%
Suburban	% of Planning Area Population	75.0%	77.5%	80.0%	82.5%	85.0%	87.5%	90.0%	92.5%	95.0%	97.5%	100.0%
	% of New Growth that is Suburban		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Demand served by Central Wastewater Systems	84.0%	85.6%	87.2%	88.8%	90.4%	92.0%	93.6%	95.2%	96.8%	98.4%	100.0%
Rural	% of Planning Area Population	25.0%	22.5%	20.0%	17.5%	15.0%	12.5%	10.0%	7.5%	5.0%	2.5%	0.0%
	% of New Growth that is Rural		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	% of Demand served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA												
Population		1,778	2,289	2,695	3,122	3,570	4,039	4,528	5,038	5,569	6,121	6,694
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand												
	Average Day (mgd)	**0.127**	**0.164**	**0.191**	**0.220**	**0.250**	**0.281**	**0.313**	**0.346**	**0.380**	**0.414**	**0.450**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020
	No-Discharge WWTP	0.107	0.107	0.107	0.107	0.107	0.107	0.107	0.107	0.107	0.107	0.107
	Total	**0.127**	**0.127**	**0.127**	**0.127**	**0.127**	**0.127**	**0.127**	**0.127**	**0.127**	**0.127**	**0.127**
Suburban - No Action Surplus or Unmet Need		**0.000**	**(0.037)**	**(0.064)**	**(0.093)**	**(0.123)**	**(0.154)**	**(0.186)**	**(0.219)**	**(0.252)**	**(0.287)**	**(0.323)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.003	0.004	0.004	0.004	0.002	(0.000)	(0.004)	(0.008)	(0.014)	(0.020)
	No-Discharge WWTP		0.033	0.060	0.089	0.119	0.152	0.186	0.222	0.261	0.301	0.343
	Total	**0.000**	**0.037**	**0.064**	**0.093**	**0.123**	**0.154**	**0.186**	**0.219**	**0.252**	**0.287**	**0.323**
Suburban - Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA												
Population		593	664	674	662	630	577	503	409	293	157	-
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Wastewater Service Demand												
	Average Day (mgd)	**0.042**	**0.047**	**0.048**	**0.047**	**0.044**	**0.040**	**0.035**	**0.028**	**0.020**	**0.011**	**0.000**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042
	Total	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**
No Action Surplus or Unmet Need		**0.000**	**(0.005)**	**(0.005)**	**(0.004)**	**(0.002)**	**0.002**	**0.008**	**0.014**	**0.022**	**0.032**	**0.042**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.005	0.005	0.004	0.002	(0.002)	(0.008)	(0.014)	(0.022)	(0.032)	(0.042)
	Total	**0.000**	**0.005**	**0.005**	**0.004**	**0.002**	**(0.002)**	**(0.008)**	**(0.014)**	**(0.022)**	**(0.032)**	**(0.042)**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA												
Wastewater Service Demand (avg day mgd)		**0.170**	**0.211**	**0.239**	**0.267**	**0.294**	**0.321**	**0.348**	**0.374**	**0.400**	**0.425**	**0.450**
Use of Existing and Capacity (avg day mgd)												
	OSSFs	0.063	0.071	0.072	0.071	0.068	0.063	0.055	0.045	0.032	0.017	-
	No-Discharge WWTP	0.107	0.140	0.167	0.196	0.226	0.259	0.293	0.329	0.367	0.408	0.450
	Total Use of Existing & New Supply	**0.170**	**0.211**	**0.239**	**0.267**	**0.294**	**0.321**	**0.348**	**0.374**	**0.400**	**0.425**	**0.450**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

4.3.11.3 Planning Sub-Area – Woodcreek Utilities

Location/Background. This Sub-Area includes land (aka Woodcreek North) within the certificated service area of Aqua Texas, Inc., a water supply corporation, that lie between the City of Woodcreek and RR 12, as well as an increment of land around the WSC that is reflective of possible future expansion of its service area. This Sub-Area is mostly urbanized.



Population. As indicated in Table 4.3-31, the 2010 population of this Sub-Area is estimated at 2,301 persons. It is projected to increase to 5,944 persons by 2060 with the High Case trend forecast, an average annual growth rate of about 1.9% over the 50-year planning period. With the presence of existing and future water infrastructure, almost 100% of the 2060 population is expected to locate in suburban-type developments.

WATER

Water Service Demands. As indicated in Table 4.3-31, the High Case forecast reflects an increase in total water demand in this Sub-Area from 0.301 mgd in 2010 to about 0.749 mgd by 2060, reflecting an average annual increase of 1.8%. Suburban demand for this Sub-Area is projected to increase from about 0.274 mgd in 2010 to around 0.749 mgd by 2060, an average annual increase of about 2.0%. Rural water use is projected to decrease from about 0.027 mgd in 2010 to near zero by 2060, as the rural portion is absorbed by the metropolitan area.

Existing Water Supplies and Use of Supplies. Groundwater from the Trinity Aquifer Group comprises the largest current supply in the suburban and rural portions of this Sub-Area, meeting an approximate 0.292 mgd of local water demand. Aqua Utilities, Inc. is currently meeting about 0.274 mgd of this demand in serving the areas near the City of Woodcreek. Aqua currently holds a permit from the HTGCD to pump 0.303 mgd of groundwater annually, and for the portion of this Sub-Area that it serves, the utility is nearing its permit limit. A permit issue is currently pending before the HTGCD to avoid a reduction in their permit as a result of gaining savings from water loss management. Given the presence of centralized water supplies in the Sub-Area, it is assumed that about 9% of existing local water needs is met through rainwater collection systems.

Additional Water Needs. Existing supplies from various sources are meeting current water demands. As growth occurs over time, it is forecast that additional water needs of suburban and rural portions of this Sub-Area will range from 0.012 mgd in 2015 to 0.448 mgd by 2060.

Water Management Recommendations. Additional water conservation and some additional rainwater collection systems are first expected to meet a portion of the Sub-Area's increased water demand over time. As Aqua is currently pumping near its permit limit, it is likely that it will need a temporary increase in its groundwater permit to allow it time to make system improvements and develop alternative supplies. It is recommended that Aqua first pursue distribution system improvements that will reduce its water loss. It is anticipated that this increase in supply efficiency will defer additional supply needs for a period of about 3-5 years. The next recommended action is that the Aqua Texas, in conjunction with Wimberley WSC, pursue additional water supplies from Canyon Lake WSC (CLWSC), who could make excess treated water available on an interim basis for a period of about 15 years. It is assumed that Aqua would reduce its Trinity pumping by 50% with the provision of this new supply. At the end of 15 years, the interim supply would revert back to CLWSC, who needs it in the longer-term to meet the needs of its own service area. It is anticipated that, by that time, the GBRA will have completed the development of new water supplies that could serve the Wimberley area on a long-term basis. To accomplish this, an 8.2 mile transmission pipeline would need to be constructed from CLWSC's storage tank on RR 32 to interconnect with the Wimberley WSC system. It is also recommended that the line be sized sufficiently, at an average delivery capacity of about 1 mgd, to meet the projected additional water needs of Aqua Texas in serving the Woodcreek and Woodcreek North areas. An additional smaller interconnect pipeline would be needed to provide increased delivery capacity between the Wimberley WSC and Aqua systems. About 2030, when the interim supply from CLWSC is withdrawn, a new pipeline, delivering GBRA treated water, is recommended that would extend from the San Marcos water treatment plant along RR 12 either directly into Wimberley or to the originating point of the initial pipeline terminus at RR 32. The combination of these various management actions could act to reduce Trinity pumping in this Sub-Area by about 50% by the year 2060.

Sensitivity Analysis. In the Mid Case forecast, growth in this area was slowed, and suburban water use in this Sub-Area is projected to increase to only around 0.616 mgd by 2060, reflecting an average annual increase of about 1.6% versus a 2.0% average annual increase in the High Case Scenario. Rural water use is projected to decrease from a current level of about 0.027 mgd to near zero by 2060, as the rural portions of the area are subsumed within the growing City. In the Mid Case Scenario, the same management recommendations, including near-term access to the CLWSC supply and longer-term use of GBRA supplies, are warranted as in the High Case Scenario, except the initial use of the longer-term supply could be reduced due to the slower growth.

In the No Action Case, there would be no imported water supplies to the Wimberley area. Thus, suburban water use in this Sub-Area is projected to increase to only around 0.453 mgd by 2060, an average annual increase of about 1.0% versus 2.0% average annual increase in the High Case Scenario. Again, rural water use is projected to decrease from a current level of about 0.027 mgd to near zero by 2060, as the rural portions of the area are subsumed within the City. With the slower growth rate, the implementation of additional supplies would be slowed somewhat more. With no new imported water, water reuse or implementation of water loss management measures in this No Action scenario, there would be a greater reliance on Trinity Aquifer supplies in the future.

WASTEWATER

Wastewater Service Demands. As indicated in Table 4.3-32, the High Case forecast reflects an increase in total wastewater service demands in this Sub-Area from 0.165 mgd in 2010 to about 0.399 mgd by 2060, reflecting an average annual increase of 1.8%. Suburban wastewater service demands in this Sub-Area are projected to increase from 0.148 mgd in 2010 to about 0.399 mgd by 2060, reflecting an average annual increase of 2.0%. Rural wastewater service demands are projected to decrease from 0.016 mgd in 2010 to near zero as the fringe rural area is absorbed into the City.

Existing Wastewater Capacity and Use of Capacity. Currently, there is 0.375 mgd in permitted centralized treatment capacity, owned and operated by Aqua Texas, which provides some service to this planning sub-area and the adjacent City of Woodcreek. About 47% of that capacity has been shown available for this Sub-Area. However, on-site sewerage facilities (OSSFs) are meeting a substantial portion of existing service demands.

Unmet Wastewater Capacity Needs. Additional wastewater treatment needs are forecast for the suburban and rural portions of this Sub-Area ranging from 0.009 mgd in 2015 to 0.235 mgd by 2060.

Wastewater Management Recommendations. The suburban growth forecast for this Sub-Area is anticipated to have sufficiently high development densities to accommodate additional centralized wastewater treatment. It is anticipated that this centralized wastewater treatment will be generally one or more small plants, rather than a large, regional-type plant that faces more costly and problematic land application issues. These smaller centralized treatment facilities could accommodate up to 0.379 mgd of the Sub-Area's total wastewater service demand by 2060. As this Sub-Area grows, it is expected that much of this development will be of sufficient density to be ultimately provided centralized wastewater treatment services.

Sensitivity Analysis. In the Mid Case and No Action scenarios, wastewater services demands are diminished in about the same proportions as the water demands described previously. In the No Action scenario, wastewater service demand would likely be further slowed as there would be no new CLWSC or GBRA water lines built to the Wimberley/Woodcreek area, which would likely diminish the number of new subdivision-type developments more suitable for being served with centralized wastewater treatment.

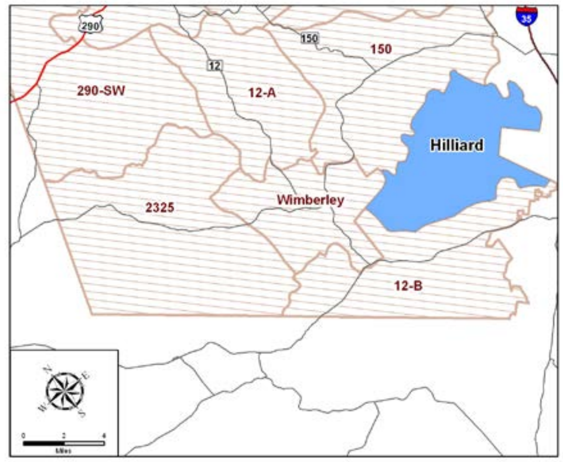
TABLE 4.3-31
WATER MANAGEMENT PLAN
PLANNING AREA **WOODCREEK UTILITIES**
SCENARIO **HI**

		Estimated					Projected					
	Planning Area	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**	**2055**	**2060**
PLANNING FACTORS												
Planning Area	Est./Projected Population	2,301	2,421	2,812	3,203	3,595	3,986	4,378	4,769	5,161	5,552	5,944
	Annual Growth Rate	6.3%	1.0%	3.0%	2.6%	2.3%	2.1%	1.9%	1.7%	1.6%	1.5%	1.4%
Suburban	% of Planning Area Population	90.1%	91.1%	92.1%	93.1%	94.1%	95.1%	96.0%	97.0%	98.0%	99.0%	100.0%
	% of New Growth that is Suburban		95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%
	% Reduction in Base Water Use		0.50%	1.00%	1.50%	2.00%	2.50%	3.00%	3.50%	4.00%	4.50%	5.00%
	% of Growth on Rainwater Systems	2.5%	2.8%	3.0%	3.3%	3.5%	3.8%	4.0%	4.3%	4.5%	4.8%	5.0%
	% of Growth on Central Water Systems			80.0%	90.0%	92.0%	89.0%	89.0%	87.0%	85.0%	85.0%	85.0%
	% of Exist. Demand Converting to Central Wtr Systems		0.0%	34.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rural	% of Planning Area Population	9.9%	8.9%	7.9%	6.9%	5.9%	5.0%	4.0%	3.0%	2.0%	1.0%	0.0%
	% of New Growth that is Rural		5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
	% Reduction in Base Water Use		0.75%	1.50%	2.25%	3.00%	3.75%	4.50%	5.25%	6.00%	6.75%	7.50%
	% of Growth on Rainwater Systems	10.0%	11.0%	12.0%	13.0%	14.0%	15.0%	16.0%	17.0%	18.0%	19.0%	20.0%
SUBURBAN AREA												
Population		2,073	2,205	2,589	2,981	3,381	3,789	4,204	4,627	5,058	5,497	5,944
	Base Per Capita Water Use (gpcd)	132	131	129	128	127	127	126	126	126	126	126
	Per Capita Water Use w/Addit. Conservation		130	128	126	124	123	122	122	121	120	120
Water Demand												
	Annual (ac-ft)	306.6	322.4	374.2	427.5	481.0	536.9	593.4	653.1	713.9	775.9	838.9
	Average Day (mgd)	**0.274**	**0.288**	**0.334**	**0.382**	**0.429**	**0.479**	**0.530**	**0.583**	**0.637**	**0.693**	**0.749**
						0.04						
Use of Existing Water Supply (mgd)												
	Rainwater Collection Systems	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007
	Trinity GW - Suburban	0.267	0.267	0.267	0.267	0.267	0.267	0.267	0.267	0.267	0.267	0.267
	Total	**0.274**	**0.274**	**0.274**	**0.274**	**0.274**	**0.274**	**0.274**	**0.274**	**0.274**	**0.274**	**0.274**
No Action Surplus or Unmet Need		**0.000**	**(0.014)**	**(0.060)**	**(0.108)**	**(0.156)**	**(0.206)**	**(0.256)**	**(0.309)**	**(0.364)**	**(0.419)**	**(0.475)**
Use of Additional Water Management Measures (mgd)												
	Additional Water Conservation		0.001	0.003	0.006	0.009	0.012	0.016	0.020	0.025	0.031	0.037
	Rainwater Collection Systems		0.000	0.002	0.003	0.005	0.007	0.009	0.011	0.014	0.016	0.019
	Trinity GW - Suburban		(0.028)	(0.116)	(0.115)	(0.116)	(0.116)	(0.116)	(0.116)	(0.116)	(0.116)	(0.116)
	Water Loss Management		0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040
	Canyon Lake WSC			0.131	0.174							
	GBRA					0.218	0.263	0.308	0.354	0.400	0.447	0.495
	Total	**0.000**	**0.014**	**0.060**	**0.108**	**0.156**	**0.206**	**0.256**	**0.309**	**0.364**	**0.419**	**0.475**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
			0.239	0.151	0.151	0.151	0.151	0.151	0.151	0.151	0.151	0.151
RURAL AREA												
Population		228	216	223	222	214	197	173	142	102	55	-
	Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
	Per Capita Water Use w/Addit. Conservation		118	116	114	113	111	109	107	105	104	-
Water Demand												
	Annual (ac-ft)	30.6	28.8	29.5	29.1	27.8	25.4	22.1	18.0	12.8	6.8	-
	Average Day (mgd)	**0.027**	**0.026**	**0.026**	**0.026**	**0.025**	**0.023**	**0.020**	**0.016**	**0.011**	**0.006**	**-**
Existing Water Supply (avg day mgd)												
	Rainwater Collection Systems	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
	Trinity GW - Rural	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
	Total	**0.027**	**0.027**	**0.027**	**0.027**	**0.027**	**0.027**	**0.027**	**0.027**	**0.027**	**0.027**	**0.027**
No Action Surplus or Unmet Need		**0.000**	**0.002**	**0.001**	**0.001**	**0.003**	**0.005**	**0.008**	**0.011**	**0.016**	**0.021**	**0.027**
			(0.012)	(0.059)	(0.107)	(0.153)	(0.201)	(0.248)	(0.298)	(0.348)	(0.398)	(0.448)
Use of Additional Water Management Measures (avg day mgd)												(1.488)
	Additional Water Conservation		0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000
	Rainwater Collection Systems		(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.002)	(0.003)	(0.004)	(0.005)
	Trinity GW - Rural		(0.002)	(0.001)	(0.002)	(0.003)	(0.005)	(0.007)	(0.010)	(0.014)	(0.018)	(0.023)
	Total	**0.000**	**(0.002)**	**(0.001)**	**(0.001)**	**(0.003)**	**(0.005)**	**(0.008)**	**(0.011)**	**(0.016)**	**(0.021)**	**(0.027)**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA												
Water Service Demand (avg day mgd)		**0.301**	**0.314**	**0.360**	**0.408**	**0.454**	**0.502**	**0.550**	**0.599**	**0.649**	**0.699**	**0.749**
Use of Existing and New Supply (avg day mgd)												
	Additional Water Conservation	-	0.002	0.004	0.006	0.009	0.013	0.017	0.021	0.026	0.032	0.037
	Rainwater Collection Systems	0.010	0.010	0.011	0.013	0.014	0.016	0.017	0.019	0.021	0.022	0.024
	Trinity GW	0.292	0.262	0.174	0.174	0.172	0.171	0.168	0.165	0.162	0.158	0.153
	Water Loss Management	-	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040
	Canyon Lake WSC	-	-	0.131	0.174	-	-	-	-	-	-	-
	GBRA	-	-	-	-	0.218	0.263	0.308	0.354	0.400	0.447	0.495
	Total Use of Existing & New Supply	**0.301**	**0.314**	**0.360**	**0.408**	**0.454**	**0.502**	**0.550**	**0.599**	**0.649**	**0.699**	**0.749**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE 4.3-32
WASTEWATER MANAGEMENT PLAN
PLANNING AREA WOODCREEK UTILITIES
SCENARIO HI

Planning Area		Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS												
Planning Area	Est./Projected Population	2,301	2,421	2,812	3,203	3,595	3,986	4,378	4,769	5,161	5,552	5,944
	Annual Growth Rate	6.3%	1.0%	3.0%	2.6%	2.3%	2.1%	1.9%	1.7%	1.6%	1.5%	1.4%
Suburban	% of Planning Area Population	90.1%	91.1%	92.1%	93.1%	94.1%	95.1%	96.0%	97.0%	98.0%	99.0%	100.0%
	% of New Growth that is Suburban		95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%
	% of Demand served by Central Wastewater Systems	80.0%	81.5%	83.0%	84.5%	86.0%	87.5%	89.0%	90.5%	92.0%	93.5%	95.0%
Rural	% of Planning Area Population	9.9%	8.9%	7.9%	6.9%	5.9%	5.0%	4.0%	3.0%	2.0%	1.0%	0.0%
	% of New Growth that is Rural		5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
	% of Demand served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA												
Population		2,073	2,205	2,589	2,981	3,381	3,789	4,204	4,627	5,058	5,497	5,944
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand												
	Average Day (mgd)	**0.148**	**0.158**	**0.184**	**0.210**	**0.237**	**0.264**	**0.291**	**0.318**	**0.345**	**0.372**	**0.399**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030
	No-Discharge WWTP	0.119	0.119	0.119	0.119	0.119	0.119	0.119	0.119	0.119	0.119	0.119
	Total	**0.148**	**0.148**	**0.148**	**0.148**	**0.148**	**0.148**	**0.148**	**0.148**	**0.148**	**0.148**	**0.148**
Suburban - No Action Surplus or Unmet Need		**0.000**	**(0.009)**	**(0.036)**	**(0.062)**	**(0.089)**	**(0.115)**	**(0.142)**	**(0.169)**	**(0.196)**	**(0.224)**	**(0.251)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		(0.000)	0.002	0.003	0.004	0.003	0.002	0.001	(0.002)	(0.005)	(0.010)
	No-Discharge WWTP		0.010	0.034	0.059	0.085	0.112	0.140	0.169	0.199	0.229	0.261
	Total	**0.000**	**0.009**	**0.036**	**0.062**	**0.089**	**0.115**	**0.142**	**0.169**	**0.196**	**0.224**	**0.251**
Suburban - Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA												
Population		228	216	223	222	214	197	173	142	102	55	-
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Wastewater Service Demand												
	Average Day (mgd)	**0.016**	**0.015**	**0.016**	**0.016**	**0.015**	**0.014**	**0.012**	**0.010**	**0.007**	**0.004**	**0.000**
	OSSFs	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016
	Total	**0.016**	**0.016**	**0.016**	**0.016**	**0.016**	**0.016**	**0.016**	**0.016**	**0.016**	**0.016**	**0.016**
No Action Surplus or Unmet Need		**0.000**	**0.001**	**0.000**	**0.001**	**0.001**	**0.003**	**0.004**	**0.007**	**0.009**	**0.013**	**0.016**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		(0.001)	(0.000)	(0.001)	(0.001)	(0.003)	(0.004)	(0.007)	(0.009)	(0.013)	(0.016)
	Total	**0.000**	**(0.001)**	**(0.000)**	**(0.001)**	**(0.001)**	**(0.003)**	**(0.004)**	**(0.007)**	**(0.009)**	**(0.013)**	**(0.016)**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA												
Wastewater Service Demand (avg day mgd)		**0.165**	**0.173**	**0.200**	**0.226**	**0.252**	**0.277**	**0.303**	**0.327**	**0.352**	**0.376**	**0.399**
Use of Existing and Capacity (avg day mgd)												
	OSSFs	0.046	0.045	0.047	0.048	0.048	0.047	0.044	0.040	0.035	0.028	0.020
	No-Discharge WWTP	0.119	0.129	0.153	0.178	0.204	0.231	0.259	0.287	0.317	0.348	0.379
	Total Use of Existing & New Supply	**0.165**	**0.173**	**0.200**	**0.226**	**0.252**	**0.277**	**0.303**	**0.327**	**0.352**	**0.376**	**0.399**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

4.3.12 Planning Sub-Area – Hilliard



Location/Background. This Sub-Area includes land that lies alongside Hilliard road in the southeast portion of the County. This Sub-Area is about one-quarter subdivided, mainly near the road, with little development elsewhere in the Sub-Area.

Population. As indicated in Table 4.3-33, the 2010 population of this Sub-Area is estimated at 2,493 persons. It is projected to increase to 6,883 persons by 2060 with the High Case trend forecast, an average annual growth rate of about 2.1% over the 50-year planning period. With its limited water supply, only about 55% of the 2060 population is expected to locate in suburban-type developments.

WATER

Water Service Demands. As indicated in Table 4.3-33, the High Case forecast reflects an increase in total water demand in this Sub-Area from 0.313 mgd in 2010 to about 0.804 mgd by 2060, reflecting an average annual increase of 1.9%. Suburban demand for this Sub-Area is projected to increase from about 0.152 mgd in 2010 to around 0.366 mgd by 2060, an average annual increase of about 1.8%. Rural water use is projected to increase from about 0.161 mgd in 2010 to around 0.438 mgd by 2060, an average annual increase of about 2.0%.

Existing Water Supplies and Use of Supplies. The San Antonio segment of the Edwards Aquifer is the main source of water supply in this Sub-Area with current aquifer demands at about 0.253 mgd. The existing Edwards supplies are essentially fully permitted (from a more firm yield perspective preferred by municipal users). A portion of the western reach of this Sub-Area is supplied from the Trinity Aquifer with current use estimated at 0.028 mgd. Domestic wells are exempt from permitting in both Edwards and Trinity groundwater districts in this Sub-Area. It is assumed that 0.031 mgd or 10% of current needs are met with rainwater collection systems.

Additional Water Needs. Existing supplies from various sources are meeting current water demands. As growth occurs over time, it is forecast that additional water needs of suburban and rural portions of this Sub-Area will range from 0.063 mgd in 2015 to 0.491 mgd by 2060.

Water Management Recommendations. Additional water conservation and additional rainwater collection systems are first expected to meet a portion of the Sub-Area's increased water demand over time. It is anticipated that through use of current permits and expansion of exempt domestic pumping, Edwards, Barton-Edwards and Trinity groundwater will continue to meet the remainder of increased water demand. The contributions of additional conservation and rainwater systems will help offset a small portion of the projected increase in groundwater pumping, but are not sufficient to avoid a projected doubling of water use depending on the two aquifers. No new imported water supply is shown, as this Sub-Area would be difficult to economically serve.

Sensitivity Analysis. In the Mid Case forecast, growth in this area was slowed, and suburban water use in this Sub-Area is projected to increase to only around 0.291 mgd by 2060, reflecting an average annual increase of about 1.3% versus a 1.8% average annual increase in the High Case Scenario. Rural water use is projected to increase to about 0.222 mgd by 2060, reflecting an average annual increase of about 1.5% versus a 2.0% average annual increase in the High Case Scenario. In the Mid Case Scenario, the same on-site management recommendations are warranted as in the High Case Scenario, except the level of water use grows less quickly and the timing of implementation of additional on-site supplies measures would be slowed.

In the No Action Case forecast, spin-off growth in this area would be even more slowed from lack of extension of any new water supply in some adjacent areas of the County. Thus, suburban water use in this Sub-Area is projected to increase to only around 0.218 mgd by 2060, an average annual increase of about 0.7% versus 1.8% average annual increase in the High Case Scenario. Rural water use is projected to increase to about 0.243 mgd by

2060, reflecting an average annual increase of about 0.8% versus a 2.0% average annual increase in the High Case Scenario. With a slightly slower growth rate, the implementation of additional on-site supplies would be slowed somewhat more.

WASTEWATER

Wastewater Service Demands. As indicated in Table 4.3-34, the High Case forecast reflects an increase in total wastewater service demands in this Sub-Area from 0.178 mgd in 2010 to about 0.463 mgd by 2060, reflecting an average annual increase of 1.9%. Suburban wastewater service demands in this Sub-Area are projected to increase from 0.082 mgd in 2010 to about 0.195 mgd by 2060, reflecting an average annual increase of 1.7%. Rural wastewater service demands are projected to increase from 0.096 mgd in 2010 to about 0.267 mgd by 2060, reflecting an average annual increase of 2.15%.

Existing Wastewater Capacity and Use of Capacity. Currently, there is no significant centralized wastewater treatment capacity in this Sub-Area with on-site sewerage facilities (OSSFs) meeting almost all service demands.

Unmet Wastewater Capacity Needs. Additional wastewater treatment needs are forecast for the suburban and rural portions of this Sub-Area ranging from 0.038 mgd in 2015 to 0.284 mgd by 2060.

Wastewater Management Recommendations. The suburban growth forecast for this Sub-Area is anticipated to have sufficiently high development densities (arising from allowances in the County's subdivision ordinance for developments with imported water, community wells, or rainwater collection systems) to also accommodate centralized wastewater treatment. However, given that no significant imported water is anticipated for this area in all three scenarios, and denser subdivision growth would be very limited, current and future wastewater demands are expected to be satisfied by OSSFs.

Sensitivity Analysis. In the Mid Case and No Action scenarios, wastewater services demands are diminished in about the same proportions as the water demands described previously, and the rate of implementation of on-site sewer systems would be slowed.

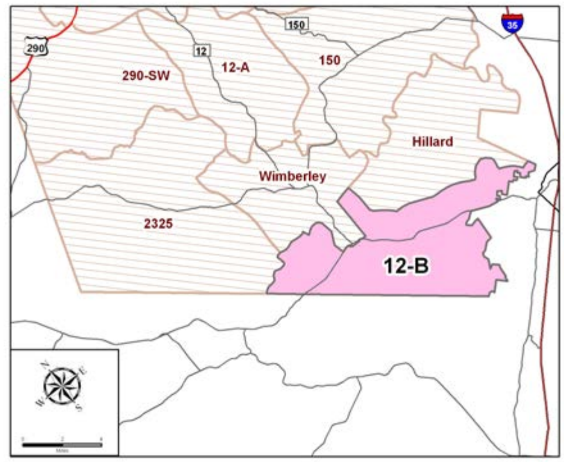
TABLE 4.3-33
WATER MANAGEMENT PLAN
PLANNING AREA HILLIARD
SCENARIO HI

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	2,493	3,029	3,458	3,886	4,314	4,742	5,171	5,599	6,027	6,455	6,883
Annual Growth Rate	2.3%	4.0%	2.7%	2.4%	2.1%	1.9%	1.7%	1.6%	1.5%	1.4%	1.3%
Suburban % of Planning Area Population	46.1%	45.0%	44.4%	43.9%	43.5%	43.2%	42.9%	42.7%	42.5%	42.4%	42.2%
% of New Growth that is Suburban		40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
% Reduction in Base Water Use		0.75%	1.50%	2.25%	3.00%	3.75%	4.50%	5.25%	6.00%	6.75%	7.50%
% of Growth on Rainwater Systems	10.0%	11.0%	12.0%	13.0%	14.0%	15.0%	16.0%	17.0%	18.0%	19.0%	20.0%
% of Growth on Central Water Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
% of Exist. Demand Converting to Central Wtr Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rural % of Planning Area Population	53.9%	55.0%	55.6%	56.1%	56.5%	56.8%	57.1%	57.3%	57.5%	57.6%	57.8%
% of New Growth that is Rural		60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
% Reduction in Base Water Use		1.25%	2.50%	3.75%	5.00%	6.25%	7.50%	8.75%	10.00%	11.25%	12.50%
% of Growth on Rainwater Systems	10.0%	11.0%	12.0%	13.0%	14.0%	15.0%	16.0%	17.0%	18.0%	19.0%	20.0%
SUBURBAN AREA											
Population	1,149	1,364	1,535	1,706	1,878	2,049	2,220	2,392	2,563	2,734	2,905
Base Per Capita Water Use (gpcd)	132	131	129	128	127	127	126	126	126	126	126
Per Capita Water Use w/Addit. Conservation		130	127	125	123	122	120	119	118	118	117
Water Demand											
Annual (ac-ft)	169.9	199.4	221.8	244.7	267.1	290.3	313.4	337.5	361.7	385.9	410.1
Average Day (mgd)	**0.152**	**0.178**	**0.198**	**0.218**	**0.238**	**0.259**	**0.280**	**0.301**	**0.323**	**0.345**	**0.366**
Use of Existing Water Supply (mgd)											
Rainwater Collection Systems	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015
Edwards GW	0.123	0.123	0.123	0.123	0.123	0.123	0.123	0.123	0.123	0.123	0.123
Trinity GW - Suburban	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014
Total	**0.152**	**0.152**	**0.152**	**0.152**	**0.152**	**0.152**	**0.152**	**0.152**	**0.152**	**0.152**	**0.152**
No Action Surplus or Unmet Need	**0.000**	**(0.026)**	**(0.046)**	**(0.067)**	**(0.087)**	**(0.108)**	**(0.128)**	**(0.150)**	**(0.171)**	**(0.193)**	**(0.214)**
Use of Additional Water Management Measures (mgd)											
Additional Water Conservation		0.001	0.003	0.005	0.007	0.010	0.013	0.016	0.019	0.023	0.027
Rainwater Collection Systems		0.003	0.005	0.008	0.011	0.014	0.017	0.021	0.025	0.029	0.033
Edwards GW		0.020	0.034	0.048	0.062	0.076	0.088	0.102	0.114	0.127	0.138
Trinity GW - Suburban		0.002	0.004	0.005	0.007	0.008	0.010	0.011	0.013	0.014	0.015
Total	**0.000**	**0.026**	**0.046**	**0.067**	**0.087**	**0.108**	**0.128**	**0.150**	**0.171**	**0.193**	**0.214**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	1,343	1,665	1,922	2,179	2,436	2,693	2,950	3,207	3,464	3,721	3,978
Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
Per Capita Water Use w/Addit. Conservation		118	115	113	110	108	105	103	101	99	96
Water Demand											
Annual (ac-ft)	180.5	222.0	254.1	285.6	316.5	346.9	376.7	405.9	434.5	462.6	490.1
Average Day (mgd)	**0.161**	**0.198**	**0.227**	**0.255**	**0.283**	**0.310**	**0.336**	**0.362**	**0.388**	**0.413**	**0.438**
Existing Water Supply (avg day mgd)											
Rainwater Collection Systems	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016
Edwards GW	0.131	0.131	0.131	0.131	0.131	0.131	0.131	0.131	0.131	0.131	0.131
Trinity GW - Rural	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015
Total	**0.161**	**0.161**	**0.161**	**0.161**	**0.161**	**0.161**	**0.161**	**0.161**	**0.161**	**0.161**	**0.161**
No Action Surplus or Unmet Need	**0.000**	**(0.037)**	**(0.066)**	**(0.094)**	**(0.121)**	**(0.149)**	**(0.175)**	**(0.201)**	**(0.227)**	**(0.252)**	**(0.276)**
Use of Additional Water Management Measures (avg day mgd)											
Additional Water Conservation		0.002	0.006	0.010	0.014	0.019	0.025	0.032	0.039	0.046	0.055
Rainwater Collection Systems		0.004	0.008	0.011	0.015	0.019	0.023	0.028	0.032	0.037	0.042
Edwards GW		0.027	0.047	0.066	0.083	0.099	0.114	0.128	0.140	0.151	0.162
Trinity GW - Rural		0.003	0.005	0.007	0.009	0.011	0.013	0.014	0.016	0.017	0.018
Total	**0.000**	**0.037**	**0.066**	**0.094**	**0.121**	**0.149**	**0.175**	**0.201**	**0.227**	**0.252**	**0.276**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Water Service Demand (avg day mgd)	**0.313**	**0.376**	**0.425**	**0.473**	**0.521**	**0.569**	**0.616**	**0.664**	**0.711**	**0.758**	**0.804**
Use of Existing and New Supply (avg day mgd)											
Additional Water Conservation	-	0.004	0.009	0.014	0.021	0.029	0.038	0.048	0.058	0.070	0.082
Rainwater Collection Systems	0.031	0.038	0.044	0.050	0.057	0.064	0.072	0.080	0.088	0.097	0.106
Edwards GW	0.253	0.301	0.335	0.368	0.398	0.428	0.456	0.483	0.508	0.531	0.553
Trinity GW	0.028	0.033	0.037	0.041	0.044	0.048	0.051	0.054	0.057	0.059	0.062
Total Use of Existing & New Supply	**0.313**	**0.376**	**0.425**	**0.473**	**0.521**	**0.569**	**0.616**	**0.664**	**0.711**	**0.758**	**0.804**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE 4.3-34
WASTEWATER MANAGEMENT PLAN
PLANNING AREA **HILLIARD**
SCENARIO **HI**

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	2,493	3,029	3,458	3,886	4,314	4,742	5,171	5,599	6,027	6,455	6,883
Annual Growth Rate	2.3%	4.0%	2.7%	2.4%	2.1%	1.9%	1.7%	1.6%	1.5%	1.4%	1.3%
Suburban % of Planning Area Population	46.1%	45.0%	44.4%	43.9%	43.5%	43.2%	42.9%	42.7%	42.5%	42.4%	42.2%
% of New Growth that is Suburban		40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rural % of Planning Area Population	53.9%	55.0%	55.6%	56.1%	56.5%	56.8%	57.1%	57.3%	57.5%	57.6%	57.8%
% of New Growth that is Rural		60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA											
Population	1,149	1,364	1,535	1,706	1,878	2,049	2,220	2,392	2,563	2,734	2,905
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand											
Average Day (mgd)	**0.082**	**0.098**	**0.109**	**0.120**	**0.132**	**0.143**	**0.153**	**0.164**	**0.175**	**0.185**	**0.195**
Existing Wastewater Treatment (mgd)											
OSSFs	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082
No-Discharge WWTP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	**0.082**	**0.082**	**0.082**	**0.082**	**0.082**	**0.082**	**0.082**	**0.082**	**0.082**	**0.082**	**0.082**
Suburban - No Action Surplus or Unmet Need	**0.000**	**(0.015)**	**(0.027)**	**(0.038)**	**(0.049)**	**(0.060)**	**(0.071)**	**(0.082)**	**(0.093)**	**(0.103)**	**(0.113)**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.015	0.027	0.038	0.049	0.060	0.071	0.082	0.093	0.103	0.113
No-Discharge WWTP		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	**0.000**	**0.015**	**0.027**	**0.038**	**0.049**	**0.060**	**0.071**	**0.082**	**0.093**	**0.103**	**0.113**
Suburban - Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	1,343	1,665	1,922	2,179	2,436	2,693	2,950	3,207	3,464	3,721	3,978
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Wastewater Service Demand											
Average Day (mgd)	**0.096**	**0.119**	**0.137**	**0.154**	**0.171**	**0.187**	**0.204**	**0.220**	**0.236**	**0.252**	**0.267**
Existing Wastewater Treatment (mgd)											
OSSFs	0.096	0.096	0.096	0.096	0.096	0.096	0.096	0.096	0.096	0.096	0.096
Total	**0.096**	**0.096**	**0.096**	**0.096**	**0.096**	**0.096**	**0.096**	**0.096**	**0.096**	**0.096**	**0.096**
No Action Surplus or Unmet Need	**0.000**	**(0.023)**	**(0.040)**	**(0.058)**	**(0.075)**	**(0.091)**	**(0.108)**	**(0.124)**	**(0.140)**	**(0.156)**	**(0.171)**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.023	0.040	0.058	0.075	0.091	0.108	0.124	0.140	0.156	0.171
Total	**0.000**	**0.023**	**0.040**	**0.058**	**0.075**	**0.091**	**0.108**	**0.124**	**0.140**	**0.156**	**0.171**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Wastewater Service Demand (avg day mgd)	**0.178**	**0.217**	**0.246**	**0.274**	**0.302**	**0.330**	**0.357**	**0.384**	**0.411**	**0.437**	**0.463**
Use of Existing and Capacity (avg day mgd)											
OSSFs	0.178	0.217	0.246	0.274	0.302	0.330	0.357	0.384	0.411	0.437	0.463
No-Discharge WWTP	-	-	-	-	-	-	-	-	-	-	-
Total Use of Existing & New Supply	**0.178**	**0.217**	**0.246**	**0.274**	**0.302**	**0.330**	**0.357**	**0.384**	**0.411**	**0.437**	**0.463**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

4.3.13 Planning Sub-Area – 12-B



Location/Background. This Sub-Area includes land alongside RR12 and 32 in the southern portion of the County. This area is about one-third subdivided with little development in the remaining portions. It is likely that noticeable remaining portions of this Sub-Area will be protected from development through reserve status or governmental ownership.

Population. As indicated in Table 4.3-35, the 2010 population of this Sub-Area is estimated at 2,410 persons. It is projected to increase to 6,439 persons by 2060 with the High Case trend forecast, an average annual growth rate of about 2.0% over the 50-year planning period. With the presence of potential future water infrastructure, about 70% of the 2060 population is expected to locate in suburban-type developments.

WATER

Water Service Demands. As indicated in Table 4.3-35, the High Case forecast reflects an increase in total water demand in this Sub-Area from 0.305 mgd in 2010 to about 0.781 mgd by 2060, reflecting an average annual increase of 1.9%. Suburban demand for this Sub-Area is projected to increase from about 0.172 mgd in 2010 to around 0.570 mgd by 2060, an average annual increase of about 2.4%. Rural water use is projected to increase from about 0.133 mgd in 2010 to around 0.211 mgd by 2060, an average annual increase of about 0.9%.

Existing Water Supplies and Use of Supplies. The San Antonio segment of the Edwards Aquifer is the main source of water supply in this Sub-Area with current aquifer demands at about 0.181 mgd. The existing Edwards supplies are essentially fully permitted (from a more firm yield perspective preferred by municipal users). A portion of the western reach of this Sub-Area is supplied from the Trinity Aquifer with current use estimated at 0.102 mgd. Domestic wells are exempt from permitting in both Edwards and Trinity groundwater districts in this Sub-Area. It is assumed that 0.022 mgd or 7.2% of current needs are met with rainwater collection systems.

Additional Water Needs. Existing supplies from various sources are meeting current water demands. As growth occurs over time, it is forecast that additional water needs of suburban and rural portions of this Sub-Area will range from 0.051 mgd in 2015 to 0.476 mgd by 2060.

Water Management Recommendations. Additional water conservation and additional rainwater collection systems are first expected to meet a portion of the Sub-Area's increased water demand over time. However, it is anticipated that most of the Sub-Area's future water demand will be met with increased exempt pumping of the Edwards and Trinity aquifers. If GBRA is able to provide long-term supplies to the Wimberley area along the RR 12 corridor, it is assumed that 25% of the future growth in this area could be met with these imported water supplies. This, however, would still entail a 1.9 times increase in groundwater pumping over the 50-year planning period. It is also possible that the City of San Marcos will increase its ETJ over time and may extend some municipal service into the eastern portions of this Sub-Area (City of San Marcos, 2010), although this was not accounted for.

Sensitivity Analysis. In the Mid Case forecast, growth in this area was slowed, and suburban water use in this Sub-Area is projected to increase to only around 0.432 mgd by 2060, reflecting an average annual increase of about 1.9% versus a 2.4% average annual increase in the High Case Scenario. Rural water use is projected to increase to about 0.181 mgd by 2060, reflecting an average annual increase of about 0.6% versus a 0.9% average annual increase in the High Case Scenario. In the Mid Case Scenario, the same management recommendations, including some access to the CLWSC supply to Wimberley, are warranted as in the High Case Scenario, except the level of water use grows less quickly and the timing of implementation of additional measures and service extensions would be slowed.

In the No Action Case, there would be no imported water supplies to the adjacent Wimberley area or extension of Sam Marcos municipal service, thus negating any access to outside water supplies for this Sub-Area. Thus, suburban water use in this Sub-Area is projected to increase to only around 0.298 mgd by 2060, an average annual increase of about 1.1% versus 2.4% average annual increase in the High Case Scenario. Rural water use is projected to increase to about 0.151 mgd by 2060, reflecting an average annual increase of about 0.3% versus a 0.9% average annual increase in the High Case Scenario. With the slower growth rate, the implementation of additional on-site supplies would be slowed somewhat more.

WASTEWATER

Wastewater Service Demands. As indicated in Table 4.3-36, the High Case forecast reflects an increase in total wastewater service demands in this Sub-Area from 0.172 mgd in 2010 to about 0.433 mgd by 2060, reflecting an average annual increase of 1.9%. Suburban wastewater service demands in this Sub-Area are projected to increase from 0.093 mgd in 2010 to about 0.304 mgd by 2060, reflecting an average annual increase of 2.4%. Rural wastewater service demands are projected to increase from 0.079 mgd in 2010 to about 0.129 mgd by 2060, reflecting an average annual increase of 1.0%.

Existing Wastewater Capacity and Use of Capacity. Currently, there is no significant centralized wastewater treatment capacity in this Sub-Area with on-site sewerage facilities (OSSFs) meeting almost all service demands.

Unmet Wastewater Capacity Needs. Additional wastewater treatment needs are forecast for the suburban and rural portions of this Sub-Area ranging from 0.030 mgd in 2015 to 0.260 mgd by 2060.

Wastewater Management Recommendations. The suburban growth forecast for this Sub-Area is anticipated to have sufficiently high development densities (arising from allowances in the County's subdivision ordinance for developments with imported water, community wells, or rainwater collection systems) to also accommodate centralized wastewater treatment. It is anticipated that this centralized wastewater treatment will be small subdivision-oriented (package) plants, rather than larger, regional-type plants that face more costly and problematic land application issues. These smaller centralized treatment facilities could accommodate up to 0.042 mgd of the Sub-Area's total wastewater service demand by 2060 with the remainder 0.391 mgd of demand expected to be met by individual on-site septic systems.

Sensitivity Analysis. In the Mid Case and No Action scenarios, wastewater services demands are diminished in about the same proportions as the water demands described previously. In the No Action scenario, lack of development of the GBRA water supplies will slow subdivision growth even further in this Sub-Area, thus likely further limiting the provision of centralized wastewater treatment facilities.

TABLE 4.3-35
WATER MANAGEMENT PLAN
PLANNING AREA 12-B
SCENARIO HI

	Estimated	Projected									
Planning Area	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**	**2055**	**2060**
PLANNING FACTORS											
Planning Area Est./Projected Population	2,410	2,830	3,231	3,632	4,033	4,434	4,835	5,236	5,637	6,038	6,439
Annual Growth Rate	3.0%	3.3%	2.7%	2.4%	2.1%	1.9%	1.7%	1.6%	1.5%	1.4%	1.3%
Suburban % of Planning Area Population	54.0%	57.8%	60.6%	62.7%	64.5%	65.9%	67.0%	68.0%	68.9%	69.6%	70.3%
% of New Growth that is Suburban		80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%
% Reduction in Base Water Use		0.75%	1.50%	2.25%	3.00%	3.75%	4.50%	5.25%	6.00%	6.75%	7.50%
% of Growth on Rainwater Systems	5.0%	5.5%	6.0%	6.5%	7.0%	7.5%	8.0%	8.5%	9.0%	9.5%	10.0%
% of Growth on Central Water Systems		0.0%	0.0%	0.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
% of Exist. Demand Converting to Central Wtr Systems		0.0%	0.0%	0.0%	3.3%	3.5%	3.8%	4.0%	4.3%	4.5%	5.0%
Rural % of Planning Area Population	46.0%	42.2%	39.4%	37.3%	35.5%	34.1%	33.0%	32.0%	31.1%	30.4%	29.7%
% of New Growth that is Rural		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
% Reduction in Base Water Use		1.25%	2.50%	3.75%	5.00%	6.25%	7.50%	8.75%	10.00%	11.25%	12.50%
% of Growth on Rainwater Systems	10.0%	11.0%	12.0%	13.0%	14.0%	15.0%	16.0%	17.0%	18.0%	19.0%	20.0%
SUBURBAN AREA											
Population	1,301	1,637	1,958	2,278	2,599	2,920	3,241	3,562	3,883	4,204	4,524
Base Per Capita Water Use (gpcd)	132	131	129	128	127	127	126	126	126	126	126
Per Capita Water Use w/Addit. Conservation		130	127	125	123	122	120	119	118	118	117
Water Demand											
Annual (ac-ft)	192.4	239.3	282.9	326.7	369.8	413.8	457.4	502.7	548.0	593.3	638.6
Average Day (mgd)	**0.172**	**0.214**	**0.253**	**0.292**	**0.330**	**0.369**	**0.408**	**0.449**	**0.489**	**0.530**	**0.570**
Use of Existing Water Supply (mgd)											
Rainwater Collection Systems	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009
Edwards GW	0.104	0.104	0.104	0.104	0.104	0.104	0.104	0.104	0.104	0.104	0.104
Trinity GW - Suburban	0.059	0.059	0.059	0.059	0.059	0.059	0.059	0.059	0.059	0.059	0.059
Total	**0.172**	**0.172**	**0.172**	**0.172**	**0.172**	**0.172**	**0.172**	**0.172**	**0.172**	**0.172**	**0.172**
No Action Surplus or Unmet Need	**0.000**	**(0.042)**	**(0.081)**	**(0.120)**	**(0.158)**	**(0.198)**	**(0.237)**	**(0.277)**	**(0.318)**	**(0.358)**	**(0.398)**
Use of Additional Water Management Measures (mgd)											
Additional Water Conservation		0.002	0.004	0.007	0.010	0.014	0.018	0.024	0.029	0.036	0.043
Rainwater Collection Systems		0.002	0.005	0.007	0.010	0.013	0.016	0.019	0.023	0.027	0.031
Edwards GW		0.024	0.046	0.068	0.079	0.090	0.099	0.109	0.117	0.125	0.132
Trinity GW - Suburban		0.014	0.026	0.038	0.044	0.050	0.056	0.061	0.066	0.071	0.074
GBRA		0.000	0.000	0.000	0.015	0.031	0.047	0.064	0.082	0.099	0.118
Total	**0.000**	**0.042**	**0.081**	**0.120**	**0.158**	**0.198**	**0.237**	**0.277**	**0.318**	**0.358**	**0.398**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	1,109	1,193	1,273	1,353	1,434	1,514	1,594	1,674	1,754	1,835	1,915
Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
Per Capita Water Use w/Addit. Conservation		118	115	113	110	108	105	103	101	99	96
Water Demand											
Annual (ac-ft)	149.1	159.0	168.3	177.4	186.3	195.0	203.5	211.9	220.1	228.1	235.9
Average Day (mgd)	**0.133**	**0.142**	**0.150**	**0.158**	**0.166**	**0.174**	**0.182**	**0.189**	**0.197**	**0.204**	**0.211**
Existing Water Supply (avg day mgd)											
Rainwater Collection Systems	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013
Edwards GW	0.077	0.077	0.077	0.077	0.077	0.077	0.077	0.077	0.077	0.077	0.077
Trinity GW - Rural	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043
Total	**0.133**	**0.133**	**0.133**	**0.133**	**0.133**	**0.133**	**0.133**	**0.133**	**0.133**	**0.133**	**0.133**
No Action Surplus or Unmet Need	**0.000**	**(0.009)**	**(0.017)**	**(0.025)**	**(0.033)**	**(0.041)**	**(0.049)**	**(0.056)**	**(0.063)**	**(0.071)**	**(0.078)**
Use of Additional Water Management Measures (avg day mgd)											
Additional Water Conservation		0.002	0.004	0.006	0.008	0.011	0.014	0.017	0.020	0.023	0.026
Rainwater Collection Systems		0.001	0.002	0.003	0.004	0.005	0.007	0.008	0.009	0.010	0.012
Edwards GW		0.004	0.007	0.010	0.013	0.016	0.018	0.020	0.022	0.024	0.025
Trinity GW - Rural		0.002	0.004	0.006	0.007	0.009	0.010	0.011	0.012	0.013	0.014
Total	**0.000**	**0.009**	**0.017**	**0.025**	**0.033**	**0.041**	**0.049**	**0.056**	**0.063**	**0.071**	**0.078**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Water Service Demand (avg day mgd)	**0.305**	**0.356**	**0.403**	**0.450**	**0.496**	**0.544**	**0.590**	**0.638**	**0.686**	**0.733**	**0.781**
Use of Existing and New Supply (avg day mgd)											
Additional Water Conservation	-	0.003	0.008	0.013	0.018	0.025	0.032	0.040	0.049	0.059	0.069
Rainwater Collection Systems	0.022	0.025	0.029	0.032	0.036	0.040	0.044	0.049	0.054	0.059	0.065
Edwards GW	0.181	0.209	0.235	0.259	0.273	0.286	0.298	0.310	0.321	0.330	0.338
Trinity GW	0.102	0.118	0.132	0.146	0.154	0.161	0.168	0.175	0.181	0.186	0.191
GBRA	-	-	-	-	0.015	0.031	0.047	0.064	0.082	0.099	0.118
Total Use of Existing & New Supply	**0.305**	**0.356**	**0.403**	**0.450**	**0.496**	**0.544**	**0.590**	**0.638**	**0.686**	**0.733**	**0.781**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE 4.3-36
WASTEWATER MANAGEMENT PLAN
PLANNING AREA 12-B
SCENARIO HI

Planning Area		Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS												
Planning Area	Est./Projected Population	2,410	2,830	3,231	3,632	4,033	4,434	4,835	5,236	5,637	6,038	6,439
	Annual Growth Rate	3.0%	3.3%	2.7%	2.4%	2.1%	1.9%	1.7%	1.6%	1.5%	1.4%	1.3%
Suburban	% of Planning Area Population	54.0%	57.8%	60.6%	62.7%	64.5%	65.9%	67.0%	68.0%	68.9%	69.6%	70.3%
	% of New Growth that is Suburban		80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%
	% of Growth served by Central Wastewater Systems		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
Rural	% of Planning Area Population	46.0%	42.2%	39.4%	37.3%	35.5%	34.1%	33.0%	32.0%	31.1%	30.4%	29.7%
	% of New Growth that is Rural		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
	% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA												
Population		1,301	1,637	1,958	2,278	2,599	2,920	3,241	3,562	3,883	4,204	4,524
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand												
	Average Day (mgd)	**0.093**	**0.117**	**0.139**	**0.161**	**0.182**	**0.203**	**0.224**	**0.244**	**0.265**	**0.284**	**0.304**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.093	0.093	0.093	0.093	0.093	0.093	0.093	0.093	0.093	0.093	0.093
	No-Discharge WWTP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Total	**0.093**	**0.093**	**0.093**	**0.093**	**0.093**	**0.093**	**0.093**	**0.093**	**0.093**	**0.093**	**0.093**
Suburban - No Action Surplus or Unmet Need		**0.000**	**(0.024)**	**(0.046)**	**(0.068)**	**(0.089)**	**(0.110)**	**(0.131)**	**(0.151)**	**(0.172)**	**(0.191)**	**(0.211)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.019	0.037	0.054	0.071	0.088	0.105	0.121	0.137	0.153	0.169
	No-Discharge WWTP		0.005	0.009	0.014	0.018	0.022	0.026	0.030	0.034	0.038	0.042
	Total	**0.000**	**0.024**	**0.046**	**0.068**	**0.089**	**0.110**	**0.131**	**0.151**	**0.172**	**0.191**	**0.211**
Suburban - Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA												
Population		1,109	1,193	1,273	1,353	1,434	1,514	1,594	1,674	1,754	1,835	1,915
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Wastewater Service Demand												
	Average Day (mgd)	**0.079**	**0.085**	**0.090**	**0.095**	**0.100**	**0.105**	**0.110**	**0.115**	**0.120**	**0.124**	**0.129**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079
	Total	**0.079**	**0.079**	**0.079**	**0.079**	**0.079**	**0.079**	**0.079**	**0.079**	**0.079**	**0.079**	**0.079**
No Action Surplus or Unmet Need		**0.000**	**(0.006)**	**(0.011)**	**(0.016)**	**(0.021)**	**(0.026)**	**(0.031)**	**(0.036)**	**(0.040)**	**(0.045)**	**(0.049)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.006	0.011	0.016	0.021	0.026	0.031	0.036	0.040	0.045	0.049
	Total	**0.000**	**0.006**	**0.011**	**0.016**	**0.021**	**0.026**	**0.031**	**0.036**	**0.040**	**0.045**	**0.049**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA												
Wastewater Service Demand (avg day mgd)		**0.172**	**0.202**	**0.230**	**0.256**	**0.283**	**0.309**	**0.334**	**0.359**	**0.384**	**0.409**	**0.433**
Use of Existing and Capacity (avg day mgd)												
	OSSFs	0.172	0.198	0.220	0.243	0.265	0.287	0.308	0.329	0.350	0.370	0.391
	No-Discharge WWTP	-	0.005	0.009	0.014	0.018	0.022	0.026	0.030	0.034	0.038	0.042
	Total Use of Existing & New Supply	**0.172**	**0.202**	**0.230**	**0.256**	**0.283**	**0.309**	**0.334**	**0.359**	**0.384**	**0.409**	**0.433**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

5.0 FACILITY NEEDS

5.1 LIMITATIONS OF ANALYSIS

The main purpose of this section is to:

- Help identify key considerations in selecting water and wastewater management options;
- Better educate decision makers about the key underlying factors affecting cost of service; and
- Describe the financial magnitude of need.

The facility needs forecast is based on projected demands as described in the three growth scenarios (HI, MID, NA). Costs described in this section should be considered high-level conceptual estimates necessary to describe the significant investment of resources in the study area.

There are significant variables and unknowns as to the scale, timing and location of development and therefore any planning document will need to be revised and updated to stay current with trends. There are proposed subdivisions that if built soon would quickly outpace the population trends for specific planning subareas. There will continue to be advances in technology addressing utility needs, however the cost for these resources are not seen to decrease but to increase with time.

5.2 CONSIDERATIONS IN SELECTING FACILITY AND MANAGEMENT OPTIONS

Selecting the correct service method or technology for water and wastewater will be driven by reliability, technical viability, social and environmental acceptability, public health, and economics as previously described in Section 3.7. The selection of the management options considered its cost effectiveness, impact to groundwater and overall reliability.

The most cost effective option for meeting future water demand is to reduce demand through conservation. This option was applied to all planning areas as a first management measure. Secondly, rainwater harvesting systems were applied as appropriate to reduce the future demand on groundwater. The reliability of the rainwater systems is very dependent on design parameters, operation of storage and implementation of drought management measures during extended drought periods. Thirdly, other local water supply alternatives were evaluated and applied in areas based on economic factors and access issues. Lastly, nearby options that supplied sufficient quantity and reliability were applied to meet the remaining demand in each scenario. These options represent the major infrastructure projects necessary to convey additional water supplies into the planning area.

Similarly, wastewater service was applied to planning areas based on the presence of existing wastewater treatment plants, densities and cost of service. There is likely to be a proliferation of package wastewater treatment plants in the area to serve high density subdivisions and limited opportunities for regionalization. The location and sizing of these facilities will be dependent on the subdivisions being served and the timing of each of the phases of construction. Regionalization of wastewater is not a current reality and was not evaluated considering the discharge limitations, lack of reuse customers, and cost effectiveness. Rural areas and lower density suburban areas will rely on on-site systems for wastewater treatment.

5.3 ASSESSMENT OF EXAMPLE DEVELOPMENTS

Generally, development densities will affect the type of water and wastewater service supplied due to the cost of services. Infrastructure projects are very capital intensive and are appropriate for areas with adequate residential densities such as suburban areas. Additional direction for densities are provided through institutional controls such as the Hays County subdivision ordinance which specifies minimum lot sizes based on water and wastewater service.

An assessment of four types of subdivisions that could be developed under the existing county subdivision ordinance was performed to demonstrate the cost of service and land impact of water and wastewater technologies for subdivisions with a range of densities. The cases are described below as Traditional, Non-Traditional and Rural subdivisions. Each case determines the cost to provide water and wastewater service to an example subdivision of 36 homes. The assumed water demand for the subdivision is 14,000 gpd or 15.7 ac-ft/yr.

The first case (A) represents a traditional subdivision that is serviced by central water and sewer. This could be a suburban area located very near the service area of an existing water and wastewater provider. Under the development regulations, there is not a specified minimum lot size for this type of development. Assuming a lot size of 0.5 acres, a total of 18 acres would be necessary for the subdivision. The length of water and wastewater pipeline necessary to serve the 36 homes is estimated at 6,720 feet. Construction costs for the pipelines are estimated at $25/linear foot and total $168,000 or $4,667 per house.

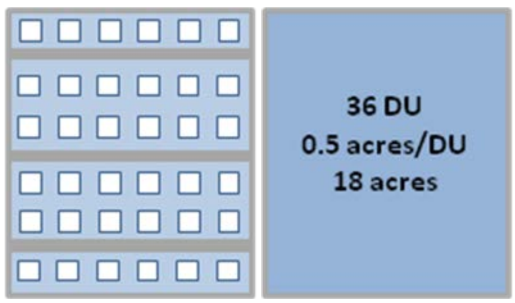


Figure 5.3-1. Case A Conceptual Layout

Capital costs totaling approximately $778,000 for the subdivision water and wastewater include the construction of the water distribution and wastewater collection system, and the connection fees based on current rates at Dripping Springs. Capital and annual costs are summarized for Case A subdivision in Table 5.3-1.

Table 5.3-1. Case A Capital and Annual Costs for Water and Wastewater

Item	Per Dwelling Unit	Total
Capital Cost		
Subdivision water lines	$2,333	$84,000
Subdivision wastewater lines	$2,333	$84,000
Water connection fee	$7,180	$258,480
Sewer connection fee	$9,752	$351,072
Total Capital Cost	$21,598	$777,552
Annual Cost		
Cost of Water (400 gal/day/DU at $3.75/kgal)	$548	$19,710
Cost of wastewater (280 gal/day/DU at $3/kgal)	$307	$11,038
Debt Service (6% for 20 years)	$1882	$67,800
Total Annual Cost	$2,737	$98,548

The second case (B) represents a non-traditional subdivision that does not have access to central water and wastewater and uses rainwater collection and advanced septic systems. The minimum lot size is one acre requiring 36 acres for the subdivision. Using information developed in Section 3.7, the total utility costs for the subdivision is $1.260 million and are detailed in Table 5.3-2.

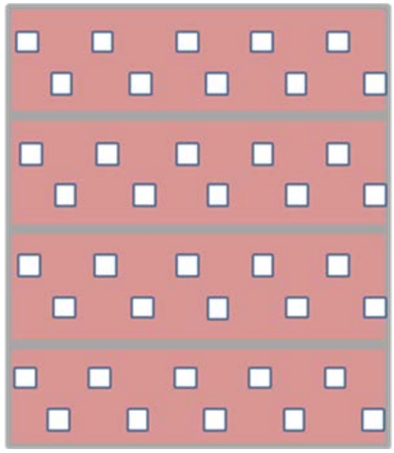


Figure 5.3-2. Case B Conceptual Layout (1.0 acres/DU)

Table 5.3-2. Case B Capital and Annual Costs for Water and Wastewater

Item	Per Dwelling Unit	Total
Capital Cost		
Rainwater collection system	$25,000	$900,000
Advanced Septic system	$10,000	$360,000
Total Capital Cost	$35,000	$1,260,000
Annual Cost		
Operation & maintenance	$800	$28,800
Debt service (6% for 20 years)	$3,050	$109,800
Total Annual Cost	$3,850	$136,800

The third case (C) represents a rural subdivision that uses individual private wells and conventional septic systems. The minimum lot size is six acres requiring 216 acres for the subdivision. Using information from Section 3.7, the costs for private well systems and conventional septic systems are detailed in Table 5.3-3.

Table 5.3-3. Case C Capital and Annual Costs for Water and Wastewater

Item	Per Dwelling Unit	Total
Capital Cost		
Private well	$18,000	$648,000
Conventional Septic system	$8,000	$288,000
Total Capital Cost	$26,000	$936,000
Annual Cost		
Operation & maintenance	$750	$95,400
Debt service (6% for 20 years)	$2,270	$81720
Total Annual Cost	$3,020	$177,120

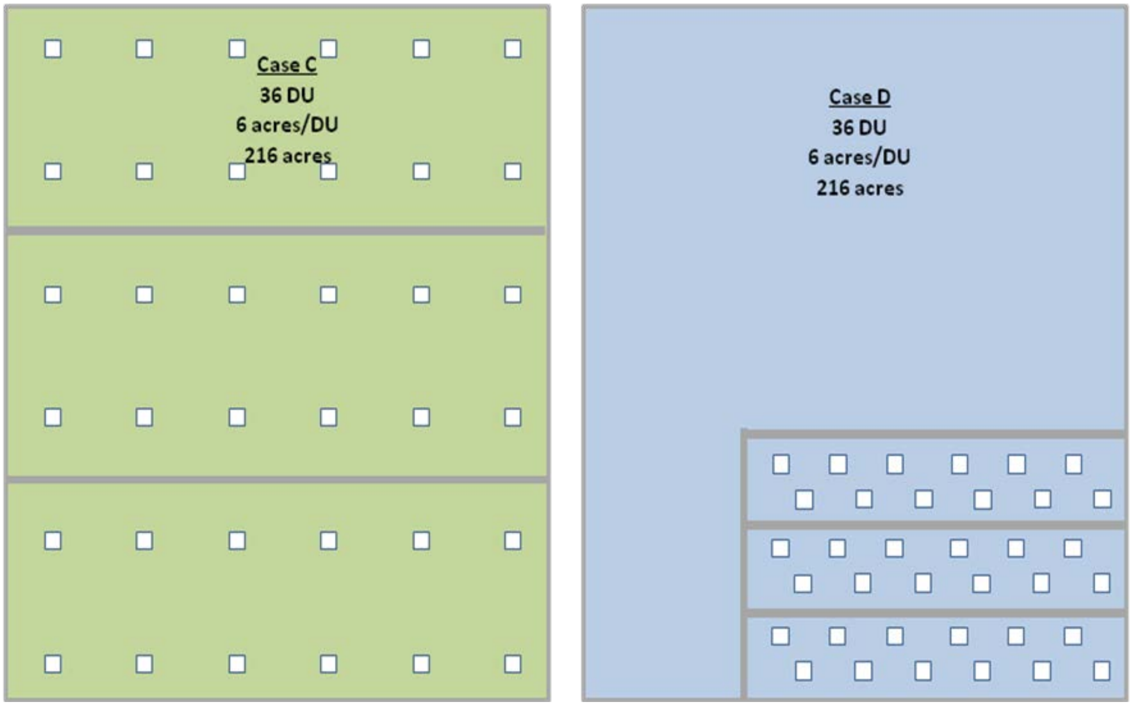


Figure 5.3-3. Conceptual Layout and Land Requirements for Case C and Case D Subdivisions

The final case (D) represents a rural subdivision that is clustered, served by community wells and advanced septic systems. The minimum lot size is six acre requiring 216 acres for the subdivision; however with the clustering the houses can be placed on 1.0 acre lots. Using information developed in Section 3.7, the costs for community well system and advanced septic systems are detailed in Table 5.3-4.

Table 5.3-4. Case D Capital and Annual Costs for Water and Wastewater

Item	Per Dwelling Unit	Total
Capital Cost		
Community Well system	$7,861	$283,000
Water distribution system	$4,194	$151,000
Advanced Septic	$10,000	$360,000
Total Capital Cost	$22,055	$794,000
Annual Cost		
Operation & maintenance	$845	$30,420
Debt Service (6% for 20 years)	$1,930	$69,400
Total Annual Cost	$2,775	$99,820

Table 5.3-5 and Figure 5.3-4 summarize the capital and annual cost for each type of subdivision described. The least costly development for water and wastewater service is Case A representing high density with central water and wastewater. This subdivision also uses the least amount of land. Another consideration on the densities is the cost to retrofit the development with pipelines for water

and wastewater. Retrofits are very costly to the existing homeowners, and face many challenges. Lower density developments will face higher costs to retrofit if a new water supply is necessary.

Table 5.3-5. Summary of Total Costs for Water and Wastewater Service for Cases A – D

Case	Capital Cost	Annual Cost	Cost to Retrofit	Land (acres)
A	$777,600	$98,545	$0	18
B	$1,260,000	$136,800	$302,000	36
C	$936,000	$177,120	$867,000	216
D	$794,000	$99,820	$151,000	216

Figure 5.3-4. Summary of Cost Per Dwelling Unit for Cases A – D.

The less traditional developments relying on groundwater and rainwater for water supply and OSSF for wastewater will cost more than Case A and have higher annual costs. Case D has the next lowest cost of the example developments by maximizing densities without purchasing water and wastewater service from a wholesaler.

It is difficult to predict what development will look like in the future for Hays County. This analysis provides some of the key factors that will condition development including land required, densities and water and wastewater services. For areas with low densities and large distances between demands such as rural areas, developments could resemble Cases B – D and will rely on on-site solutions such as groundwater, rainwater and OSSF. Suburban areas may develop more closely to Case A to support sufficient development densities. These would be located proximate to nearby service corridors or near demand centers and will have greater potential access to centralized water and wastewater service.

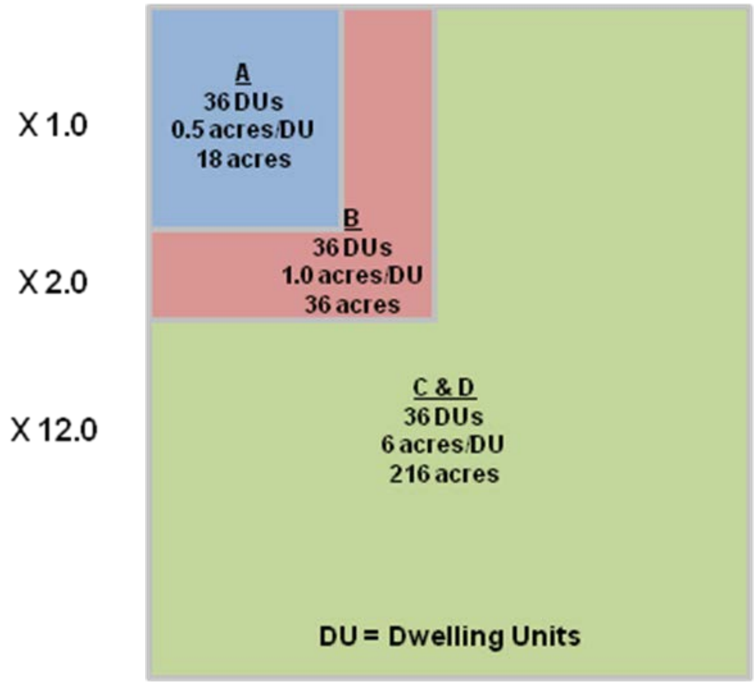


Figure 5.3-5. Equivalent Land Commitment for Same Number of Dwelling Units

Another aspect of the subdivision density is the land requirements. Figure 5.3-5 indicates that low density developments with on-site water and wastewater solutions will require nearly twelve times the land area as the more dense subdivision described in Case A for the same number of homes. The land implications of each case will have an impact on land development costs and home prices, utility and other infrastructure costs, service costs and quality of service and the tax base. Additionally, development under cases B, C and D could result in rural sprawl, increasing fragmentation of environmental habitats, degradation of water quality and availability, and impacts to quality of life and aesthetics of the developing areas.

5.4 MAGNITUDE OF NEED

Groundwater resources in the County are not sufficient to meet all of the projected growth in any of the planning scenarios. Demands will need to be shifted to supplies other than local groundwater such as rainwater harvesting and imported surface water.

The demand projections identify a significant need for additional water supply and an increase in wastewater service for the planning area. Based on the high case scenario, the planning area will have a 24.62 mgd demand by 2060; representing an increase in water demand by 15.586 mgd. Figure 5.4-1 identifies that 31% of the total demand in the planning area will be met by local groundwater development by 2060 compared to 67% of the demand in 2010. By 2060, 49% (12.14 mgd) of the total water demand will be met through conservation strategies, residential rainwater harvesting and local groundwater.

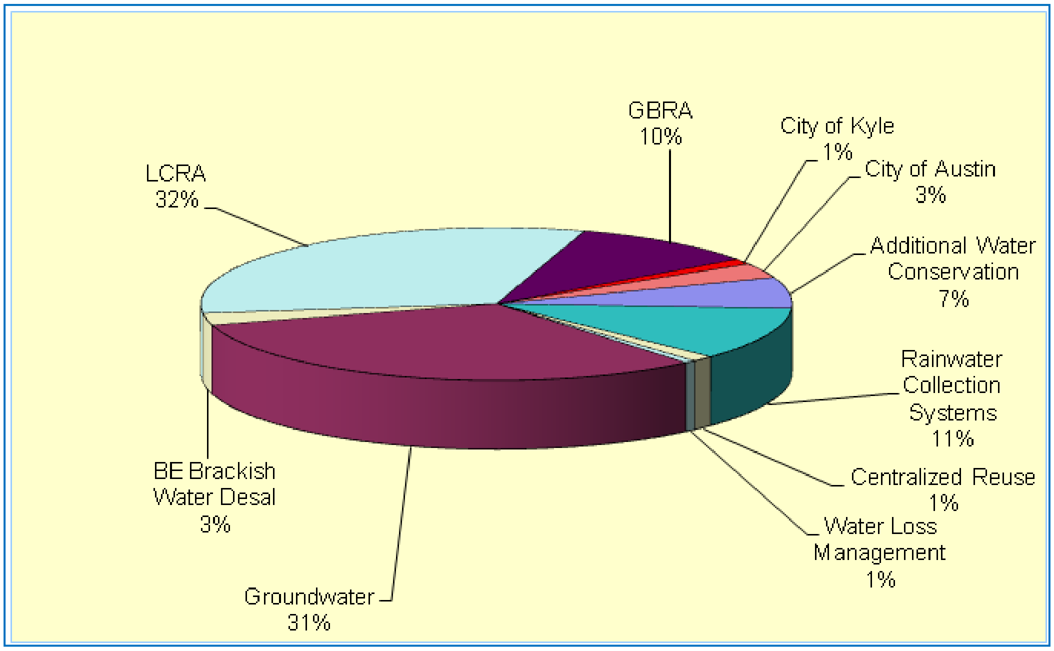


Figure 5.4-1. Projected Distribution of 24.6 mgd of Water Use in 2060 (HI Case)

Table 5.4-1 details the total project and annual cost for the water supply alternatives applied for the planning period. The unit cost represents the cost per thousand gallons based on the annual cost and the total water supply from the project.

Table 5.4-1. Estimated Costs for Water Management Measures

Strategy	Total Project Cost	Annual Cost	Unit Cost ($/kgal)
Conservation	$1,112,000	$1,112,000	$1.90
Rainwater Harvesting (per DU)	$25,000	$2,500	$30.44
Local Groundwater (per DU)	$18,000	$2,250	$6.85
LCRA RR12 and Hamilton Pool Pipeline Extension	$21,189,000	$2,002,000	$0.84
Interconnection Wimberley/Woodcreek	$5,925,000	$637,000	$1.75
Interim Supply from CLWSC	$6,726,000	$1,973,000	$5.41
City of Austin extension to Spillar/Pfluger Ranch	$3,114,000	$1,442,000	$4.03
Centralized Reuse	$3,465,000	$866,000	$7.91
Wimberley/Woodcreek Water Supply Project[1]	$20,705,000	$11,063,000	$7.58
Edwards BFZ Aquifer Brackish Water Desalination[2]	$43,810,000	$9,003,000	$3.14
Water Loss Management	$5,000,000	$437,000	$7.98

1 – Option C. Unit costs based on a 4 mgd supply.

2 - Costs estimate from 2011 Region K Plan may be significantly underestimated. Unit costs based on a 7.9 mgd supply for total project.

Infrastructure projects will be required to deliver the remaining 51% (12.52 mgd) of the water supply in 2060. Capital costs for these projects over the next 50 years are estimated at $446,046,000. This total includes costs for the large infrastructure projects ($111.4 million) as well as cumulative costs for investment into exempt groundwater wells ($229 million) and rainwater harvesting systems ($105.6 million) Figure 5.4-2 details total project costs for additional water management measures to meet projected demand for the High Case scenario during the planning period.

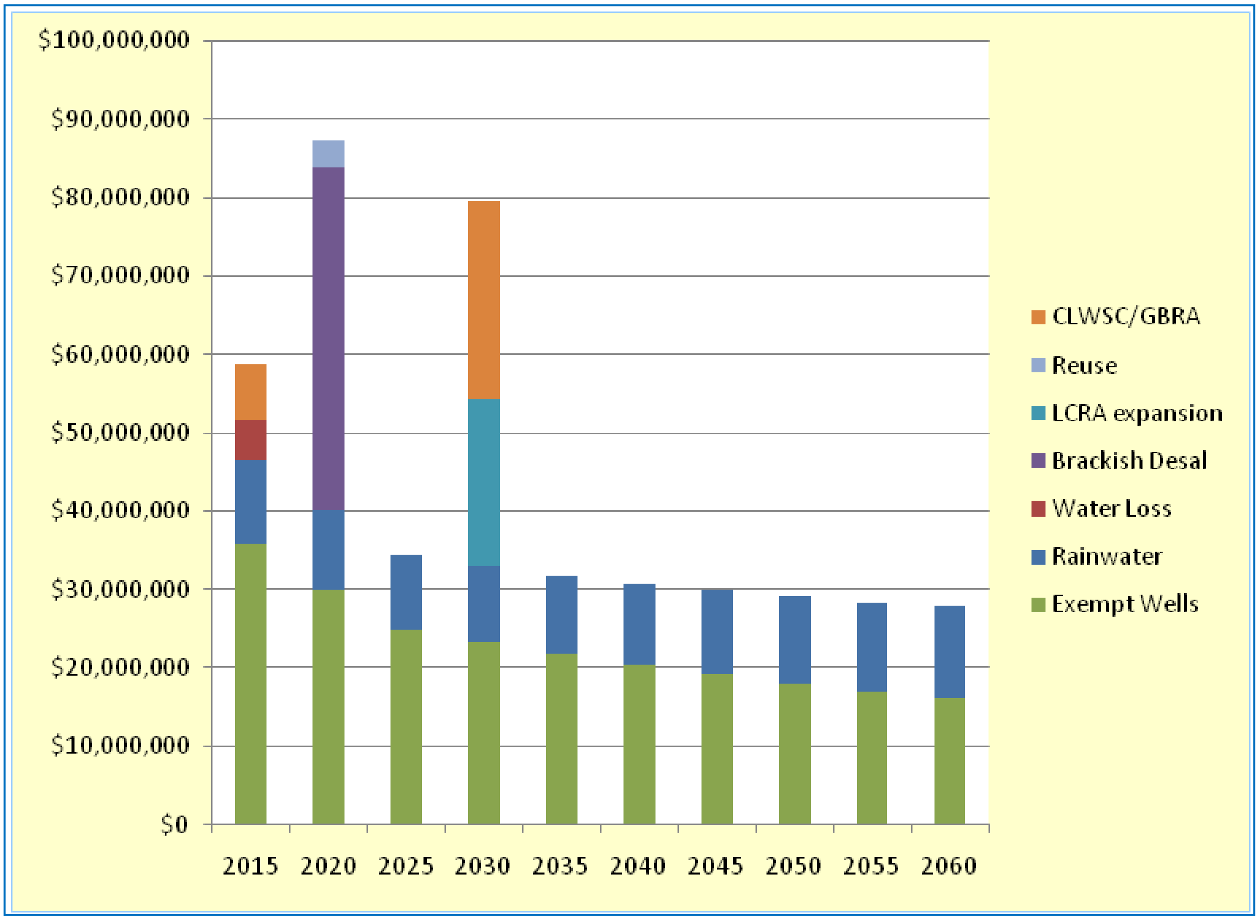


Figure 5.4-2. Total Project Costs for Water Management Measures for Western Hays County

The figure demonstrates the high cost of the infrastructure projects to meet demand for the cities of Wimberley, Woodcreek and Hays between 2020 and 2030. Expenditures for exempt wells are shown to decrease over time as more owners invest into rainwater harvesting systems.

Within the planning area, there is a permitted wastewater treatment capacity of 3.2 mgd with an ultimate wastewater demand of 12.5 mgd by 2060. A number of the permitted facilities have yet to be constructed. The constructed capacity of the permitted systems is limited to 1.85 mgd. Table 5.4-2 describes the 2010 and 2060 wastewater demand for each planning subarea, the current wastewater treatment capacity and OSSF capacity, and the projected increase of treatment capacity for the WWTP. Currently only about 13% of the wastewater is treated by a WWTP, the remaining wastewater is treated and disposed through on-site sewerage systems (OSSFs). By 2060, approximately 5.1 mgd or 41% of the total wastewater is projected to be treated through WWTPs. WWTP facilities will need to be expanded or newly constructed to meet the 4.5 mgd increase in constructed capacity. The location and sizing of these facilities will be dependent on the subdivisions being served and the timing of their construction.

Table 5.4-2. Summary of Wastewater Management Measures by Planning Sub-Area

Area	2010 (mgd)			2060 (mgd)			Total built (mgd)	Required Expansion (mgd)
	Total Demand	WWTP	OSSFs	Total demand	WWTP	OSSFs		
3238	0.178	0.000	0.178	0.479	0.054	0.425	0.000	0.054
290-NW	0.317	0.000	0.317	0.827	0.083	0.744	0.000	0.083
Dripping Springs Area	0.404	0.206	0.198	1.124	1.012	0.112	0.502	0.806
290-NE	1.090	0.223	0.866	3.190	1.652	1.538	0.950	1.429
Hays Area	0.318	0.000	0.318	0.807	0.220	0.587	0.000	0.220
967	0.224	0.000	0.224	0.568	0.212	0.356	0.000	0.212
150	0.437	0.000	0.437	1.136	0.113	1.023	0.000	0.113
12-A	0.228	0.000	0.228	0.573	0.000	0.573	0.000	0.000
290-SW	0.093	0.000	0.093	0.238	0.000	0.238	0.000	0.000
2325	0.306	0.000	0.306	0.775	0.077	0.698	0.000	0.077
Wimberley Area	0.738	0.250	0.487	1.872	1.648	0.225	0.400	1.397
Hilliard	0.178	0.000	0.178	0.463	0.000	0.463	0.000	0.000
12-B	0.172	0.000	0.172	0.433	0.042	0.391	0.000	0.042
Total	4.683	0.680	4.004	12.485	5.113	7.372	1.852	4.433

The cities of Dripping Springs and Wimberley are anticipating expansion projects, as described in Section 3.7.2.1, for their wastewater treatment facilities as a response to growth, increasing service areas and failing OSSFs. The total project costs are estimated at $24,290,000.

Based on the projected wastewater demand for the City of Dripping Springs, an additional 0.566 mgd of treatment capacity would be required (see Table 5.4-3). This allows the city to meet approximately 90% of the total wastewater demand within the city. The city's proposed expansion project would provide an additional 0.1875 mgd of capacity. The remaining required capacity for the City is 0.3 mgd and would most likely be met through one or more wastewater plants located near future dense development. Some of this smaller plant capacity may need to be constructed before 2025.

The City of Wimberley is projected to treat approximately 80% of the wastewater demand by 2060. To meet this demand the City will need to expand their existing plant and sewer system by 0.793 mgd. The near-term proposed improvements for a new treatment plant and expanded sewer system are estimated at $8,525,000 for a total capacity of 0.1 mgd. Upgrades could be required by 2020.

The WWTP that serves the communities of Woodcreek and Woodcreek Utilities will likely require a 0.460 mgd expansion during the planning period. This would allow the WWTP to serve approximately 98% of the total long-term wastewater demand for these communities.

Table 5.4-3. Additional Wastewater Treatment Needs for Wimberley Area and City of Dripping

Area	2010 (mgd)			2060 (mgd)			Total Permit (mgd)	Required Expansion (mgd)
	Total Demand	WWTP	OSSF	Total Demand	WWTP	OSSF		
City of Dripping Springs	0.262	0.121	0.141	0.763	0.686	0.076	0.163	0.485
City of Wimberley	0.403	0.025	0.379	1.023	0.818	0.205	0.025	0.793
Woodcreek Phase I, II	0.334	0.225	0.109	0.849	0.829	0.020	0.375	0.454

Total capital costs to provide wastewater treatment for the growth projected in the High Case Scenario is estimated at $367,888,000. Figure 5.4-3 illustrates those needs in five-year increments. This includes costs for installation of OSSFs to meet 45% of the future wastewater needs in the county. Cost for wastewater treatment plants include the proposed improvements in Wimberley and Dripping Springs as well as costs for future package plants and sewer systems.

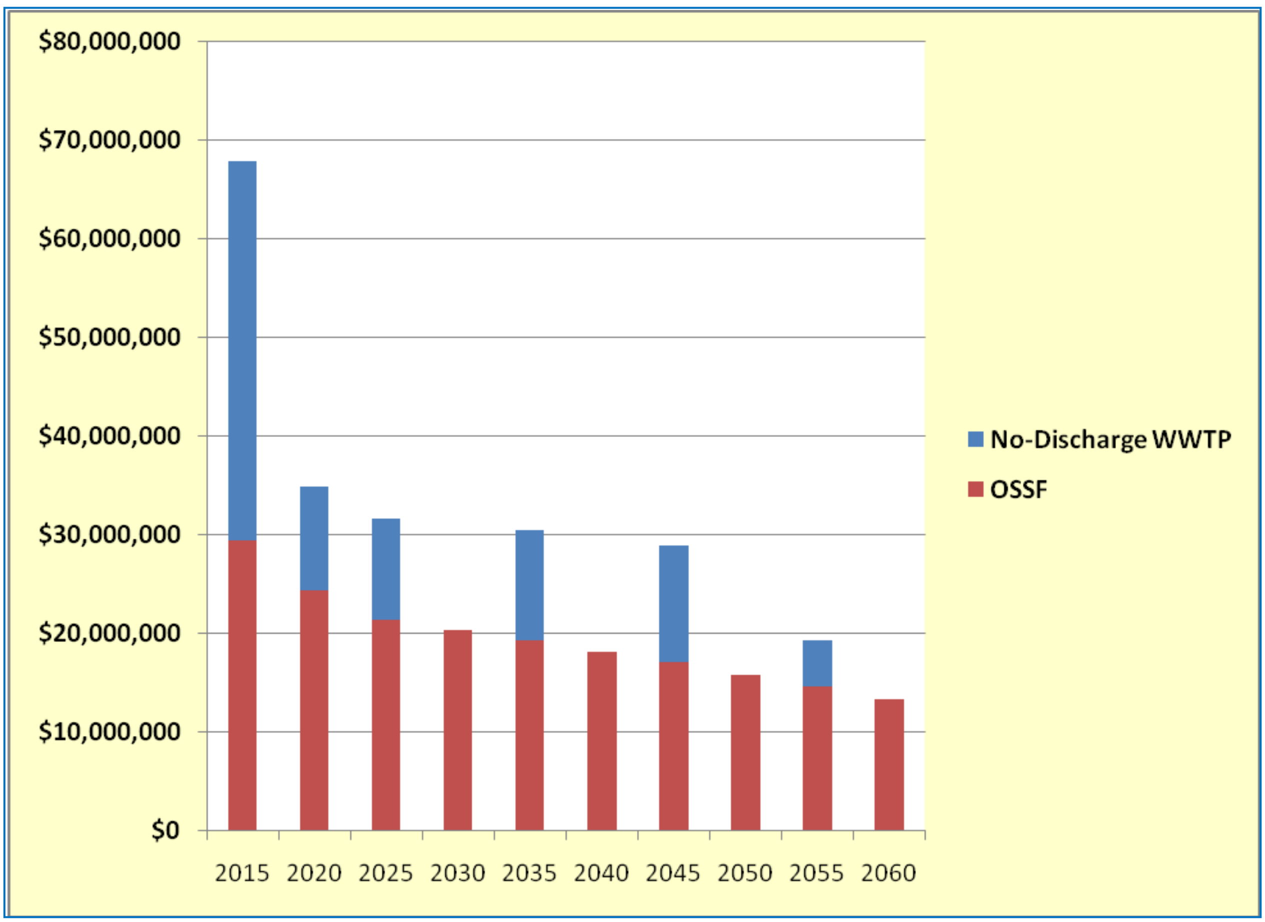


Figure 5.4-3. Total Project Costs for Wastewater Management Measures for Western Hays County

6.0 POLICY CONSIDERATIONS

Because of the wide array of water entities in Hays County, policy considerations have been identified for various levels of government and utility providers and regulators, including:

6.1 COUNTY PLANNING, REGULATION, AND COORDINATION ROLE

There are *many* stakeholder groups with differing water interests that span different areas of Hays County. In any one broader subarea of the County, there are typically multiple water entities, including one or more river authorities, groundwater districts, towns and communities, private utilities, and other interest groups.

The State's formalized and on-going regional water planning process bridges many of these interests, but occurs in a cycle of only once every five years. Because of its focus on water supply planning for many, many entities, the regional planning efforts pay limited attention to local issues, little attention to the needs of rapidly-growing suburban areas, does not address wastewater issues, and have no substantial involvement in forming a "critical mass" of momentum needed to bring about project implementation. The TWDB's other regional planning grant and financial assistance programs provide additional support for greater definition of more localized regional projects and a means of garnering funding, but still do not adequately provide for the week-to-week focused coordination and other efforts needed to initiate implementation.

The County is the one entity with a more local focus that spans these various interest groups and can provide a key role as a regional leader, facilitator and actor to help bridge jurisdictional boundaries, better coordinate integrated water planning and policy, and facilitate needed actions. With daunting growth pressure facing the area and to proactively help *avoid* adverse growth-related impacts, Hays County should consider enhancing its role in supporting good integrated planning and insightful regulation that has the longer-term "end in mind." The County, in cooperation with other rapidly-growing Texas counties, should continue their legislative-lobbying efforts to obtain more legal authority to manage and condition growth in suburban and rural areas.

6.2 INNOVATING APPROPRIATE TECHNOLOGIES

Many times, new or alternative technologies face challenges being "innovated" into the mainstream market, typically due to factors such as high costs, regulatory impediments, or lack of history of market acceptance. And yet if these hurdles are not overcome, valuable new approaches may remain marginal and of limited use for longer periods of time until market forces eventually drive their innovation. To create results sooner in time, and in turn, lower production costs that accelerate innovation, government has historically created policies and/or programs that provide incentives, disincentives, or both to help overcome these barriers to innovation.

In the case of Hays County, several examples are applicable. The County's subdivision ordinance seeks to protect surface and groundwater quantity and quality through density regulation, and at the same time, incentivizes through the allowances of greater housing densities, the development of "other water" (including rainwater collection systems) and advanced on-site wastewater systems. The County also provides through its linked deposit and interest rebate program, financial incentives to develop alternative water supplies (including rainwater collection systems) and reduce pumping of groundwater. The County has also taken a lead in developing demonstration projects at new County facilities that emphasize low-water landscaping, rainwater collection systems, and alternative wastewater treatment technologies.

The County and other jurisdictions within the County should continue to find appropriate ways to promote and incentivize water management actions that are more sustainable, including broad support for water conservation and reuse, and rainwater collection systems as an alternative to groundwater.

Actions that should be taken include:

- Promoting legislation and tax incentives for existing developments or individuals who:
  a. Switch to rainwater harvesting
  b. Use low flow appliances and fixtures
  c. Irrigate with Reuse or Rainwater
  d. Xeriscaping
  e. Manage their land for water stewardship (aquifer recharge and water quality)
- Develop and promote incentive programs for future development concerning:
  a. Conservation Development
  b. Land Conservation & Habitat Protection
  c. Larger lot sizing in spring flow recharge areas
  d. Parkland dedication and open space protection
  e. Rainwater Harvesting
  f. Decentralized Waste Water Reuse
  g. Reuse of Greywater
  h. Xeriscaping
  i. Stream Set Backs and Riparian Restoration
- Encourage state legislative or agency actions to enhance compliance of water-conserving rate structures and limitations on allowable water loss.
- Examine and support methods to make expanded use of stormwater for irrigation and aquifer recharge.
- Conduct a Best Practice Study on how other States are resolving Water problems and incorporation of best practice for:
  a. Development
  b. Open Space
  c. Golf Course Installation
  d. Schools and other Public Buildings
- Establish a Water Conservation Task Force to Promote Education
- Offer Training for Rainwater Harvesting Installation and programs to help promote mass adoption of rainwater systems for new home installations and retrofitting existing homes.

6.3 UTILITY OVERSIZING AND COUNTY GROWTH MANAGEMENT

In many cases, it is cheaper to oversize (increase the diameter of) an initial long-distance water supply pipeline than to build a second line too soon in time to meet future growth needs. In many cases, longer distanced pipelines will be oversized so that the facilities can provide for both near-term and longer-term water needs of the demand center, as well as possibly meet the water needs of intervening areas along the pipeline route. If additional imported water supplies are made available to the more concentrated water demand centers in Dripping Springs and Wimberley/Woodcreek, the anticipated pipelines will likely traverse less developed lands along roadway routes in the northwestern and south central portions of the County.

Currently, the County has rather limited authority to condition development in the rural areas. Hays and other Central Texas counties sought additional growth management powers in the past Legislative session to better address growth-related issues, but were not successful. Many Central Texas cities have found that controlling the extension of utility service is a powerful growth management tool that can allow for win-win situations where both the private sector greatly benefits from the provision of utility service and the affected government is typically able to exact greater amenities, property value enhancements, environmental controls, and other facility improvements through a negotiated development agreement. In lieu of, or in addition to, having additional statutory authority to manage growth, the County should investigate ways to acquire utility oversizing as an enhanced means of conditioning new development. However, with every new power or authority also come challenges and responsibilities. New water supply, treatment, and conveyance infrastructure are expensive and oversizing costs a considerable amount of money for which there is no current source of off-setting revenue. These oversizing costs must be borne by someone.

On May 9, 2000 the Hays County Commissioners Court passed a resolution authorizing the creation of the Hays County Water and Sewer Authority pursuant to Section 412.016 (now §562.016) of the Texas Local Government Code that provides that a "county may acquire, own, finance, operate, or contract for the operation of, a water or sewer utility system to serve an unincorporated area of the county" also subject to some other statutory provisions. The statute goes on to say that "to finance the water or sewer utility system, a county may issue bonds payable solely from the revenue generated by the water or sewer utility system" and "this subsection does not authorize the issuance of general obligation bonds payable from ad valorem taxes to finance a water or sewer utility system." The action by the Commissioners Court, at that time, further limited any County involvement to just facilitating planning and further required that any expenses relating to water or sewer service provided through the new Authority be borne by those persons or entities receiving the utility service.

So, a practical challenge facing the County is how to pay for any utility oversizing in that no revenue is normally generated from oversizing that, by definition, is not used. There may be some possibilities for the County controlling oversizing through the TWDB's State Participation Program, which would allow for a deferral of repayment for the oversizing, but may still require a repayment-backing pledge of some sort by the County. The County also has a limited, but growing amount, of revenue arising from the

County's role in the LCRA/Dripping Springs pipeline, but it would not be sufficient for securing much of an oversizing position in these new pipelines.

Finally, a decision to extend water service to new developments can be controversial. If the County were able to secure oversizing, this would also come with a responsibility of treating applicants in a similar, equitable manner. Consistent policy and evaluation criteria would need to be developed and followed.

6.4 URBAN SPRAWL AND WATER SUPPLY TRANSITION

It will take some time for additional water supplies to be developed and imported into the urbanized communities. Further, new subdivisions may develop in adjoining areas that can not yet access this imported water, but have the potential for gaining access in the future as the urban areas expand. Without the presence of a near-term centralized water system, these new subdivisions will be facing the low development densities, provided for in the County's subdivision ordinance, with the attendant consequences of increasing land sprawl, increasing the future costs of public services, and limiting the ability to install structural environmental controls.

Also if these subdivisions develop instead with on-site water systems and future water supply problems develop from inadequate groundwater, from under-designed rainwater collection systems, or protracted drought, it will be very problematic and costly to retrofit centralized utility service into these existing neighborhoods after the fact. These issues take on even greater importance in very rapidly-growing areas, such as the Hwy 290 corridor, where a high degree of ultimate urbanization is expected and substantial development could occur before additional supplies become available.

Therefore, careful consideration should be given by the HTGCD and the County to coordinated policies that could grant <u>interim</u> community well permits that would allow for greater development densities and internal water distribution infrastructure to be built at the initiation of the subdivision. Then when adequate imported supplies are made available, the transition to these alternative supplies would be much more achievable. Obviously, there will be concerns about granting interim pumping permits and hoping for a future transition to alternative water supplies. One suggestion that has been made is to require development that seeks a community well permit to initially meet the County's six acre per dwelling unit gross density requirement for individual wells, provide for clustered housing in one portion of the tract, hold the required undeveloped acreage in a reserve trust until acceptable alternative supplies are made available to the development, and then release the adjoining reserve land for future development.

6.5 INTEGRATED MUNICIPAL GROWTH MANAGEMENT

At the municipal level, there is a need for better linkage of land planning and development regulation and provision of utility service. In the western part of the County, only the City of Dripping Springs has some direct involvement in the provision of utility service, and that is limited to a small service area for wastewater and an intended future municipal role in providing retail water service to a certificated area that includes part of the City and to a large development in its ETJ that has yet to move forward. The City currently has no water infrastructure or supply under direct contract to provide retail service outside of its future ETJ customer. In Dripping Springs itself, the extension of water service is controlled by the Dripping Springs WSC, a private utility, which has both existing infrastructure and water supply to address growth in the community. In the southern part of the County, private utilities (Wimberley WSC and Aqua Texas) also serve the municipalities of Wimberley and Woodcreek, respectively.

The intent of this recommendation is not to comment on the service quality of these private utilities. The intent of this recommendation is to simply identify that at some point in a municipality's growth and evolution, it is strategic that cities ultimately own their utilities and exercise direct control over the utility extension and service decisions. What might be a good business decision for a private utility extending service may not agree with the municipality's comprehensive plan. Also, a municipality exercising control over service extensions can be a powerful tool in assuring compliance with regulations and in negotiating developer agreements that maximize community benefits.

The cost of transitioning from private to public ownership can range from small to large. There are instances of utility assets simply transferring ownership, at no or little cost, so that any accrued equity in the system doesn't reappear as larger debt on the buyer's books and increase the rates. In others, there is compensation to the seller for their equity in the system and/or other possible pricing considerations. In these cases, the cost of gaining municipal ownership can result in rate increases.

6.6 REGIONALIZATION OPPORTUNITIES

There are several factors that may act to increase the presence of small centralized utility systems in the western portion of the County. First, as discussed above, there may be an increased number of interim community well systems until alternative imported water supplies can be developed. Second, the presence of the Edwards Aquifer recharge zone and contributing zone in the study area will most likely limit future wastewater discharge permits to land application disposal requirements to better protect water quality. Because of the noticeable and costly land area requirements associated with these discharge systems, it will be difficult and costly to permit and build large (more regional) wastewater treatment plants. As a result, the County is likely to experience a greater proliferation of smaller, subdivision-oriented, "package" wastewater treatment plants. Third, alternative technologies, such as hybrid centralized/septic/reuse wastewater systems serving small clusters of development, may become more innovated into future development.

In all three instances of these more dispersed smaller utility systems, there is a need for up-front capital investment and continued professional operations and maintenance. A whole series of problems could arise if there is an "unmanaged" proliferation of these small utilities, ranging from redundant utility organizations and staffing, loss of economies, high utility rates, non-standardized equipment, questionable operations and upkeep of facilities.

There is a need for regional ownership and operations of these dispersed systems to gain economies of scale, improve professional operations, and better assure that these systems are sustainable over time. Local river authorities currently perform such functions in certain areas of the County. However, even in the best of circumstances, this can be difficult with inherent high costs of service, resulting high utility rates, customers unhappy with large bills, and thus resisting re-investment in the system. One river authority is actively seeking to reduce its regional treated water and wastewater service role in serving dispersed systems.

There are private sector, for-profit companies that perform these functions as their core business. They, too, are also challenged by the inherent higher cost of service of these smaller systems and understandable customer resistance to rate hikes. But being private utilities, these companies can make a more technical, less politically-influenced, case to the State regulatory authority for sufficient rates needed to fund and maintain the utility.

It is unclear what is needed in terms of policies for promoting regional ownership and operation of dispersed systems. Do we let service and financial problems arise and let the “market take its course” where many dispersed systems are eventually consolidated over the long-term? Are there legislative remedies or policies that might lower the barriers to public entities performing these functions? Is this a more viable role for the private sector to perform? This would be a timely topic for a future TWDB research grant study.

Another regionalization item that will be a growing policy issue over time is if there is a proliferation of small wastewater treatment systems in portions of the County that are more intensely developed, there will likely be increasing pressure for consolidation of these multiple systems into regional wastewater treatment plants at some point in the future. Because of large land area needs with associated high costs and neighborhood compatible land use issues, it is very unlikely that a future regional plant would be feasible employing land application disposal. It is likely that such a regional plant will seek a stream discharge permit. With continued growth, the County may face a difficult choice in the future between the cumulative water quality concerns of many smaller treatment plants versus that of fewer larger plants with steam discharges.

6.7 ENHANCED GROUNDWATER MANAGEMENT

The Barton Springs/Edwards Aquifer Conservation District and the Edwards Aquifer Authority that manage groundwater in the eastern portion of the County were empowered by the State to collect funding from special assessments, user fees, and permits, and for the most part, have reasonably adequate funding to operate meaningful programs.

The Hays Trinity Groundwater Conservation District (HTGCD) was created with limited Chapter 36 (Texas Water Code) authority and funding powers only related to non-recurring fees for registration of new wells and for connections to water systems using Trinity groundwater. This very limited and volatile funding base has made planning, budgeting, and managing programs very difficult for the District and effectively precludes the District from any borrowing. As a result, the District has had to make do on a shoestring budget with limited staff and low salaries. Even so, the dedication of the Board and Staff has allowed it to implement basic planning and management programs.

Given the rapid growth in western Hays County, the limited Trinity resource, and the growing groundwater availability problems there, many have recognized that more is needed to enhance the effectiveness of the HTGCD. In late 2009, a special advisory group was formed at the initiative of State legislators that included Hays County and HTGCD officials, utility managers, and representatives of various development, agricultural, environmental, and public interest groups. The purpose of the special advisory group was to review and assess water, economic, private property, and quality of life issues in western Hays County as they relate to effective groundwater management and the current powers and authority of the HTGCD.

A number of contentious issues were discussed and debated, and near-unanimous agreement was ultimately reached in five issue areas and forwarded to the State Legislators in November 2010 for their consideration. Those five areas of agreement of the Advisory Group included policy recommendations that:

(1) the Board of the HTGCD be given the authority to call an election for the consideration of an ad valorem tax not to exceed $0.05 per $100 of valuation for purposes of supporting the District's operation;
(2) the limitation on the District with respect to access to private property be unchanged;
(3) with respect to exempt wells, that:
    a. existing exempt wells be grandfathered;
    b. landowners be allowed five years from the date of any approved regulation to drill a well that is exempt from regulation, and that such permits be granted are applied-for during the five year period and the well meets the criteria for exempt wells; and
    c. after five years, the property will fall under new well permitting rules.
(4) the Hays County Commissioners Court not oversee District decisions, except as in reasonable fiscal oversight of use of County funds for operations; and
(5) the terms of the District Board Directors be for four years, and service limited to two terms. Also, Directors would not be paid for service on the board.

If the Legislature proceeds to implement these consensus recommendations, this will have a positive effect on the District and enhance its ability to manage groundwater. This study also supports these proposed legislative changes as an initial positive step and believes that full Chapter 36 powers are needed soon to address the significance of the local groundwater management issues.

Outside of funding perhaps the most contentious issue relates to the impact of exempt domestic wells. Much of the tremendous growth in western Hays County in the past three decades has been supplied by exempt domestic wells. In northwestern Hays County, the relatively thin (approx. 50 to 75 feet) saturated thickness of the Aquifer and high groundwater demands can quickly deplete the resource during times of drought.

In the Wimberley/Woodcreek area with a greater saturated thickness (approx. 200 to 300 feet) , high demand during dry conditions can draw down water levels and impinge on spring and stream flow critical to the ambiance of the local tourism economy. While not as much an issue within the HTGCD permitted areas served by Dripping Springs WSC, Wimberley WSC and Aqua Texas, exempt domestic wells have been a noticeable contributor to these groundwater availability problems.

Estimates prepared by this planning study indicate exempt domestic pumping at about 3,253 ac-ft/yr, which is approaching the HTGCD's 2008 estimate of 3,713 ac-ft/yr of groundwater availability for the entire District. Essentially, the existing exempt domestic pumping is estimated to consume most of the sustainable groundwater supply of the Aquifer within the entire District.

In July 2010, Groundwater Management Area (GMA) 9 adopted a Desired Future Conditions (DFC) of an average 30-ft drawdown of the aquifer over the 50-year period within the entire multi-county GMA boundaries. With this DFC, TWDB's modeling indicated an average 19 foot drawdown for Hays County. A total pumping rate of 9,115 ac-ft/yr in western Hays County was modeled by the State that met the DFC level (TWDB, 2010e). In order to determine the managed available groundwater (MAG) amount for permitting, the exempt pumping must first be subtracted from the 9,115 ac-ft/yr of potential average annual pumping that produces the desired future conditions draw-down. The trend-based forecast developed in this study indicates exempt pumping reaching such a level by 2060 that potentially leaves very little excess supply at that time for additional permitted uses. So not only is exempt domestic pumping consuming most of the Aquifer's estimated sustainable yield, it is forecast to consume most of the increment of additional water availability produced by the agreed-upon future drawdown of the resource.

The rapid growth increasing groundwater demands coupled with the thin saturated thickness of the Trinity in northern Hays County and limited pumping capability in the Wimberley/Woodcreek area (as it affects spring and stream flows) has created visible, real groundwater problems during dry years and during drought. With anticipated increasing demand over time and a finite groundwater resource, these problems will tend to occur more frequently during less dry conditions.

Further actions the County could take, in coordination with groundwater conservation districts (GCDs), to help improvement groundwater management and operate within the limits of the defined DFCs include:

- Creating a County Liaison with the GCDs and GMA-9 , work with local cities & public water suppliers to incorporate standards and define target conservation measures to achieve Desired Future Condition
- Participating with GCDs in GMA-9 to clarify DFC measures to meet the Managed Available, including development of:
    1. Groundwater Database, and
    2. Monitoring System

This scarce groundwater situation and its current and future impact upon the environment has regional and local governments/utilities in these areas carefully examining options to secure additional costly imported water supplies. As previously discussed, near-by water resources can only be made available to western Hays County on an interim basis. Longer-term supplies must be newly developed, and in most cases, transported over long distances at great expense.

Aside from the contentious water resources debate over private (groundwater) property rights as they may affect the public good, Hays County is facing a problem of noticeable and increasing inequity over time. As the more densely-populated demand centers are, in effect, being forced to commit considerable funds to secure alternative water supplies to provide for growth and/or to reduce pumping pressure on the Trinity Aquifer, the magnitude of the existing and potential future exempt pumping is causing much of the depletion problem, but bearing none of the cost of the mitigation.

There are considerable political challenges in addressing this issue. But at the most basic economic level, corrective "market forces" are being blunted as there is no direct pricing signal affecting the decision-making and behavior of exempt users. While not likely to be popular, one possible option is for the District to be given authority to levy an impact fee for each new exempt well, whose proceeds would help fund HTGCD District operations or to create a subsidized loan fund made available to those entities developing alternative water supplies.

6.8 POLICY SUMMARY

While the focus of these policy recommendations primarily relates to what Hays County can do to promote effective water resource management and assist in meeting the future utility service needs in its jurisdiction, further policy actions are needed at various other levels government.

Rather than divesting the problem, large regional authorities providing wholesale and retail treated water utility service should examine ways to maintain government-sponsored utility service, reduce costs, and overcome political hurdles in charging the full cost of service to under-performing service areas. A greater cost-efficient, regional governmental presence is needed given the likelihood of many new physically-separate utilities in the County in the future.

State legislative action is needed to bolster the power and authority of the Hays Trinity Groundwater Conservation District to allow for more effective management of the limited and stressed groundwater resources in the western part of the County. Further consideration should be given to granting full Chapter 36 powers and examine ways to limit the future impact of exempt domestic wells.

The TCEQ needs to expeditiously finalize the Priority Groundwater Management Area considerations that could consolidate (or not) the HTGCD into a broader management entity serving portions of Comal, Hays, and Travis counties. Various governmental entities in the study area have taken positions on either side of this issue.

Given a new state groundwater policy framework, regional decisions on desired future groundwater conditions, and forecasts of pumping exempt from District regulation, policy decisions need to be made by the HTGCD Board as to the specification of the amount of managed available (permittable) groundwater and whether this may result in any additional permit availability in the near-term.

Groundwater districts, working in cooperation with the County, should develop a joint policy that would, as appropriate, allow for interim community well permits for new subdivisions as a means of realizing greater development densities that can be more economically provided government and utility services and environmental impacts more closely controlled. This would be especially important in allowing water distribution systems to be constructed with the initial development to greatly facilitate conversion to alternative water supplies at the earliest possible date.

Municipalities in the study area should resolve themselves to the difficult longer-term task of starting, acquiring, or expanding their own municipal utility system. For small communities growing to medium- and larger-sized communities, this is an especially tough proposition facing high costs of service in developing new expensive supplies and capacity, realizing few initial economies of scale, incurring possible recapitalization of utility acquisition costs, and resulting high utility rates and hook-up fees. However, it should be understood that a higher cost of service will be realized in any case by some form of utility, and the rate-payers will still ultimately pay the bill. The core question is whether the municipality can ultimately make integrated decisions on where and when to serve and use the utility extension decisions as a tool in conditioning new development.

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APPENDIX A
MID CASE MANAGEMENT PLANS FORECASTS

TABLE A-1
WATER MANAGEMENT PLAN
PLANNING AREA 3238
SCENARIO MID

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	2,490	3,041	3,384	3,796	4,114	4,414	4,685	4,937	5,150	5,333	5,554
Annual Growth Rate	2.8%	4.1%	2.2%	2.3%	1.6%	1.4%	1.2%	1.1%	0.8%	0.7%	0.8%
Suburban % of Planning Area Population	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
% of New Growth that is Suburban		90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
% Reduction in Base Water Use		0.50%	1.00%	1.50%	2.00%	2.50%	3.00%	3.50%	4.00%	4.50%	5.00%
% of Growth on Rainwater Systems	10.0%	11.0%	12.0%	13.0%	14.0%	15.0%	16.0%	17.0%	18.0%	19.0%	20.0%
% of Growth on Central Water Systems		25.0%	27.5%	30.0%	32.5%	35.0%	37.5%	40.0%	42.5%	45.0%	50.0%
% of Exist. Demand Converting to Central Wtr Syster	40.0%	7.5%	8.3%	9.0%	9.8%	10.5%	11.3%	12.0%	12.8%	13.5%	15.0%
Rural % of Planning Area Population	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
% of New Growth that is Rural		10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
% Reduction in Base Water Use		1.00%	2.00%	3.00%	4.00%	5.00%	6.00%	7.00%	8.00%	9.00%	10.00%
% of Growth on Rainwater Systems	15.0%	16.5%	18.0%	19.5%	21.0%	22.5%	24.0%	25.5%	27.0%	28.5%	30.0%
SUBURBAN AREA											
Population	2,241	2,737	3,046	3,416	3,702	3,973	4,216	4,444	4,635	4,800	4,999
Base Per Capita Water Use (gpcd)	132	131	129	128	127	127	126	126	126	126	126
Per Capita Water Use w/Addit. Conservation		130	128	126	124	123	122	122	121	120	120
Water Demand											
Annual (ac-ft)	331.4	400.1	440.1	489.8	526.7	562.9	595.1	627.2	654.1	677.5	705.6
Average Day (mgd)	**0.296**	**0.357**	**0.393**	**0.437**	**0.470**	**0.503**	**0.531**	**0.560**	**0.584**	**0.605**	**0.630**
Use of Existing Water Supply (mgd)											
Rainwater Collection Systems	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030
Trinity GW - Suburban	0.148	0.148	0.148	0.148	0.148	0.148	0.148	0.148	0.148	0.148	0.148
LCRA RR3238 Pipeline	0.118	0.118	0.118	0.118	0.118	0.118	0.118	0.118	0.118	0.118	0.118
Total	**0.296**	**0.296**	**0.296**	**0.296**	**0.296**	**0.296**	**0.296**	**0.296**	**0.296**	**0.296**	**0.296**
No Action Surplus or Unmet Need	**0.000**	**(0.061)**	**(0.097)**	**(0.141)**	**(0.174)**	**(0.207)**	**(0.235)**	**(0.264)**	**(0.288)**	**(0.309)**	**(0.334)**
Use of Additional Water Management Measures (mgd)											
Additional Water Conservation		0.002	0.004	0.007	0.009	0.013	0.016	0.020	0.023	0.027	0.031
Rainwater Collection Systems		0.007	0.011	0.017	0.021	0.026	0.031	0.036	0.040	0.044	0.049
Trinity GW - Suburban		0.015	0.010	0.006	(0.008)	(0.026)	(0.049)	(0.076)	(0.108)	(0.144)	(0.185)
LCRA RR3238 Pipeline		0.038	0.072	0.112	0.151	0.194	0.238	0.285	0.333	0.382	0.439
Total	**0.000**	**0.061**	**0.097**	**0.141**	**0.174**	**0.207**	**0.235**	**0.264**	**0.288**	**0.309**	**0.334**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	249	304	338	380	411	441	468	494	515	533	555
Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
Per Capita Water Use w/Addit. Conservation		118	116	114	111	109	107	105	103	101	99
Water Demand											
Annual (ac-ft)	33.5	40.5	44.7	49.7	53.5	56.9	59.8	62.5	64.6	66.3	68.4
Average Day (mgd)	**0.030**	**0.036**	**0.040**	**0.044**	**0.048**	**0.051**	**0.053**	**0.056**	**0.058**	**0.059**	**0.061**
Existing Water Supply (avg day mgd)											
Rainwater Collection Systems	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004
Trinity GW - Rural	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
Total	**0.030**	**0.030**	**0.030**	**0.030**	**0.030**	**0.030**	**0.030**	**0.030**	**0.030**	**0.030**	**0.030**
No Action Surplus or Unmet Need	**0.000**	**(0.006)**	**(0.010)**	**(0.015)**	**(0.018)**	**(0.021)**	**(0.024)**	**(0.026)**	**(0.028)**	**(0.029)**	**(0.031)**
Use of Additional Water Management Measures (avg day mgd)											
Additional Water Conservation		0.000	0.001	0.001	0.002	0.003	0.003	0.004	0.005	0.005	0.006
Rainwater Collection Systems		0.001	0.002	0.003	0.003	0.004	0.005	0.005	0.006	0.006	0.007
Trinity GW - Rural		0.005	0.008	0.011	0.013	0.014	0.016	0.017	0.017	0.018	0.018
Total	**0.000**	**0.006**	**0.010**	**0.015**	**0.018**	**0.021**	**0.024**	**0.026**	**0.028**	**0.029**	**0.031**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Water Service Demand (avg day mgd)	**0.326**	**0.393**	**0.433**	**0.482**	**0.518**	**0.553**	**0.585**	**0.616**	**0.642**	**0.664**	**0.691**
Use of Existing and New Supply (avg day mgd)											
Additional Water Conservation	-	0.002	0.005	0.008	0.011	0.015	0.019	0.024	0.028	0.033	0.038
Rainwater Collection Systems	0.034	0.042	0.047	0.053	0.059	0.064	0.070	0.075	0.080	0.084	0.090
Trinity GW	0.173	0.194	0.191	0.190	0.178	0.162	0.140	0.114	0.083	0.047	0.006
LCRA RR3238 Pipeline	0.118	0.156	0.190	0.230	0.270	0.312	0.356	0.403	0.451	0.500	0.557
Total Use of Existing & New Supply	**0.326**	**0.393**	**0.433**	**0.482**	**0.518**	**0.553**	**0.585**	**0.616**	**0.642**	**0.664**	**0.691**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE A-2
WASTEWATER MANAGEMENT PLAN
PLANNING AREA 3238
SCENARIO MID

Planning Area		Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS												
Planning Area	Est./Projected Population	2,490	3,041	3,384	3,796	4,114	4,414	4,685	4,937	5,150	5,333	5,554
	Annual Growth Rate	2.8%	4.1%	2.2%	2.3%	1.6%	1.4%	1.2%	1.1%	0.8%	0.7%	0.8%
Suburban	% of Planning Area Population	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
	% of New Growth that is Suburban		90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
	% of Growth served by Central Wastewater Systems		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
Rural	% of Planning Area Population	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
	% of New Growth that is Rural		10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
	% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA												
Population		2,241	2,737	3,046	3,416	3,702	3,973	4,216	4,444	4,635	4,800	4,999
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand												
	Average Day (mgd)	**0.160**	**0.196**	**0.216**	**0.241**	**0.259**	**0.276**	**0.291**	**0.305**	**0.316**	**0.325**	**0.336**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.152	0.152	0.152	0.152	0.152	0.152	0.152	0.152	0.152	0.152	0.152
	No-Discharge WWTP	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016
	Total	**0.168**	**0.168**	**0.168**	**0.168**	**0.168**	**0.168**	**0.168**	**0.168**	**0.168**	**0.168**	**0.168**
Suburban - No Action Surplus or Unmet Need		**0.0078**	**(0.028)**	**(0.048)**	**(0.073)**	**(0.091)**	**(0.108)**	**(0.123)**	**(0.137)**	**(0.148)**	**(0.157)**	**(0.168)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.021	0.037	0.057	0.072	0.085	0.097	0.108	0.117	0.124	0.133
	No-Discharge WWTP		0.007	0.011	0.016	0.020	0.023	0.026	0.029	0.031	0.033	0.035
	Total	**0.000**	**0.028**	**0.048**	**0.073**	**0.091**	**0.108**	**0.123**	**0.137**	**0.148**	**0.157**	**0.168**
Suburban - Surplus or Unmet Need		**0.008**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA												
Population		249	304	338	380	411	441	468	494	515	533	555
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Wastewater Service Demand												
	Average Day (mgd)	**0.018**	**0.022**	**0.024**	**0.027**	**0.029**	**0.031**	**0.032**	**0.034**	**0.035**	**0.036**	**0.037**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018
	Total	**0.018**	**0.018**	**0.018**	**0.018**	**0.018**	**0.018**	**0.018**	**0.018**	**0.018**	**0.018**	**0.018**
No Action Surplus or Unmet Need		**0.000**	**(0.004)**	**(0.006)**	**(0.009)**	**(0.011)**	**(0.013)**	**(0.015)**	**(0.016)**	**(0.017)**	**(0.018)**	**(0.020)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.004	0.006	0.009	0.011	0.013	0.015	0.016	0.017	0.018	0.020
	Total	**0.000**	**0.004**	**0.006**	**0.009**	**0.011**	**0.013**	**0.015**	**0.016**	**0.017**	**0.018**	**0.020**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA												
Wastewater Service Demand (avg day mgd)		**0.178**	**0.218**	**0.240**	**0.268**	**0.288**	**0.307**	**0.324**	**0.339**	**0.351**	**0.361**	**0.373**
Use of Existing and Capacity (avg day mgd)												
	OSSFs	0.170	0.195	0.213	0.236	0.253	0.268	0.282	0.294	0.304	0.312	0.322
	No-Discharge WWTP	0.016	0.023	0.027	0.032	0.036	0.039	0.042	0.045	0.047	0.049	0.051
	Total Use of Existing & New Supply	**0.186**	**0.218**	**0.240**	**0.268**	**0.288**	**0.307**	**0.324**	**0.339**	**0.351**	**0.361**	**0.373**
Surplus or Unmet Need		**0.008**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE A-3
WATER MANAGEMENT PLAN
PLANNING AREA 290-NW
SCENARIO MID

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	4,434	5,416	6,026	6,759	7,326	7,860	8,342	8,792	9,170	9,497	9,630
Annual Growth Rate	3.2%	4.1%	2.2%	2.3%	1.6%	1.4%	1.2%	1.1%	0.8%	0.7%	0.3%
Suburban % of Planning Area Population	31.5%	40.3%	44.3%	48.2%	50.6%	52.6%	54.2%	55.5%	56.6%	57.4%	57.7%
% of New Growth that is Suburban		80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%
% Reduction in Base Water Use		0.50%	1.00%	1.50%	2.00%	2.50%	3.00%	3.50%	4.00%	4.50%	5.00%
% of Growth on Rainwater Systems	10.0%	11.0%	12.0%	13.0%	14.0%	15.0%	16.0%	17.0%	18.0%	19.0%	20.0%
% of Growth on Central Water Systems		50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
% of Exist. Demand Converting to Central Wtr Syster	0.0%	7.5%	8.3%	9.0%	9.8%	10.5%	11.3%	12.0%	12.8%	13.5%	15.0%
Rural % of Planning Area Population	68.5%	59.7%	55.7%	51.8%	49.4%	47.4%	45.8%	44.5%	43.4%	42.6%	42.3%
% of New Growth that is Rural		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
% Reduction in Base Water Use		1.00%	2.00%	3.00%	4.00%	5.00%	6.00%	7.00%	8.00%	9.00%	10.00%
% of Growth on Rainwater Systems	15.0%	16.5%	18.0%	19.5%	21.0%	22.5%	24.0%	25.5%	27.0%	28.5%	30.0%
SUBURBAN AREA											
Population	1,397	2,182	2,671	3,257	3,710	4,138	4,524	4,883	5,186	5,448	5,554
Base Per Capita Water Use (gpcd)	132	131	129	128	127	127	126	126	126	126	126
Per Capita Water Use w/Addit. Conservation		130	128	126	124	123	122	122	121	120	120
Water Demand											
Annual (ac-ft)	206.6	319.0	385.9	467.0	527.8	586.3	638.5	689.2	731.9	768.9	783.9
Average Day (mgd)	**0.184**	**0.285**	**0.345**	**0.417**	**0.471**	**0.524**	**0.570**	**0.615**	**0.653**	**0.687**	**0.700**
Use of Existing Water Supply (mgd)											
Rainwater Collection Systems	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018
Trinity GW - Suburban	0.166	0.166	0.166	0.166	0.166	0.166	0.166	0.166	0.166	0.166	0.166
Total	**0.184**	**0.184**	**0.184**	**0.184**	**0.184**	**0.184**	**0.184**	**0.184**	**0.184**	**0.184**	**0.184**
No Action Surplus or Unmet Need	**0.000**	**(0.100)**	**(0.160)**	**(0.233)**	**(0.287)**	**(0.339)**	**(0.386)**	**(0.431)**	**(0.469)**	**(0.502)**	**(0.515)**
Use of Additional Water Management Measures (mgd)											
Additional Water Conservation		0.001	0.003	0.006	0.009	0.013	0.017	0.022	0.026	0.031	0.035
Rainwater Collection Systems		0.011	0.018	0.028	0.035	0.043	0.051	0.058	0.065	0.071	0.074
Trinity GW - Suburban		0.024	0.029	0.037	0.071	0.067	0.058	0.046	0.030	0.011	(0.017)
LCRA RR3238 Pipeline		0.064	0.109	0.162	0.171	0.180	0.189	0.198	0.206	0.215	0.221
LCRA RR12 Pipeline						0.036	0.072	0.107	0.141	0.175	0.202
Total	**0.000**	**0.100**	**0.160**	**0.233**	**0.287**	**0.339**	**0.386**	**0.431**	**0.469**	**0.502**	**0.515**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	3,037	3,233	3,355	3,502	3,615	3,722	3,819	3,909	3,984	4,050	4,076
Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
Per Capita Water Use w/Addit. Conservation		118	116	114	111	109	107	105	103	101	99
Water Demand											
Annual (ac-ft)	408.2	431.0	443.5	459.0	469.8	479.5	487.6	494.7	499.8	503.5	502.3
Average Day (mgd)	**0.364**	**0.385**	**0.396**	**0.410**	**0.419**	**0.428**	**0.435**	**0.442**	**0.446**	**0.450**	**0.448**
Existing Water Supply (avg day mgd)											
Rainwater Collection Systems	0.055	0.055	0.055	0.055	0.055	0.055	0.055	0.055	0.055	0.055	0.055
Trinity GW - Rural	0.310	0.310	0.310	0.310	0.310	0.310	0.310	0.310	0.310	0.310	0.310
Total	**0.364**	**0.364**	**0.364**	**0.364**	**0.364**	**0.364**	**0.364**	**0.364**	**0.364**	**0.364**	**0.364**
No Action Surplus or Unmet Need	**0.000**	**(0.020)**	**(0.032)**	**(0.045)**	**(0.055)**	**(0.064)**	**(0.071)**	**(0.077)**	**(0.082)**	**(0.085)**	**(0.084)**
Use of Additional Water Management Measures (avg day mgd)											
Additional Water Conservation		0.004	0.008	0.012	0.017	0.021	0.026	0.031	0.036	0.040	0.045
Rainwater Collection Systems		0.003	0.005	0.008	0.010	0.012	0.014	0.015	0.017	0.018	0.017
Trinity GW - Rural		0.013	0.018	0.025	0.028	0.030	0.031	0.031	0.029	0.027	0.022
Total	**0.000**	**0.020**	**0.032**	**0.045**	**0.055**	**0.064**	**0.071**	**0.077**	**0.082**	**0.085**	**0.084**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Water Service Demand (avg day mgd)	**0.549**	**0.670**	**0.741**	**0.827**	**0.891**	**0.952**	**1.005**	**1.057**	**1.100**	**1.136**	**1.148**
Use of Existing and New Supply (avg day mgd)											
Additional Water Conservation	-	0.005	0.011	0.019	0.026	0.034	0.043	0.052	0.062	0.071	0.080
Rainwater Collection Systems	0.073	0.088	0.097	0.109	0.118	0.128	0.137	0.147	0.155	0.162	0.164
Trinity GW	0.476	0.513	0.523	0.537	0.575	0.573	0.564	0.553	0.535	0.513	0.481
LCRA RR3238 Pipeline	-	0.064	0.109	0.162	0.171	0.180	0.189	0.198	0.206	0.215	0.221
LCRA RR12 Pipeline	-	-	-	-	-	0.036	0.072	0.107	0.141	0.175	0.202
Total Use of Existing & New Supply	**0.549**	**0.670**	**0.741**	**0.827**	**0.891**	**0.952**	**1.005**	**1.057**	**1.100**	**1.136**	**1.148**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE A-4
WASTEWATER MANAGEMENT PLAN
PLANNING AREA 290-NW
SCENARIO MID

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	4,434	5,416	6,026	6,759	7,326	7,860	8,342	8,792	9,170	9,497	9,630
Annual Growth Rate	3.2%	4.1%	2.2%	2.3%	1.6%	1.4%	1.2%	1.1%	0.8%	0.7%	0.3%
Suburban % of Planning Area Population	31.5%	40.3%	44.3%	48.2%	50.6%	52.6%	54.2%	55.5%	56.6%	57.4%	57.7%
% of New Growth that is Suburban		80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%
% of Growth served by Central Wastewater Systems		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
Rural % of Planning Area Population	68.5%	59.7%	55.7%	51.8%	49.4%	47.4%	45.8%	44.5%	43.4%	42.6%	42.3%
% of New Growth that is Rural		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA											
Population	1,397	2,182	2,671	3,257	3,710	4,138	4,524	4,883	5,186	5,448	5,554
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand											
Average Day (mgd)	**0.100**	**0.156**	**0.190**	**0.230**	**0.260**	**0.288**	**0.313**	**0.335**	**0.353**	**0.369**	**0.373**
Existing Wastewater Treatment (mgd)											
OSSFs	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100
No-Discharge WWTP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	**0.100**	**0.100**	**0.100**	**0.100**	**0.100**	**0.100**	**0.100**	**0.100**	**0.100**	**0.100**	**0.100**
Suburban - No Action Surplus or Unmet Need	**0.000**	**(0.056)**	**(0.090)**	**(0.130)**	**(0.160)**	**(0.188)**	**(0.213)**	**(0.235)**	**(0.254)**	**(0.269)**	**(0.273)**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.045	0.072	0.104	0.128	0.150	0.170	0.188	0.203	0.215	0.219
No-Discharge WWTP		0.011	0.018	0.026	0.032	0.038	0.043	0.047	0.051	0.054	0.055
Total	**0.000**	**0.056**	**0.090**	**0.130**	**0.160**	**0.188**	**0.213**	**0.235**	**0.254**	**0.269**	**0.273**
Suburban - Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	3,037	3,233	3,355	3,502	3,615	3,722	3,819	3,909	3,984	4,050	4,076
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Wastewater Service Demand											
Average Day (mgd)	**0.217**	**0.231**	**0.238**	**0.247**	**0.253**	**0.259**	**0.264**	**0.268**	**0.272**	**0.274**	**0.274**
Existing Wastewater Treatment (mgd)											
OSSFs	0.217	0.217	0.217	0.217	0.217	0.217	0.217	0.217	0.217	0.217	0.217
Total	**0.217**	**0.217**	**0.217**	**0.217**	**0.217**	**0.217**	**0.217**	**0.217**	**0.217**	**0.217**	**0.217**
No Action Surplus or Unmet Need	**0.000**	**(0.014)**	**(0.021)**	**(0.030)**	**(0.036)**	**(0.042)**	**(0.047)**	**(0.051)**	**(0.054)**	**(0.057)**	**(0.057)**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.014	0.021	0.030	0.036	0.042	0.047	0.051	0.054	0.057	0.057
Total	**0.000**	**0.014**	**0.021**	**0.030**	**0.036**	**0.042**	**0.047**	**0.051**	**0.054**	**0.057**	**0.057**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Wastewater Service Demand (avg day mgd)	**0.317**	**0.387**	**0.428**	**0.477**	**0.513**	**0.547**	**0.577**	**0.603**	**0.625**	**0.643**	**0.647**
Use of Existing and Capacity (avg day mgd)											
OSSFs	0.317	0.376	0.410	0.451	0.481	0.509	0.534	0.556	0.574	0.589	0.592
No-Discharge WWTP	-	0.011	0.018	0.026	0.032	0.038	0.043	0.047	0.051	0.054	0.055
Total Use of Existing & New Supply	**0.317**	**0.387**	**0.428**	**0.477**	**0.513**	**0.547**	**0.577**	**0.603**	**0.625**	**0.643**	**0.647**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE A-5
WATER MANAGEMENT PLAN
PLANNING AREA DRIPPING SPRINGS AREA
SCENARIO MID

	Estimated	Projected									
Planning Area	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**	**2055**	**2060**
PLANNING FACTORS											
Planning Area Est./Projected Population	5,685	7,055	7,990	9,140	10,121	11,112	12,083	13,064	13,994	14,899	16,229
Annual Growth Rate	2.5%	4.4%	2.5%	2.7%	2.1%	1.9%	1.7%	1.6%	1.4%	1.3%	1.7%
Suburban % of Planning Area Population	69.1%	72.1%	75.2%	78.3%	81.4%	84.5%	87.6%	90.7%	93.8%	96.9%	100.0%
Rural % of Planning Area Population	30.9%	27.9%	24.8%	21.7%	18.6%	15.5%	12.4%	9.3%	6.2%	3.1%	0.0%
SUBURBAN AREA											
Population	3,926	5,090	6,012	7,160	8,242	9,392	10,587	11,851	13,128	14,438	16,229
Base Per Capita Water Use (gpcd)	170	182	199	218	220	212	206	201	196	193	189
Per Capita Water Use w/Addit. Conservation		181	196	213	214	205	197	191	186	181	176
Water Demand											
Annual (ac-ft)	749	1,039	1,342	1,746	2,027	2,230	2,440	2,664	2,889	3,118	3,432
Average Day (mgd)	**0.669**	**0.928**	**1.199**	**1.559**	**1.810**	**1.992**	**2.179**	**2.378**	**2.579**	**2.784**	**3.065**
Use of Existing Water Supply (mgd)											
Rainwater Collection Systems	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037
Trinity GW - Suburban	0.371	0.371	0.371	0.371	0.371	0.371	0.371	0.371	0.371	0.371	0.371
LCRA US290 Pipeline	0.261	0.261	0.261	0.261	0.261	0.261	0.261	0.261	0.261	0.261	0.261
Total	**0.669**	**0.669**	**0.669**	**0.669**	**0.669**	**0.669**	**0.669**	**0.669**	**0.669**	**0.669**	**0.669**
No Action Surplus or Unmet Need	**0.000**	**(0.259)**	**(0.530)**	**(0.890)**	**(1.141)**	**(1.323)**	**(1.510)**	**(1.709)**	**(1.910)**	**(2.115)**	**(2.396)**
Use of Additional Water Management Measures (mgd)											
Additional Water Conservation		0.007	0.017	0.032	0.049	0.068	0.088	0.112	0.138	0.166	0.202
Rainwater Collection Systems		0.015	0.032	0.055	0.073	0.087	0.102	0.119	0.137	0.156	0.184
Trinity GW - Suburban		(0.094)	(0.068)	(0.038)	0.001	0.034	0.064	0.093	0.118	0.138	0.162
LCRA US290 Pipeline		0.331	0.549	0.840	1.017	1.112	1.191	1.191	1.191	1.191	1.191
LCRA RR12 Pipeline		0.000	0.000	0.000	0.000	0.022	0.065	0.194	0.326	0.464	0.657
Total	**0.000**	**0.259**	**0.530**	**0.890**	**1.141**	**1.323**	**1.510**	**1.710**	**1.910**	**2.115**	**2.396**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	1,760	1,965	1,979	1,980	1,879	1,719	1,496	1,213	866	461	-
Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
Per Capita Water Use w/Addit. Conservation		118	116	114	113	111	109	107	105	104	-
Water Demand											
Annual (ac-ft)	236.5	262.0	261.5	259.5	244.2	221.4	191.0	153.5	108.6	57.3	-
Average Day (mgd)	**0.211**	**0.234**	**0.234**	**0.232**	**0.218**	**0.198**	**0.171**	**0.137**	**0.097**	**0.051**	**-**
Existing Water Supply (avg day mgd)											
Rainwater Collection Systems	0.032	0.032	0.032	0.032	0.032	0.032	0.032	0.032	0.032	0.032	0.032
Trinity GW - Rural	0.180	0.180	0.180	0.180	0.180	0.180	0.180	0.180	0.180	0.180	0.180
Total	**0.211**	**0.211**	**0.211**	**0.211**	**0.211**	**0.211**	**0.211**	**0.211**	**0.211**	**0.211**	**0.211**
No Action Surplus or Unmet Need	**0.000**	**(0.023)**	**(0.022)**	**(0.021)**	**(0.007)**	**0.013**	**0.041**	**0.074**	**0.114**	**0.160**	**0.211**
Use of Additional Water Management Measures (avg day mgd)											
Additional Water Conservation		0.002	0.004	0.005	0.007	0.007	0.008	0.007	0.006	0.003	0.000
Rainwater Collection Systems		0.004	0.004	0.003	0.000	(0.004)	(0.011)	(0.019)	(0.030)	(0.035)	(0.039)
Trinity GW - Rural		0.017	0.015	0.012	(0.000)	(0.017)	(0.038)	(0.062)	(0.090)	(0.129)	(0.172)
Total	**0.000**	**0.023**	**0.022**	**0.021**	**0.007**	**(0.013)**	**(0.041)**	**(0.074)**	**(0.114)**	**(0.160)**	**(0.211)**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Water Service Demand (avg day mgd)	**0.880**	**1.162**	**1.432**	**1.791**	**2.028**	**2.189**	**2.349**	**2.516**	**2.676**	**2.835**	**3.065**
Use of Existing and New Supply (avg day mgd)											
Additional Water Conservation	-	0.009	0.021	0.038	0.056	0.075	0.096	0.119	0.143	0.170	0.202
Rainwater Collection Systems	0.069	0.088	0.104	0.128	0.143	0.152	0.160	0.169	0.176	0.190	0.214
Trinity GW	0.550	0.473	0.497	0.524	0.551	0.567	0.576	0.581	0.578	0.560	0.540
LCRA US290 Pipeline	0.261	0.592	0.810	1.101	1.278	1.373	1.452	1.452	1.452	1.452	1.452
LCRA RR12 Pipeline	-	-	-	-	-	0.022	0.065	0.194	0.326	0.464	0.657
Total Use of Existing & New Supply	**0.880**	**1.162**	**1.432**	**1.791**	**2.028**	**2.189**	**2.349**	**2.516**	**2.676**	**2.835**	**3.065**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE A-6
WASTEWATER MANAGEMENT PLAN
PLANNING AREA DRIPPING SPRINGS AREA
SCENARIO MID

Planning Area		Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS												
Planning Area	Est./Projected Population	5,685	7,055	7,990	9,140	10,121	11,112	12,083	13,064	13,994	14,899	16,229
	Annual Growth Rate	13.3%	24.1%	13.3%	14.4%	10.7%	9.8%	8.7%	8.1%	7.1%	6.5%	8.9%
Suburban	% of Planning Area Population	69.1%	72.1%	75.2%	78.3%	81.4%	84.5%	87.6%	90.7%	93.8%	96.9%	100.0%
Rural	% of Planning Area Population	30.9%	27.9%	24.8%	21.7%	18.6%	15.5%	12.4%	9.3%	6.2%	3.1%	0.0%
SUBURBAN AREA												
Population		3,926	5,090	6,012	7,160	8,242	9,392	10,587	11,851	13,128	14,438	16,229
	Wastewater Return Flow (gpcd)	71	71	70	69	68	67	66	65	64	63	63
Suburban - Wastewater Service Demand												
	Average Day (mgd)	**0.279**	**0.362**	**0.422**	**0.495**	**0.563**	**0.632**	**0.703**	**0.775**	**0.846**	**0.917**	**1.015**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.073	0.073	0.073	0.073	0.073	0.073	0.073	0.073	0.073	0.073	0.073
	No-Discharge WWTP	0.206	0.206	0.206	0.206	0.206	0.206	0.206	0.206	0.206	0.206	0.206
	Total	**0.279**	**0.279**	**0.279**	**0.279**	**0.279**	**0.279**	**0.279**	**0.279**	**0.279**	**0.279**	**0.279**
Suburban - No Action Surplus or Unmet Need		**0.000**	**(0.083)**	**(0.143)**	**(0.216)**	**(0.284)**	**(0.353)**	**(0.424)**	**(0.496)**	**(0.567)**	**(0.638)**	**(0.736)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.028	0.037	0.046	0.051	0.053	0.053	0.051	0.045	0.037	0.028
	No-Discharge WWTP		0.054	0.106	0.171	0.233	0.300	**0.370**	0.445	0.522	0.601	0.707
	Total	**0.000**	**0.083**	**0.143**	**0.216**	**0.284**	**0.353**	**0.424**	**0.496**	**0.567**	**0.638**	**0.736**
Suburban - Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA												
Population		1,760	1,965	1,979	1,980	1,879	1,719	1,496	1,213	866	461	-
	Wastewater Return Flow (gpcd)	71	71	70	69	68	67	66	65	64	64	0
Wastewater Service Demand												
	Average Day (mgd)	**0.125**	**0.140**	**0.139**	**0.137**	**0.128**	**0.116**	**0.099**	**0.079**	**0.056**	**0.029**	**0.000**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125
	Total	**0.125**	**0.125**	**0.125**	**0.125**	**0.125**	**0.125**	**0.125**	**0.125**	**0.125**	**0.125**	**0.125**
No Action Surplus or Unmet Need		**0.000**	**(0.015)**	**(0.014)**	**(0.012)**	**(0.003)**	**0.009**	**0.026**	**0.046**	**0.069**	**0.096**	**0.125**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.015	0.014	0.012	0.003	(0.009)	(0.026)	(0.046)	(0.069)	(0.096)	(0.125)
	Total	**0.000**	**0.015**	**0.014**	**0.012**	**0.003**	**(0.009)**	**(0.026)**	**(0.046)**	**(0.069)**	**(0.096)**	**(0.125)**
Surplus or Unmet Need		**0.000**	**0.000**	**(0.000)**	**0.000**	**(0.000)**	**(0.000)**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA												
Wastewater Service Demand (avg day mgd)		**0.404**	**0.501**	**0.560**	**0.632**	**0.691**	**0.748**	**0.802**	**0.854**	**0.902**	**0.946**	**1.015**
Use of Existing and Capacity (avg day mgd)												
	OSSFs	0.198	0.241	0.248	0.256	0.252	0.242	0.226	0.203	0.174	0.139	0.101
	No-Discharge WWTP	0.206	0.260	0.312	0.377	0.439	0.506	0.576	0.651	0.728	0.807	0.913
	Total Use of Existing & New Supply	**0.404**	**0.501**	**0.560**	**0.632**	**0.691**	**0.748**	**0.802**	**0.854**	**0.902**	**0.946**	**1.015**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE A-7
WATER MANAGEMENT PLAN
PLANNING AREA **CITY OF DRIPPING SPRINGS**
SCENARIO **MID**

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	3,690	4,579	5,186	5,933	6,569	7,212	7,843	8,480	9,083	9,671	10,534
Annual Growth Rate	1.7%	4.4%	2.5%	2.7%	2.1%	1.9%	1.7%	1.6%	1.4%	1.3%	1.7%
Suburban % of Planning Area Population	66.0%	69.4%	72.8%	76.2%	79.6%	83.0%	86.4%	89.8%	93.2%	96.6%	100.0%
% of New Growth that is Suburban		95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%
% Reduction in Base Water Use		0.50%	1.00%	1.50%	2.00%	2.50%	3.00%	3.50%	4.00%	4.50%	5.00%
% of Growth on Rainwater Systems	5.0%	5.5%	6.0%	6.5%	7.0%	7.5%	8.0%	8.5%	9.0%	9.5%	10.0%
% of Growth on LCRA 290 Line		35.0%	55.0%	58.0%	40.5%						
% of Growth on LCRA RR12 Line						5.0%	10.0%	15.0%	20.0%	25.0%	25.0%
% of Exist. Demand Converting to Central Wtr Syster	0.0%	0.0%	0.0%	0.0%	0.0%	3.5%	3.8%	4.0%	4.3%	4.5%	5.0%
Rural % of Planning Area Population	34.0%	30.6%	27.2%	23.8%	20.4%	17.0%	13.6%	10.2%	6.8%	3.4%	0.0%
% of New Growth that is Rural		5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
% Reduction in Base Water Use		0.75%	1.50%	2.25%	3.00%	3.75%	4.50%	5.25%	6.00%	6.75%	7.50%
% of Growth on Rainwater Systems	15.0%	16.5%	18.0%	19.5%	21.0%	22.5%	24.0%	25.5%	27.0%	28.5%	30.0%
SUBURBAN AREA											
Population - Inside City	2,435	3,178	3,776	4,521	5,229	5,986	6,776	7,615	8,466	9,342	10,534
Base Per Capita Water Use (gpcd)	181	180	178	177	176	176	175	175	175	175	175
Per Capita Water Use w/Addit. Conservation	181	200	227	255	257	245	234	226	219	213	207
Population - Outside City	-	389	1,090	2,096	2,567	2,575	2,583	2,583	2,583	2,583	2,583
Base Per Capita Water Use (gpcd)	181	180	178	177	176	176	175	175	175	175	175
Per Capita Water Use w/Addit. Conservation		200	227	255	257	245	234	226	219	213	207
Water Demand											
Annual (ac-ft)	493.8	717.2	970.1	1,311.9	1,537.0	1,683.0	1,834.6	1,999.0	2,165.8	2,337.6	2,571.3
Average Day (mgd)	**0.441**	**0.640**	**0.866**	**1.171**	**1.372**	**1.503**	**1.638**	**1.785**	**1.934**	**2.087**	**2.296**
Use of Existing Water Supply (mgd)											
Rainwater Collection Systems	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022
Trinity GW - Suburban	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034
DS WSC	0.385	0.385	0.385	0.385	0.385	0.385	0.385	0.385	0.385	0.385	0.385
LCRA US290 Pipeline	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	**0.441**	**0.441**	**0.441**	**0.441**	**0.441**	**0.441**	**0.441**	**0.441**	**0.441**	**0.441**	**0.441**
No Action Surplus or Unmet Need	**0.000**	**(0.199)**	**(0.425)**	**(0.731)**	**(0.931)**	**(1.062)**	**(1.197)**	**(1.344)**	**(1.493)**	**(1.646)**	**(1.855)**
Use of Additional Water Management Measures (mgd)											
Additional Water Conservation		0.003	0.009	0.018	0.027	0.038	0.049	0.062	0.077	0.094	0.115
Rainwater Collection Systems		0.011	0.025	0.044	0.058	0.068	0.079	0.092	0.105	0.119	0.140
Trinity GW - Suburban		0.028	0.054	0.085	0.124	0.157	0.187	0.216	0.241	0.260	0.284
DS WSC		0.087	0.144	0.213	0.269	0.325	0.378	0.430	0.477	0.522	0.590
LCRA US290 Pipeline		0.070	0.194	0.371	0.452	0.452	0.452	0.452	0.452	0.452	0.452
LCRA RR12 Pipeline		0.000	0.000	0.000	0.000	0.022	0.052	0.092	0.140	0.198	0.273
Total	**0.000**	**0.199**	**0.425**	**0.731**	**0.931**	**1.062**	**1.197**	**1.344**	**1.493**	**1.646**	**1.855**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	1,255	1,401	1,411	1,412	1,340	1,226	1,067	865	618	329	-
Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
Per Capita Water Use w/Addit. Conservation		118	116	114	113	111	109	107	105	104	-
Water Demand											
Annual (ac-ft)	168.6	186.8	186.5	185.1	174.1	157.9	136.2	109.5	77.5	40.9	-
Average Day (mgd)	**0.151**	**0.167**	**0.166**	**0.165**	**0.155**	**0.141**	**0.122**	**0.098**	**0.069**	**0.037**	**-**
Existing Water Supply (avg day mgd)											
Rainwater Collection Systems	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023
Trinity GW - Rural	0.128	0.128	0.128	0.128	0.128	0.128	0.128	0.128	0.128	0.128	0.128
Total	**0.151**	**0.151**	**0.151**	**0.151**	**0.151**	**0.151**	**0.151**	**0.151**	**0.151**	**0.151**	**0.151**
No Action Surplus or Unmet Need	**0.000**	**(0.016)**	**(0.016)**	**(0.015)**	**(0.005)**	**0.010**	**0.029**	**0.053**	**0.081**	**0.114**	**0.151**
Use of Additional Water Management Measures (avg day mgd)											
Additional Water Conservation		0.001	0.002	0.004	0.005	0.005	0.005	0.005	0.004	0.002	0.000
Rainwater Collection Systems		0.003	0.003	0.002	0.000	(0.003)	(0.008)	(0.014)	(0.021)	(0.023)	(0.023)
Trinity GW - Rural		0.012	0.011	0.009	(0.000)	(0.012)	(0.027)	(0.044)	(0.064)	(0.094)	(0.128)
Total	**0.000**	**0.016**	**0.016**	**0.015**	**0.005**	**(0.010)**	**(0.029)**	**(0.053)**	**(0.081)**	**(0.114)**	**(0.151)**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Water Service Demand (avg day mgd)	**0.591**	**0.807**	**1.033**	**1.337**	**1.528**	**1.644**	**1.760**	**1.883**	**2.003**	**2.124**	**2.296**
Use of Existing and New Supply (avg day mgd)											
Additional Water Conservation	-	0.004	0.011	0.021	0.032	0.043	0.055	0.068	0.082	0.096	0.115
Rainwater Collection Systems	0.045	0.058	0.072	0.091	0.103	0.110	0.116	0.122	0.128	0.142	0.162
Trinity GW	0.162	0.203	0.227	0.255	0.286	0.307	0.322	0.334	0.339	0.329	0.319
DS WSC	0.385	0.472	0.528	0.597	0.654	0.710	0.762	0.814	0.862	0.906	0.975
LCRA US290 Pipeline	-	0.070	0.194	0.371	0.452	0.452	0.452	0.452	0.452	0.452	0.452
LCRA RR12 Pipeline	-	-	-	-	-	0.022	0.052	0.092	0.140	0.198	0.273
Total Use of Existing & New Supply	**0.591**	**0.807**	**1.033**	**1.337**	**1.528**	**1.644**	**1.760**	**1.883**	**2.003**	**2.124**	**2.296**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE A-8
WASTEWATER MANAGEMENT PLAN
PLANNING AREA CITY OF DRIPPING SPRINGS
SCENARIO MID

		Estimated	Projected									
Planning Area		2010	2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS												
Planning Area	Est./Projected Population	3,690	4,579	5,186	5,933	6,569	7,212	7,843	8,480	9,083	9,671	10,534
	Annual Growth Rate	1.7%	4.4%	2.5%	2.7%	2.1%	1.9%	1.7%	1.6%	1.4%	1.3%	1.7%
Suburban	% of Planning Area Population	66.0%	69.4%	72.8%	76.2%	79.6%	83.0%	86.4%	89.8%	93.2%	96.6%	100.0%
	% of New Growth that is Suburban		95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%
	% of Demand served by Central Wastewater System	70.0%	71.0%	72.0%	73.0%	74.0%	75.0%	76.0%	77.0%	78.0%	79.0%	80.0%
Rural	% of Planning Area Population	34.0%	30.6%	27.2%	23.8%	20.4%	17.0%	13.6%	10.2%	6.8%	3.4%	0.0%
	% of New Growth that is Rural		5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
	% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA												
Population		2,435	3,178	3,776	4,521	5,229	5,986	6,776	7,615	8,466	9,342	10,534
	Wastewater Return Flow (gpcd)	71	71	70	68	67	66	65	64	62	61	60
Suburban - Wastewater Service Demand												
	Average Day (mgd)	**0.172**	**0.225**	**0.263**	**0.309**	**0.351**	**0.395**	**0.439**	**0.484**	**0.528**	**0.572**	**0.632**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052
	No-Discharge WWTP	0.121	0.121	0.121	0.121	0.121	0.121	0.121	0.121	0.121	0.121	0.121
	Total	**0.172**	**0.172**	**0.172**	**0.172**	**0.172**	**0.172**	**0.172**	**0.172**	**0.172**	**0.172**	**0.172**
Suburban - No Action Surplus or Unmet Need		**0.000**	**(0.053)**	**(0.090)**	**(0.137)**	**(0.179)**	**(0.223)**	**(0.267)**	**(0.312)**	**(0.356)**	**(0.399)**	**(0.460)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.014	0.022	0.032	0.040	0.047	0.054	0.060	0.064	0.068	0.075
	No-Discharge WWTP		0.039	0.069	0.105	0.139	0.176	0.213	0.252	0.291	0.331	0.385
	Total	**0.000**	**0.053**	**0.090**	**0.137**	**0.179**	**0.223**	**0.267**	**0.312**	**0.356**	**0.399**	**0.460**
Suburban - Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA												
Population		1,255	1,401	1,411	1,412	1,340	1,226	1,067	865	618	329	-
	Wastewater Return Flow (gpcd)	71	71	70	69	69	68	67	66	65	64	64
Wastewater Service Demand												
	Average Day (mgd)	**0.089**	**0.100**	**0.099**	**0.098**	**0.092**	**0.083**	**0.071**	**0.057**	**0.040**	**0.021**	**0.000**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089
	Total	**0.089**	**0.089**	**0.089**	**0.089**	**0.089**	**0.089**	**0.089**	**0.089**	**0.089**	**0.089**	**0.089**
No Action Surplus or Unmet Need		**0.000**	**(0.010)**	**(0.010)**	**(0.009)**	**(0.003)**	**0.006**	**0.018**	**0.032**	**0.049**	**0.068**	**0.089**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.010	0.010	0.009	0.003	(0.006)	(0.018)	(0.032)	(0.049)	(0.068)	(0.089)
	Total	**0.000**	**0.010**	**0.010**	**0.009**	**0.003**	**(0.006)**	**(0.018)**	**(0.032)**	**(0.049)**	**(0.068)**	**(0.089)**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA												
Wastewater Service Demand (avg day mgd)		**0.262**	**0.325**	**0.362**	**0.407**	**0.443**	**0.478**	**0.511**	**0.541**	**0.569**	**0.593**	**0.632**
Use of Existing and Capacity (avg day mgd)												
	OSSFs	0.141	0.165	0.173	0.182	0.183	0.182	0.177	0.169	0.157	0.141	0.126
	No-Discharge WWTP	0.121	0.160	0.189	0.226	0.260	0.296	0.334	0.373	0.412	0.452	0.506
	Total Use of Existing & New Supply	**0.262**	**0.325**	**0.362**	**0.407**	**0.443**	**0.478**	**0.511**	**0.541**	**0.569**	**0.593**	**0.632**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE A-9
WATER MANAGEMENT PLAN
PLANNING AREA **DRIPPING SPRINGS WSC**
SCENARIO **MID**

	Estimated	Projected									
Planning Area	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**	**2055**	**2060**
PLANNING FACTORS											
Planning Area Est./Projected Population (inside Planning Area)	1,995	2,476	2,804	3,208	3,552	3,899	4,240	4,584	4,911	5,228	5,695
Annual Growth Rate	4.1%	4.4%	2.5%	2.7%	2.1%	1.9%	1.7%	1.6%	1.4%	1.3%	1.7%
Est. Wholesale (Outside P.A.) Population	2,530	3,139	3,555	4,067	4,504	4,944	5,377	5,813	6,227	6,630	7,222
Annual Growth Rate		4.4%	2.5%	2.7%	2.1%	1.9%	1.7%	1.6%	1.4%	1.3%	1.7%
Suburban % of Planning Area Population	74.7%	77.2%	79.8%	82.3%	84.8%	87.4%	89.9%	92.4%	94.9%	97.5%	100.0%
% of New Growth that is Suburban		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
% Reduction in Base Water Use		0.50%	1.00%	1.50%	2.00%	2.50%	3.00%	3.50%	4.00%	4.50%	5.00%
% of Growth on Rainwater Systems	2.5%	2.8%	3.0%	3.3%	3.5%	3.8%	4.0%	4.3%	4.5%	4.8%	5.0%
% of Growth on LCRA 290 Line	42.6%	167.5%	76.0%	77.0%	71.0%	69.0%	56.6%	0.0%	0.0%	0.0%	0.0%
% of Growth on LCRA RR12 Line		0.0%	0.0%	0.0%	0.0%	0.0%	9.0%	62.5%	58.0%	54.0%	62.5%
% of Exist. Demand Converting to Central Wtr Systems		2.5%	2.8%	3.0%	3.3%	3.5%	3.7%	4.0%	4.3%	4.5%	5.0%
Rural % of Planning Area Population	25.3%	22.8%	20.2%	17.7%	15.2%	12.7%	10.1%	7.6%	5.1%	2.5%	0.0%
% of New Growth that is Rural		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
% Reduction in Base Water Use		0.75%	1.50%	2.25%	3.00%	3.75%	4.50%	5.25%	6.00%	6.75%	7.50%
% of Growth on Rainwater Systems	15.0%	16.5%	18.0%	19.5%	21.0%	22.5%	24.0%	25.5%	27.0%	28.5%	30.00%
SUBURBAN AREA											
Population - Outside City	1,490	1,912	2,236	2,640	3,013	3,406	3,811	4,237	4,662	5,096	5,695
Base Per Capita Water Use (gpcd)	153	150	149	147	145	144	142	140	138	137	135
Per Capita Water Use w/Addit. Conservation		150	147	145	142	140	138	135	133	131	128
Population - Inside City	2,530	3,139	3,555	4,067	4,504	4,944	5,377	5,813	6,227	6,630	7,222
Base Per Capita Water Use (gpcd)	152	150	149	147	145	144	142	140	138	137	135
Per Capita Water Use w/Addit. Conservation		150	147	145	142	140	138	135	133	131	128
Water Demand											
Annual (ac-ft)	686.1	850.4	964.1	1,103.6	1,222.5	1,342.3	1,459.4	1,577.1	1,688.2	1,795.5	1,953.3
Average Day (mgd)	**0.613**	**0.759**	**0.861**	**0.985**	**1.092**	**1.198**	**1.303**	**1.408**	**1.507**	**1.603**	**1.744**
	0.597										
Use of Existing Water Supply (mgd)											
Rainwater Collection Systems	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015
Trinity GW - Suburban	0.336	0.336	0.336	0.336	0.336	0.336	0.336	0.336	0.336	0.336	0.336
LCRA US290 Pipeline	0.261	0.261	0.261	0.261	0.261	0.261	0.261	0.261	0.261	0.261	0.261
Total	**0.613**	**0.613**	**0.613**	**0.613**	**0.613**	**0.613**	**0.613**	**0.613**	**0.613**	**0.613**	**0.613**
No Action Surplus or Unmet Need	**0.000**	**(0.147)**	**(0.248)**	**(0.373)**	**(0.479)**	**(0.586)**	**(0.690)**	**(0.796)**	**(0.895)**	**(0.991)**	**(1.131)**
Use of Additional Water Management Measures (mgd)											
Additional Water Conservation		0.004	0.009	0.015	0.022	0.030	0.039	0.049	0.060	0.072	0.087
Rainwater Collection Systems		0.004	0.007	0.011	0.015	0.019	0.023	0.028	0.032	0.037	0.044
Trinity GW - Suburban		(0.122)	(0.123)	(0.122)	(0.122)	(0.123)	(0.123)	(0.123)	(0.122)	(0.122)	(0.122)
LCRA US290 Pipeline		0.261	0.355	0.469	0.565	0.660	0.739	0.739	0.739	0.739	0.739
LCRA RR12 Pipeline		0.000	0.000	0.000	0.000	0.000	0.013	0.103	0.186	0.266	0.384
Total	**0.000**	**0.147**	**0.248**	**0.373**	**0.479**	**0.586**	**0.690**	**0.796**	**0.895**	**0.991**	**1.131**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
gw supply	0.336	0.214	0.214	0.214	0.214	0.214	0.214	0.214	0.214	0.214	0.214
	0.261	0.522	0.616	0.730	0.826	0.921	1.000	1.000	1.000	1.000	1.000
RURAL AREA											
Population	505	564	568	568	539	493	429	348	248	132	-
Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
Per Capita Water Use w/Addit. Conservation		118	116	114	113	111	109	107	105	104	-
Water Demand											
Annual (ac-ft)	67.9	75.2	75.1	74.4	70.0	63.5	54.8	44.0	31.1	16.4	-
Average Day (mgd)	**0.061**	**0.067**	**0.067**	**0.066**	**0.063**	**0.057**	**0.049**	**0.039**	**0.028**	**0.015**	**-**
Existing Water Supply (avg day mgd)											
Rainwater Collection Systems	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009
Trinity GW - Rural	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052
Total	**0.061**	**0.061**	**0.061**	**0.061**	**0.061**	**0.061**	**0.061**	**0.061**	**0.061**	**0.061**	**0.061**
No Action Surplus or Unmet Need	**0.000**	**(0.007)**	**(0.006)**	**(0.006)**	**(0.002)**	**0.004**	**0.012**	**0.021**	**0.033**	**0.046**	**0.061**
Use of Additional Water Management Measures (avg day mgd)											
Additional Water Conservation		0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.001	0.000
Rainwater Collection Systems		0.001	0.001	0.001	0.000	(0.001)	(0.003)	(0.006)	(0.009)	(0.012)	(0.017)
Trinity GW - Rural		0.005	0.004	0.003	(0.000)	(0.005)	(0.011)	(0.018)	(0.026)	(0.035)	(0.044)
Total	**0.000**	**0.007**	**0.006**	**0.006**	**0.002**	**(0.004)**	**(0.012)**	**(0.021)**	**(0.033)**	**(0.046)**	**(0.061)**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Water Service Demand (avg day mgd)	**0.673**	**0.826**	**0.928**	**1.052**	**1.154**	**1.255**	**1.352**	**1.447**	**1.535**	**1.618**	**1.744**
Use of Existing and New Supply (avg day mgd)											
Additional Water Conservation	-	0.004	0.010	0.016	0.024	0.032	0.041	0.051	0.062	0.073	0.087
Rainwater Collection Systems	0.024	0.030	0.033	0.036	0.039	0.042	0.044	0.046	0.048	0.049	0.051
Trinity GW	0.388	0.271	0.270	0.269	0.265	0.260	0.254	0.247	0.240	0.231	0.222
LCRA US290 Pipeline	0.261	0.522	0.616	0.730	0.826	0.921	1.000	1.000	1.000	1.000	1.000
LCRA RR12 Pipeline	-	-	-	-	-	-	0.013	0.103	0.186	0.266	0.384
Total Use of Existing & New Supply	**0.673**	**0.826**	**0.928**	**1.052**	**1.154**	**1.255**	**1.352**	**1.447**	**1.535**	**1.618**	**1.744**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE A-10
WASTEWATER MANAGEMENT PLAN
PLANNING AREA DRIPPING SPRINGS WSC
SCENARIO MID

Planning Area	Estimated	Projected									
	2010	2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	1,995	2,476	2,804	3,208	3,552	3,899	4,240	4,584	4,911	5,228	5,695
Annual Growth Rate	4.1%	4.4%	2.5%	2.7%	2.1%	1.9%	1.7%	1.6%	1.4%	1.3%	1.7%
Suburban % of Planning Area Population	74.7%	77.2%	79.8%	82.3%	84.8%	87.4%	89.9%	92.4%	94.9%	97.5%	100.0%
% of New Growth that is Suburban		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
% of Demand served by Central Wastewater Systems	80.0%	72.0%	74.0%	76.0%	78.0%	80.0%	82.0%	84.0%	86.0%	88.0%	90.0%
Rural % of Planning Area Population	25.3%	22.8%	20.2%	17.7%	15.2%	12.7%	10.1%	7.6%	5.1%	2.5%	0.0%
% of New Growth that is Rural		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
% of Demand served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA											
Population	1,490	1,912	2,236	2,640	3,013	3,406	3,811	4,237	4,662	5,096	5,695
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand											
Average Day (mgd)	**0.107**	**0.137**	**0.159**	**0.186**	**0.211**	**0.237**	**0.263**	**0.291**	**0.318**	**0.345**	**0.383**
Existing Wastewater Treatment (mgd)											
OSSFs	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021
No-Discharge WWTP	0.085	0.085	0.085	0.085	0.085	0.085	0.085	0.085	0.085	0.085	0.085
Total	**0.107**	**0.107**	**0.107**	**0.107**	**0.107**	**0.107**	**0.107**	**0.107**	**0.107**	**0.107**	**0.107**
Suburban - No Action Surplus or Unmet Need	**0.000**	**(0.030)**	**(0.052)**	**(0.080)**	**(0.105)**	**(0.130)**	**(0.157)**	**(0.184)**	**(0.211)**	**(0.238)**	**(0.276)**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.017	0.020	0.023	0.025	0.026	0.026	0.025	0.023	0.020	0.017
No-Discharge WWTP		0.013	0.032	0.056	0.079	0.104	0.131	0.159	0.188	0.218	0.259
Total	**0.000**	**0.030**	**0.052**	**0.080**	**0.105**	**0.130**	**0.157**	**0.184**	**0.211**	**0.238**	**0.276**
Suburban - Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	505	564	568	568	539	493	429	348	248	132	-
Wastewater Return Flow (gpcd)	71	71	70	68	67	66	65	64	62	61	60
Wastewater Service Demand											
Average Day (mgd)	**0.036**	**0.040**	**0.040**	**0.039**	**0.036**	**0.033**	**0.028**	**0.022**	**0.015**	**0.008**	**0.000**
Existing Wastewater Treatment (mgd)											
OSSFs	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036
Total	**0.036**	**0.036**	**0.036**	**0.036**	**0.036**	**0.036**	**0.036**	**0.036**	**0.036**	**0.036**	**0.036**
No Action Surplus or Unmet Need	**0.000**	**(0.004)**	**(0.004)**	**(0.003)**	**(0.000)**	**0.003**	**0.008**	**0.014**	**0.020**	**0.028**	**0.036**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.004	0.004	0.003	0.000	(0.003)	(0.008)	(0.014)	(0.020)	(0.028)	(0.036)
Total	**0.000**	**0.004**	**0.004**	**0.003**	**0.000**	**(0.003)**	**(0.008)**	**(0.014)**	**(0.020)**	**(0.028)**	**(0.036)**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Wastewater Service Demand (avg day mgd)	**0.142**	**0.177**	**0.198**	**0.225**	**0.247**	**0.270**	**0.291**	**0.313**	**0.333**	**0.353**	**0.383**
Use of Existing and Capacity (avg day mgd)											
OSSFs	0.057	0.078	0.081	0.084	0.083	0.080	0.075	0.069	0.060	0.049	0.038
No-Discharge WWTP	0.085	0.098	0.118	0.142	0.165	0.190	0.216	0.244	0.273	0.304	0.344
Total Use of Existing & New Supply	**0.142**	**0.177**	**0.198**	**0.225**	**0.247**	**0.270**	**0.291**	**0.313**	**0.333**	**0.353**	**0.383**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE A-11
WATER MANAGEMENT PLAN
PLANNING AREA **290-NE**
SCENARIO **MID**

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Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	15,234	18,881	21,356	24,394	26,969	29,559	32,089	34,633	37,032	39,356	42,639
Annual Growth Rate	5.0%	4.4%	2.5%	2.7%	2.0%	1.9%	1.7%	1.5%	1.3%	1.2%	1.6%
Suburban % of Planning Area Population	68.3%	72.5%	74.5%	76.4%	77.7%	78.8%	79.7%	80.5%	81.1%	81.6%	82.2%
% of New Growth that is Suburban		90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
% Reduction in Base Water Use		0.50%	1.00%	1.50%	2.00%	2.50%	3.00%	3.50%	4.00%	4.50%	5.00%
% of Growth on Rainwater Systems	10.0%	11.0%	12.0%	13.0%	14.0%	15.0%	16.0%	17.0%	18.0%	19.0%	20.0%
% of Growth on Central Water Systems (LCRA)		40.0%	40.0%	40.0%	35.0%	35.0%	35.0%	35.0%	30.0%	30.0%	20.0%
% of Exist. Demand Converting to Central Wtr Syster	68.3%	5.0%	5.5%	6.0%	6.5%	7.0%	7.5%	8.0%	8.5%	9.0%	0.0%
Rural % of Planning Area Population	31.7%	27.5%	25.5%	23.6%	22.3%	21.2%	20.3%	19.5%	18.9%	18.4%	17.8%
% of New Growth that is Rural		10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
% Reduction in Base Water Use		0.75%	1.50%	2.25%	3.00%	3.75%	4.50%	5.25%	6.00%	6.75%	7.50%
% of Growth on Rainwater Systems	15.0%	16.5%	18.0%	19.5%	21.0%	22.5%	24.0%	25.5%	27.0%	28.5%	30.0%
SUBURBAN AREA											
Population	10,405	13,688	15,915	18,649	20,967	23,298	25,574	27,864	30,023	32,115	35,069
Base Per Capita Water Use (gpcd)	132	131	129	128	127	127	126	126	126	126	126
Per Capita Water Use w/Addit. Conservation		130	128	126	124	123	122	122	121	120	120
Water Demand											
Annual (ac-ft)	1,538.5	2,000.9	2,299.6	2,673.9	2,982.7	3,301.3	3,609.5	3,932.7	4,237.4	4,532.6	4,949.6
Average Day (mgd)	**1.374**	**1.786**	**2.053**	**2.387**	**2.663**	**2.948**	**3.223**	**3.511**	**3.783**	**4.047**	**4.419**
Use of Existing Water Supply (mgd)											
Rainwater Collection Systems	0.137	0.137	0.137	0.137	0.137	0.137	0.137	0.137	0.137	0.137	0.137
Trinity GW - Suburban	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278	0.278
Barton-Edwards GW	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020
LCRA US290 Pipeline	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938
Total	**1.374**	**1.374**	**1.374**	**1.374**	**1.374**	**1.374**	**1.374**	**1.374**	**1.374**	**1.374**	**1.374**
No Action Surplus or Unmet Need	**0.000**	**(0.413)**	**(0.680)**	**(1.014)**	**(1.289)**	**(1.574)**	**(1.849)**	**(2.138)**	**(2.410)**	**(2.673)**	**(3.046)**
Use of Additional Water Management Measures (mgd)											
Additional Water Conservation		0.009	0.021	0.036	0.053	0.074	0.097	0.123	0.151	0.182	0.221
Rainwater Collection Systems		0.045	0.077	0.121	0.159	0.202	0.246	0.295	0.344	0.394	0.469
Trinity GW - Suburban		(0.095)	(0.320)	(0.576)	(0.767)	(0.890)	(0.882)	(0.879)	(0.883)	(0.901)	(0.729)
Barton-Edwards GW		(0.007)	(0.023)	(0.042)	(0.055)	(0.064)	(0.064)	(0.063)	(0.064)	(0.065)	(0.053)
LCRA US290 Pipeline		0.234	0.416	0.632	0.818	1.014	1.213	1.424	1.622	1.825	1.899
City of Dripping Springs		0.070	0.194	0.371	0.452	0.452	0.452	0.452	0.452	0.452	0.452
City of Austin (80% of Spillar Ranch)		0.157	0.314	0.472	0.629	0.786	0.786	0.786	0.786	0.786	0.786
Total	**0.000**	**0.413**	**0.680**	**1.014**	**1.289**	**1.574**	**1.849**	**2.138**	**2.410**	**2.673**	**3.046**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	4,829	5,194	5,441	5,745	6,003	6,262	6,514	6,769	7,009	7,241	7,569
Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
Per Capita Water Use w/Addit. Conservation		118	116	114	113	111	109	107	105	104	102
Water Demand											
Annual (ac-ft)	649.1	692.3	719.2	752.9	779.9	806.6	831.9	856.8	879.3	900.3	932.7
Average Day (mgd)	**0.580**	**0.618**	**0.642**	**0.672**	**0.696**	**0.720**	**0.743**	**0.765**	**0.785**	**0.804**	**0.833**
Existing Water Supply (avg day mgd)											
Rainwater Collection Systems	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087
Trinity GW - Rural	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
Barton-Edwards GW	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033
Total	**0.580**	**0.580**	**0.580**	**0.580**	**0.580**	**0.580**	**0.580**	**0.580**	**0.580**	**0.580**	**0.580**
No Action Surplus or Unmet Need	**0.000**	**(0.039)**	**(0.063)**	**(0.093)**	**(0.117)**	**(0.141)**	**(0.163)**	**(0.185)**	**(0.206)**	**(0.224)**	**(0.253)**
Use of Additional Water Management Measures (avg day mgd)											
Additional Water Conservation		0.005	0.010	0.015	0.021	0.027	0.033	0.040	0.047	0.054	0.062
Rainwater Collection Systems		0.006	0.011	0.017	0.022	0.027	0.032	0.038	0.043	0.049	0.058
Trinity GW - Rural		0.026	0.039	0.057	0.069	0.081	0.091	0.100	0.107	0.113	0.124
Barton-Edwards GW		0.002	0.003	0.004	0.005	0.006	0.007	0.007	0.008	0.008	0.009
Total	**0.000**	**0.039**	**0.063**	**0.093**	**0.117**	**0.141**	**0.163**	**0.185**	**0.206**	**0.224**	**0.253**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Water Service Demand (avg day mgd)	**1.953**	**2.405**	**2.695**	**3.060**	**3.360**	**3.668**	**3.965**	**4.276**	**4.568**	**4.851**	**5.252**
Use of Existing and New Supply (avg day mgd)											
Additional Water Conservation	-	0.014	0.030	0.051	0.074	0.101	0.130	0.163	0.198	0.236	0.283
Rainwater Collection Systems	0.224	0.276	0.312	0.362	0.405	0.453	0.503	0.558	0.612	0.667	0.751
Trinity GW	0.738	0.668	0.457	0.218	0.040	(0.071)	(0.053)	(0.042)	(0.038)	(0.051)	0.132
Barton-Edwards GW	0.053	0.048	0.033	0.016	0.003	(0.005)	(0.004)	(0.003)	(0.003)	(0.004)	0.010
LCRA US290 Pipeline	0.938	1.172	1.354	1.570	1.756	1.952	2.151	2.362	2.560	2.763	2.838
City of Dripping Springs	-	0.070	0.194	0.371	0.452	0.452	0.452	0.452	0.452	0.452	0.452
Total Use of Existing & New Supply	**1.953**	**2.247**	**2.381**	**2.588**	**2.731**	**2.882**	**3.179**	**3.490**	**3.782**	**4.065**	**4.466**
Surplus or Unmet Need	**0.000**	**(0.157)**	**(0.314)**	**(0.472)**	**(0.629)**	**(0.786)**	**(0.786)**	**(0.786)**	**(0.786)**	**(0.786)**	**(0.786)**

TABLE A-12
WASTEWATER MANAGEMENT PLAN
PLANNING AREA 290-NE
SCENARIO MID

Planning Area		Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS												
Planning Area	Est./Projected Population	15,234	18,881	21,356	24,394	26,969	29,559	32,089	34,633	37,032	39,356	42,639
	Annual Growth Rate	5.0%	4.4%	2.5%	2.7%	2.0%	1.9%	1.7%	1.5%	1.3%	1.2%	1.6%
Suburban	% of Planning Area Population	68.3%	72.5%	74.5%	76.4%	77.7%	78.8%	79.7%	80.5%	81.1%	81.6%	82.2%
	% of New Growth that is Suburban		90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
	% of Growth served by Central Wastewater Systems		75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%
Rural	% of Planning Area Population	31.7%	27.5%	25.5%	23.6%	22.3%	21.2%	20.3%	19.5%	18.9%	18.4%	17.8%
	% of New Growth that is Rural		10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
	% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA												
Population		10,405	13,688	15,915	18,649	20,967	23,298	25,574	27,864	30,023	32,115	35,069
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand												
	Average Day (mgd)	**0.744**	**0.979**	**1.131**	**1.316**	**1.469**	**1.622**	**1.768**	**1.913**	**2.046**	**2.174**	**2.357**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.521	0.521	0.521	0.521	0.521	0.521	0.521	0.521	0.521	0.521	0.521
	No-Discharge WWTP	0.223	0.223	0.223	0.223	0.223	0.223	0.223	0.223	0.223	0.223	0.223
	Total	**0.744**	**0.744**	**0.744**	**0.744**	**0.744**	**0.744**	**0.744**	**0.744**	**0.744**	**0.744**	**0.744**
Suburban - No Action Surplus or Unmet Need		**0.000**	**(0.235)**	**(0.386)**	**(0.572)**	**(0.725)**	**(0.877)**	**(1.024)**	**(1.168)**	**(1.302)**	**(1.429)**	**(1.612)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.059	0.097	0.143	0.181	0.219	0.256	0.292	0.326	0.357	0.403
	No-Discharge WWTP		0.176	0.290	0.429	0.544	0.658	0.768	0.876	0.977	**1.072**	1.209
	Total	**0.000**	**0.235**	**0.386**	**0.572**	**0.725**	**0.877**	**1.024**	**1.168**	**1.302**	**1.429**	**1.612**
Suburban - Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA												
Population		4,829	5,194	5,441	5,745	6,003	6,262	6,514	6,769	7,009	7,241	7,569
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Wastewater Service Demand												
	Average Day (mgd)	**0.345**	**0.371**	**0.387**	**0.405**	**0.421**	**0.436**	**0.450**	**0.465**	**0.478**	**0.490**	**0.509**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.345	0.345	0.345	0.345	0.345	0.345	0.345	0.345	0.345	0.345	0.345
	Total	**0.345**	**0.345**	**0.345**	**0.345**	**0.345**	**0.345**	**0.345**	**0.345**	**0.345**	**0.345**	**0.345**
No Action Surplus or Unmet Need		**0.000**	**(0.026)**	**(0.041)**	**(0.060)**	**(0.075)**	**(0.090)**	**(0.105)**	**(0.119)**	**(0.132)**	**(0.145)**	**(0.163)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.026	0.041	0.060	0.075	0.090	0.105	0.119	0.132	0.145	0.163
	Total	**0.000**	**0.026**	**0.041**	**0.060**	**0.075**	**0.090**	**0.105**	**0.119**	**0.132**	**0.145**	**0.163**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA												
Wastewater Service Demand (avg day mgd)		**1.090**	**1.350**	**1.517**	**1.721**	**1.890**	**2.057**	**2.218**	**2.377**	**2.524**	**2.664**	**2.865**
Use of Existing and Capacity (avg day mgd)												
	OSSFs	0.866	0.951	1.004	1.069	1.123	1.176	1.227	1.278	1.324	1.368	1.433
	No-Discharge WWTP	0.223	0.399	0.513	0.652	0.767	0.881	0.991	1.100	1.200	1.295	1.433
	Total Use of Existing & New Supply	**1.090**	**1.350**	**1.517**	**1.721**	**1.890**	**2.057**	**2.218**	**2.377**	**2.524**	**2.664**	**2.865**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE A-13
WATER MANAGEMENT PLAN
PLANNING AREA **HAYS AREA**
SCENARIO **MID**

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	4,443	5,427	6,038	6,773	7,341	7,876	8,359	8,810	9,189	9,517	9,436
Annual Growth Rate	2.0%	4.1%	2.2%	2.3%	1.6%	1.4%	1.2%	1.1%	0.8%	0.7%	-0.2%
Suburban % of Planning Area Population	95.7%	94.7%	94.2%	93.7%	93.5%	93.2%	93.0%	92.9%	92.8%	92.7%	92.7%
% of New Growth that is Suburban		90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
% Reduction in Base Water Use		0.50%	1.00%	1.50%	2.00%	2.50%	3.00%	3.50%	4.00%	4.50%	5.00%
% of Growth on Rainwater Systems	5.0%	5.5%	6.0%	6.5%	7.0%	7.5%	8.0%	8.5%	9.0%	9.5%	10.0%
% of Growth on Central Water Systems			30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%
% of Exist. Demand Converting to Central Wtr Systems			2.8%	3.0%	3.3%	3.5%	3.8%	4.0%	4.3%	4.5%	5.0%
Rural % of Planning Area Population	4.3%	5.3%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
% of New Growth that is Rural		10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
% Reduction in Base Water Use		0.75%	1.50%	2.25%	3.00%	3.75%	4.50%	5.25%	6.00%	6.75%	7.50%
% of Growth on Rainwater Systems	10.0%	11.0%	12.0%	13.0%	14.0%	15.0%	16.0%	17.0%	18.0%	19.0%	20.0%
SUBURBAN AREA											
Population	4,252	5,137	5,688	6,349	6,860	7,342	7,777	8,182	8,523	8,818	8,745
Base Per Capita Water Use (gpcd)	132	131	129	128	127	127	126	126	126	126	126
Per Capita Water Use w/Addit. Conservation		130	128	126	124	123	122	122	121	120	120
Water Demand											
Annual (ac-ft)	628.7	751.0	821.9	910.2	975.9	1,040.3	1,097.6	1,154.8	1,202.9	1,244.6	1,234.3
Average Day (mgd)	**0.561**	**0.670**	**0.734**	**0.813**	**0.871**	**0.929**	**0.980**	**1.031**	**1.074**	**1.111**	**1.102**
Use of Existing Water Supply (mgd)											
Rainwater Collection Systems	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028
Barton-Edwards GW	0.533	0.533	0.533	0.533	0.533	0.533	0.533	0.533	0.533	0.533	0.533
Total	**0.561**	**0.561**	**0.561**	**0.561**	**0.561**	**0.561**	**0.561**	**0.561**	**0.561**	**0.561**	**0.561**
No Action Surplus or Unmet Need	**0.000**	**(0.109)**	**(0.172)**	**(0.251)**	**(0.310)**	**(0.368)**	**(0.419)**	**(0.470)**	**(0.513)**	**(0.550)**	**(0.541)**
Use of Additional Water Management Measures (mgd)											
Additional Water Conservation		0.003	0.007	0.012	0.017	0.023	0.029	0.036	0.043	0.050	0.055
Rainwater Collection Systems		0.006	0.010	0.015	0.019	0.023	0.027	0.032	0.036	0.039	0.038
Barton-Edwards GW		0.090	0.101	0.119	0.123	0.123	0.118	0.110	0.096	0.076	0.027
BE Brackish Water Desal		0.000	0.034	0.075	0.111	0.148	0.184	0.222	0.259	0.295	0.320
Trinity GW - Suburban		0.010	0.020	0.030	0.040	0.050	0.060	0.070	0.080	0.090	0.100
Total	**0.000**	**0.099**	**0.152**	**0.221**	**0.270**	**0.318**	**0.359**	**0.400**	**0.433**	**0.460**	**0.441**
Surplus or Unmet Need	**0.000**	**0.010**	**0.020**	**0.030**	**0.040**	**0.050**	**0.060**	**0.070**	**0.080**	**0.090**	**0.100**
RURAL AREA											
Population	191	289	351	424	481	534	583	628	666	698	690
Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
Per Capita Water Use w/Addit. Conservation		118	116	114	113	111	109	107	105	104	102
Water Demand											
Annual (ac-ft)	25.7	38.6	46.3	55.6	62.5	68.8	74.4	79.4	83.5	86.8	85.1
Average Day (mgd)	**0.023**	**0.034**	**0.041**	**0.050**	**0.056**	**0.061**	**0.066**	**0.071**	**0.075**	**0.078**	**0.076**
Existing Water Supply (avg day mgd)											
Rainwater Collection Systems	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Barton-Edwards GW	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021
Total	**0.023**	**0.023**	**0.023**	**0.023**	**0.023**	**0.023**	**0.023**	**0.023**	**0.023**	**0.023**	**0.023**
No Action Surplus or Unmet Need	**0.000**	**(0.012)**	**(0.018)**	**(0.027)**	**(0.033)**	**(0.039)**	**(0.044)**	**(0.048)**	**(0.052)**	**(0.055)**	**(0.053)**
Use of Additional Water Management Measures (avg day mgd)											
Additional Water Conservation		0.000	0.001	0.001	0.002	0.002	0.003	0.004	0.004	0.005	0.006
Rainwater Collection Systems		0.001	0.002	0.003	0.004	0.005	0.006	0.006	0.007	0.008	0.007
Barton-Edwards GW		0.010	0.016	0.022	0.027	0.031	0.035	0.038	0.040	0.042	0.040
Total	**0.000**	**0.012**	**0.018**	**0.027**	**0.033**	**0.039**	**0.044**	**0.048**	**0.052**	**0.055**	**0.053**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Water Service Demand (avg day mgd)	**0.584**	**0.705**	**0.775**	**0.862**	**0.927**	**0.990**	**1.046**	**1.102**	**1.149**	**1.189**	**1.178**
Use of Existing and New Supply (avg day mgd)											
Additional Water Conservation	-	0.004	0.008	0.013	0.019	0.026	0.032	0.040	0.047	0.055	0.061
Rainwater Collection Systems	0.030	0.038	0.042	0.048	0.053	0.059	0.063	0.069	0.073	0.077	0.076
Barton-Edwards GW	0.554	0.654	0.671	0.696	0.704	0.709	0.706	0.702	0.689	0.671	0.621
BE Brackish Water Desal	-	-	0.034	0.075	0.111	0.148	0.184	0.222	0.259	0.295	0.320
Trinity GW - Suburban	-	0.010	0.020	0.030	0.040	0.050	0.060	0.070	0.080	0.090	0.100
Total Use of Existing & New Supply	**0.584**	**0.705**	**0.775**	**0.862**	**0.927**	**0.990**	**1.046**	**1.102**	**1.149**	**1.189**	**1.178**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE A-14
WASTEWATER MANAGEMENT PLAN
PLANNING AREA **HAYS AREA**
SCENARIO **MID**

		Estimated	Projected									
	Planning Area	2010	2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS												
Planning Area	Est./Projected Population	4,443	5,427	6,038	6,773	7,341	7,876	8,359	8,810	9,189	9,517	9,436
	Annual Growth Rate	2.0%	4.1%	2.2%	2.3%	1.6%	1.4%	1.2%	1.1%	0.8%	0.7%	-0.2%
Suburban	% of Planning Area Population	95.7%	94.7%	94.2%	93.7%	93.5%	93.2%	93.0%	92.9%	92.8%	92.7%	92.7%
	% of New Growth that is Suburban		90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
	% of Growth served by Central Wastewater Systems		50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Rural	% of Planning Area Population	4.3%	5.3%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of New Growth that is Rural		10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
	% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA												
Population		4,252	5,137	5,688	6,349	6,860	7,342	7,777	8,182	8,523	8,818	8,745
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand												
	Average Day (mgd)	**0.304**	**0.367**	**0.404**	**0.448**	**0.481**	**0.511**	**0.538**	**0.562**	**0.581**	**0.597**	**0.588**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.304	0.304	0.304	0.304	0.304	0.304	0.304	0.304	0.304	0.304	0.304
	No-Discharge WWTP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Total	**0.304**	**0.304**	**0.304**	**0.304**	**0.304**	**0.304**	**0.304**	**0.304**	**0.304**	**0.304**	**0.304**
Suburban - No Action Surplus or Unmet Need		**0.000**	**(0.063)**	**(0.100)**	**(0.144)**	**(0.177)**	**(0.207)**	**(0.233)**	**(0.258)**	**(0.277)**	**(0.293)**	**(0.284)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.032	0.050	0.072	0.088	0.103	0.117	0.129	0.138	0.146	0.142
	No-Discharge WWTP		0.032	0.050	0.072	0.088	0.103	0.117	0.129	0.138	0.146	0.142
	Total	**0.000**	**0.063**	**0.100**	**0.144**	**0.177**	**0.207**	**0.233**	**0.258**	**0.277**	**0.293**	**0.284**
Suburban - Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA												
Population		191	289	351	424	481	534	583	628	666	698	690
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Wastewater Service Demand												
	Average Day (mgd)	**0.014**	**0.021**	**0.025**	**0.030**	**0.034**	**0.037**	**0.040**	**0.043**	**0.045**	**0.047**	**0.046**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014
	Total	**0.014**	**0.014**	**0.014**	**0.014**	**0.014**	**0.014**	**0.014**	**0.014**	**0.014**	**0.014**	**0.014**
No Action Surplus or Unmet Need		**0.000**	**(0.007)**	**(0.011)**	**(0.016)**	**(0.020)**	**(0.024)**	**(0.027)**	**(0.029)**	**(0.032)**	**(0.034)**	**(0.033)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.007	0.011	0.016	0.020	0.024	0.027	0.029	0.032	0.034	0.033
	Total	**0.000**	**0.007**	**0.011**	**0.016**	**0.020**	**0.024**	**0.027**	**0.029**	**0.032**	**0.034**	**0.033**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA												
Wastewater Service Demand (avg day mgd)		**0.318**	**0.388**	**0.429**	**0.478**	**0.514**	**0.548**	**0.578**	**0.605**	**0.626**	**0.644**	**0.634**
Use of Existing and Capacity (avg day mgd)												
	OSSFs	0.318	0.356	0.379	0.406	0.426	0.445	0.461	0.476	0.488	0.498	0.492
	No-Discharge WWTP	-	0.032	0.050	0.072	0.088	0.103	0.117	0.129	0.138	0.146	0.142
	Total Use of Existing & New Supply	**0.318**	**0.388**	**0.429**	**0.478**	**0.514**	**0.548**	**0.578**	**0.605**	**0.626**	**0.644**	**0.634**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE A-15
WATER MANAGEMENT PLAN
PLANNING AREA 967
SCENARIO MID

	Estimated	Projected									
Planning Area	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**	**2055**	**2060**
PLANNING FACTORS											
Planning Area Est./Projected Population	3,138	3,847	4,299	4,845	5,279	5,697	6,084	6,455	6,780	7,075	7,240
Annual Growth Rate	6.5%	4.2%	2.2%	2.4%	1.7%	1.5%	1.3%	1.2%	1.0%	0.9%	0.5%
Suburban % of Planning Area Population	70.0%	73.7%	75.4%	77.1%	78.1%	79.0%	79.7%	80.3%	80.7%	81.1%	81.3%
% of New Growth that is Suburban		90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
% Reduction in Base Water Use		0.50%	1.00%	1.50%	2.00%	2.50%	3.00%	3.50%	4.00%	4.50%	5.00%
% of Growth on Rainwater Systems	5.0%	5.5%	6.0%	6.5%	7.0%	7.5%	8.0%	8.5%	9.0%	9.5%	10.0%
% of Growth on Central Water Systems			85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%
% of Exist. Demand Converting to Central Wtr Systems			2.8%	3.0%	3.3%	3.5%	3.8%	4.0%	4.3%	4.5%	5.0%
Rural % of Planning Area Population	30.0%	26.3%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
% of New Growth that is Rural		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
% Reduction in Base Water Use		0.75%	1.50%	2.25%	3.00%	3.75%	4.50%	5.25%	6.00%	6.75%	7.50%
% of Growth on Rainwater Systems	10.0%	11.0%	12.0%	13.0%	14.0%	15.0%	16.0%	17.0%	18.0%	19.0%	20.0%
SUBURBAN AREA											
Population	2,197	2,835	3,242	3,733	4,124	4,500	4,848	5,182	5,475	5,740	5,889
Base Per Capita Water Use (gpcd)	132	131	129	128	127	127	126	126	126	126	126
Per Capita Water Use w/Addit. Conservation		130	128	126	124	123	122	122	121	120	120
Water Demand											
Annual (ac-ft)	324.8	414.4	468.5	535.3	586.7	637.6	684.3	731.4	772.7	810.1	831.2
Average Day (mgd)	**0.290**	**0.370**	**0.418**	**0.478**	**0.524**	**0.569**	**0.611**	**0.653**	**0.690**	**0.723**	**0.742**
Use of Existing Water Supply (mgd)											
Rainwater Collection Systems	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015
Barton-Edwards GW	0.224	0.224	0.224	0.224	0.224	0.224	0.224	0.224	0.224	0.224	0.224
Trinity GW - Suburban	0.051	0.051	0.051	0.051	0.051	0.051	0.051	0.051	0.051	0.051	0.051
Total	**0.290**	**0.290**	**0.290**	**0.290**	**0.290**	**0.290**	**0.290**	**0.290**	**0.290**	**0.290**	**0.290**
No Action Surplus or Unmet Need	**0.000**	**(0.080)**	**(0.128)**	**(0.188)**	**(0.234)**	**(0.279)**	**(0.321)**	**(0.363)**	**(0.400)**	**(0.433)**	**(0.452)**
Use of Additional Water Management Measures (mgd)											
Additional Water Conservation		0.002	0.004	0.007	0.010	0.014	0.018	0.023	0.028	0.033	0.037
Rainwater Collection Systems		0.004	0.007	0.011	0.014	0.018	0.021	0.025	0.028	0.031	0.033
Barton-Edwards GW		0.060	0.055	0.050	0.042	0.034	0.024	0.013	0.001	(0.012)	(0.027)
Trinity GW - Suburban		0.014	0.013	0.011	0.010	0.008	0.005	0.003	0.000	(0.003)	(0.006)
LCRA US290 Pipeline		0.000	0.049	0.108	0.157	0.206	0.252	0.299	0.343	0.384	0.415
Total	**0.000**	**0.080**	**0.128**	**0.188**	**0.234**	**0.279**	**0.321**	**0.363**	**0.400**	**0.433**	**0.452**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	941	1,083	1,173	1,282	1,369	1,453	1,530	1,604	1,669	1,728	1,761
Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
Per Capita Water Use w/Addit. Conservation		118	116	114	113	111	109	107	105	104	102
Water Demand											
Annual (ac-ft)	126.5	144.3	155.1	168.1	177.9	187.1	195.4	203.1	209.4	214.9	217.0
Average Day (mgd)	**0.113**	**0.129**	**0.138**	**0.150**	**0.159**	**0.167**	**0.174**	**0.181**	**0.187**	**0.192**	**0.194**
Existing Water Supply (avg day mgd)											
Rainwater Collection Systems	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011
Barton-Edwards GW	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083
Trinity GW - Rural	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019
Total	**0.113**	**0.113**	**0.113**	**0.113**	**0.113**	**0.113**	**0.113**	**0.113**	**0.113**	**0.113**	**0.113**
No Action Surplus or Unmet Need	**0.000**	**(0.016)**	**(0.026)**	**(0.037)**	**(0.046)**	**(0.054)**	**(0.062)**	**(0.068)**	**(0.074)**	**(0.079)**	**(0.081)**
Use of Additional Water Management Measures (avg day mgd)											
Additional Water Conservation		0.001	0.002	0.003	0.005	0.006	0.008	0.010	0.011	0.013	0.015
Rainwater Collection Systems		0.002	0.003	0.004	0.006	0.007	0.008	0.009	0.010	0.011	0.012
Barton-Edwards GW		0.011	0.017	0.024	0.029	0.033	0.037	0.040	0.043	0.045	0.045
Trinity GW - Rural		0.002	0.004	0.005	0.007	0.008	0.008	0.009	0.010	0.010	0.010
Total	**0.000**	**0.016**	**0.026**	**0.037**	**0.046**	**0.054**	**0.062**	**0.068**	**0.074**	**0.079**	**0.081**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Water Service Demand (avg day mgd)	**0.403**	**0.499**	**0.557**	**0.628**	**0.683**	**0.736**	**0.785**	**0.834**	**0.877**	**0.915**	**0.936**
Use of Existing and New Supply (avg day mgd)											
Additional Water Conservation	-	0.003	0.006	0.011	0.015	0.020	0.026	0.032	0.039	0.046	0.052
Rainwater Collection Systems	0.026	0.032	0.036	0.041	0.046	0.050	0.055	0.060	0.064	0.068	0.070
Barton-Edwards GW	0.307	0.378	0.379	0.381	0.378	0.374	0.368	0.361	0.351	0.340	0.325
Trinity GW	0.070	0.086	0.087	0.087	0.086	0.086	0.084	0.082	0.080	0.078	0.074
LCRA US290 Pipeline	-	-	0.049	0.108	0.157	0.206	0.252	0.299	0.343	0.384	0.415
Total Use of Existing & New Supply	**0.403**	**0.499**	**0.557**	**0.628**	**0.683**	**0.736**	**0.785**	**0.834**	**0.877**	**0.915**	**0.936**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE A-16
WASTEWATER MANAGEMENT PLAN
PLANNING AREA 967
SCENARIO MID

		Estimated	Projected									
Planning Area		**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**	**2055**	**2060**
PLANNING FACTORS												
Planning Area	Est./Projected Population	3,138	3,847	4,299	4,845	5,279	5,697	6,084	6,455	6,780	7,075	7,240
	Annual Growth Rate	6.5%	4.2%	2.2%	2.4%	1.7%	1.5%	1.3%	1.2%	1.0%	0.9%	0.5%
Suburban	% of Planning Area Population	70.0%	73.7%	75.4%	77.1%	78.1%	79.0%	79.7%	80.3%	80.7%	81.1%	81.3%
	% of New Growth that is Suburban		90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
	% of Growth served by Central Wastewater Systems		75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%
Rural	% of Planning Area Population	30.0%	26.3%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of New Growth that is Rural		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
	% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA												
Population		2,197	2,835	3,242	3,733	4,124	4,500	4,848	5,182	5,475	5,740	5,889
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand												
	Average Day (mgd)	**0.157**	**0.203**	**0.230**	**0.263**	**0.289**	**0.313**	**0.335**	**0.356**	**0.373**	**0.388**	**0.396**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141
	No-Discharge WWTP	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016
	Total	**0.157**	**0.157**	**0.157**	**0.157**	**0.157**	**0.157**	**0.157**	**0.157**	**0.157**	**0.157**	**0.157**
Suburban - No Action Surplus or Unmet Need		**0.000**	**(0.046)**	**(0.073)**	**(0.106)**	**(0.132)**	**(0.156)**	**(0.178)**	**(0.199)**	**(0.216)**	**(0.231)**	**(0.239)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.011	0.018	0.027	0.033	0.039	0.044	0.050	0.054	0.058	0.060
	No-Discharge WWTP		0.034	0.055	**0.080**	0.099	0.117	0.133	0.149	0.162	0.174	0.179
	Total	**0.000**	**0.046**	**0.073**	**0.106**	**0.132**	**0.156**	**0.178**	**0.199**	**0.216**	**0.231**	**0.239**
Suburban - Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA												
Population		941	1,083	1,173	1,282	1,369	1,453	1,530	1,604	1,669	1,728	1,761
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Wastewater Service Demand												
	Average Day (mgd)	**0.067**	**0.077**	**0.083**	**0.090**	**0.096**	**0.101**	**0.106**	**0.110**	**0.114**	**0.117**	**0.118**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.067	0.067	0.067	0.067	0.067	0.067	0.067	0.067	0.067	0.067	0.067
	Total	**0.067**	**0.067**	**0.067**	**0.067**	**0.067**	**0.067**	**0.067**	**0.067**	**0.067**	**0.067**	**0.067**
No Action Surplus or Unmet Need		**0.000**	**(0.010)**	**(0.016)**	**(0.023)**	**(0.029)**	**(0.034)**	**(0.038)**	**(0.043)**	**(0.046)**	**(0.050)**	**(0.051)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.010	0.016	0.023	0.029	0.034	0.038	0.043	0.046	0.050	0.051
	Total	**0.000**	**0.010**	**0.016**	**0.023**	**0.029**	**0.034**	**0.038**	**0.043**	**0.046**	**0.050**	**0.051**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA												
Wastewater Service Demand (avg day mgd)		**0.224**	**0.280**	**0.314**	**0.354**	**0.385**	**0.414**	**0.441**	**0.466**	**0.487**	**0.505**	**0.514**
Use of Existing and Capacity (avg day mgd)												
	OSSFs	0.209	0.230	0.243	0.258	0.270	0.282	0.292	0.301	0.309	0.316	0.319
	No-Discharge WWTP	0.016	0.050	0.071	0.095	0.115	0.133	0.149	0.165	0.178	0.189	0.195
	Total Use of Existing & New Supply	**0.224**	**0.280**	**0.314**	**0.354**	**0.385**	**0.414**	**0.441**	**0.466**	**0.487**	**0.505**	**0.514**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE A-17
WATER MANAGEMENT PLAN
PLANNING AREA 150
SCENARIO MID

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	6,117	7,471	8,314	9,324	10,106	10,844	11,509	12,129	12,651	13,102	13,235
Annual Growth Rate	3.0%	4.1%	2.2%	2.3%	1.6%	1.4%	1.2%	1.1%	0.8%	0.7%	0.2%
Suburban % of Planning Area Population	54.9%	59.4%	61.5%	63.5%	64.8%	65.8%	66.7%	67.3%	67.9%	68.3%	68.4%
% of New Growth that is Suburban		80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%
% Reduction in Base Water Use		0.75%	1.50%	2.25%	3.00%	3.75%	4.50%	5.25%	6.00%	6.75%	7.50%
% of Growth on Rainwater Systems	5.0%	5.5%	6.0%	6.5%	7.0%	7.5%	8.0%	8.5%	9.0%	9.5%	10.0%
% of Growth on Central Water Systems		20.0%	20.0%	20.0%	20.0%	10.0%	5.0%	5.0%	5.0%	5.0%	5.0%
% of Exist. Demand Converting to Central Wtr Systems		2.5%	2.8%	3.0%	3.3%	3.5%	3.8%	4.0%	4.3%	4.5%	5.0%
Rural % of Planning Area Population	45.1%	40.6%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
% of New Growth that is Rural		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
% Reduction in Base Water Use		1.00%	2.00%	3.00%	4.00%	5.00%	6.00%	7.00%	8.00%	9.00%	10.00%
% of Growth on Rainwater Systems	10.0%	11.0%	12.0%	13.0%	14.0%	15.0%	16.0%	17.0%	18.0%	19.0%	20.0%
SUBURBAN AREA											
Population	3,358	4,441	5,115	5,924	6,549	7,139	7,671	8,168	8,585	8,946	9,053
Base Per Capita Water Use (gpcd)	132	131	129	128	127	127	126	126	126	126	126
Per Capita Water Use w/Addit. Conservation		130	127	125	123	122	120	119	118	118	117
Water Demand											
Annual (ac-ft)	496.5	649.2	739.1	849.3	931.7	1,011.6	1,082.7	1,152.8	1,211.7	1,262.7	1,277.7
Average Day (mgd)	**0.443**	**0.580**	**0.660**	**0.758**	**0.832**	**0.903**	**0.967**	**1.029**	**1.082**	**1.127**	**1.141**
Use of Existing Water Supply (mgd)											
Rainwater Collection Systems	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022
Barton-Edwards GW	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082
Edwards GW	0.217	0.217	0.217	0.217	0.217	0.217	0.217	0.217	0.217	0.217	0.217
Trinity GW - Suburban	0.121	0.121	0.121	0.121	0.121	0.121	0.121	0.121	0.121	0.121	0.121
Total	**0.443**	**0.443**	**0.443**	**0.443**	**0.443**	**0.443**	**0.443**	**0.443**	**0.443**	**0.443**	**0.443**
No Action Surplus or Unmet Need	**0.000**	**(0.136)**	**(0.217)**	**(0.315)**	**(0.389)**	**(0.460)**	**(0.523)**	**(0.586)**	**(0.639)**	**(0.684)**	**(0.697)**
Use of Additional Water Management Measures (mgd)											
Additional Water Conservation		0.004	0.010	0.017	0.025	0.034	0.044	0.054	0.065	0.076	0.086
Rainwater Collection Systems		0.007	0.012	0.019	0.024	0.029	0.034	0.040	0.044	0.049	0.050
Barton-Edwards GW		0.017	0.025	0.035	0.041	0.048	0.054	0.059	0.062	0.063	0.059
Edwards GW		0.044	0.066	0.093	0.109	0.127	0.142	0.155	0.163	0.167	0.157
Trinity GW - Suburban		0.025	0.037	0.052	0.061	0.071	0.079	0.087	0.091	0.093	0.087
City of Kyle		0.038	0.067	0.100	0.129	0.151	0.171	0.192	0.213	0.236	0.259
Total	**0.000**	**0.136**	**0.217**	**0.315**	**0.389**	**0.460**	**0.523**	**0.586**	**0.639**	**0.684**	**0.697**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	2,759	3,030	3,198	3,400	3,557	3,704	3,837	3,961	4,066	4,156	4,183
Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
Per Capita Water Use w/Addit. Conservation		118	116	114	111	109	107	105	103	101	99
Water Demand											
Annual (ac-ft)	370.9	403.9	422.7	445.7	462.2	477.2	490.0	501.4	510.1	516.7	515.4
Average Day (mgd)	**0.331**	**0.361**	**0.377**	**0.398**	**0.413**	**0.426**	**0.438**	**0.448**	**0.455**	**0.461**	**0.460**
Existing Water Supply (avg day mgd)											
Rainwater Collection Systems	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033
Barton-Edwards GW	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058
Edwards GW	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154
Trinity GW - Rural	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086
Total	**0.331**	**0.331**	**0.331**	**0.331**	**0.331**	**0.331**	**0.331**	**0.331**	**0.331**	**0.331**	**0.331**
No Action Surplus or Unmet Need	**0.000**	**(0.029)**	**(0.046)**	**(0.067)**	**(0.082)**	**(0.095)**	**(0.106)**	**(0.117)**	**(0.124)**	**(0.130)**	**(0.129)**
Use of Additional Water Management Measures (avg day mgd)											
Additional Water Conservation		0.004	0.008	0.012	0.017	0.021	0.026	0.031	0.036	0.042	0.046
Rainwater Collection Systems		0.003	0.005	0.008	0.010	0.012	0.014	0.016	0.017	0.018	0.018
Barton-Edwards GW		0.004	0.007	0.009	0.011	0.012	0.013	0.014	0.014	0.014	0.013
Edwards GW		0.012	0.017	0.024	0.028	0.032	0.034	0.036	0.037	0.036	0.034
Trinity GW - Rural		0.007	0.010	0.014	0.016	0.018	0.019	0.020	0.020	0.020	0.019
Total	**0.000**	**0.029**	**0.046**	**0.067**	**0.082**	**0.095**	**0.106**	**0.117**	**0.124**	**0.130**	**0.129**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Water Service Demand (avg day mgd)	**0.774**	**0.940**	**1.037**	**1.156**	**1.245**	**1.329**	**1.404**	**1.477**	**1.537**	**1.589**	**1.601**
Use of Existing and New Supply (avg day mgd)											
Additional Water Conservation	-	0.008	0.017	0.029	0.041	0.055	0.070	0.085	0.101	0.118	0.132
Rainwater Collection Systems	0.055	0.066	0.073	0.082	0.089	0.096	0.103	0.110	0.117	0.122	0.123
Barton-Edwards GW	0.141	0.162	0.172	0.185	0.193	0.201	0.207	0.213	0.216	0.218	0.213
Edwards GW	0.371	0.427	0.455	0.488	0.509	0.530	0.547	0.562	0.571	0.575	0.562
Trinity GW	0.207	0.239	0.254	0.273	0.284	0.296	0.305	0.314	0.319	0.321	0.313
City of Kyle	-	0.038	0.067	0.100	0.129	0.151	0.171	0.192	0.213	0.236	0.259
Total Use of Existing & New Supply	**0.774**	**0.940**	**1.037**	**1.156**	**1.245**	**1.329**	**1.404**	**1.477**	**1.537**	**1.589**	**1.601**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE A-18
WASTEWATER MANAGEMENT PLAN
PLANNING AREA 150
SCENARIO MID

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	6,117	7,471	8,314	9,324	10,106	10,844	11,509	12,129	12,651	13,102	13,235
Annual Growth Rate	3.0%	4.1%	2.2%	2.3%	1.6%	1.4%	1.2%	1.1%	0.8%	0.7%	0.2%
Suburban % of Planning Area Population	54.9%	59.4%	61.5%	63.5%	64.8%	65.8%	66.7%	67.3%	67.9%	68.3%	68.4%
% of New Growth that is Suburban		80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%
% of Growth served by Central Wastewater Systems		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
Rural % of Planning Area Population	45.1%	40.6%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
% of New Growth that is Rural		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA											
Population	3,358	4,441	5,115	5,924	6,549	7,139	7,671	8,168	8,585	8,946	9,053
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand											
Average Day (mgd)	**0.240**	**0.318**	**0.363**	**0.418**	**0.459**	**0.497**	**0.530**	**0.561**	**0.585**	**0.605**	**0.608**
Existing Wastewater Treatment (mgd)											
OSSFs	0.239	0.239	0.239	0.239	0.239	0.239	0.239	0.239	0.239	0.239	0.239
No-Discharge WWTP	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Total	**0.240**	**0.240**	**0.240**	**0.240**	**0.240**	**0.240**	**0.240**	**0.240**	**0.240**	**0.240**	**0.240**
Suburban - No Action Surplus or Unmet Need	**0.000**	**(0.077)**	**(0.123)**	**(0.178)**	**(0.219)**	**(0.257)**	**(0.290)**	**(0.320)**	**(0.345)**	**(0.365)**	**(0.368)**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.062	0.099	0.142	0.175	0.205	0.232	0.256	0.276	0.292	0.295
No-Discharge WWTP		0.015	**0.025**	0.036	0.044	0.051	0.058	0.064	0.069	0.073	0.074
Total	**0.000**	**0.077**	**0.123**	**0.178**	**0.219**	**0.257**	**0.290**	**0.320**	**0.345**	**0.365**	**0.368**
Suburban - Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	2,759	3,030	3,198	3,400	3,557	3,704	3,837	3,961	4,066	4,156	4,183
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Wastewater Service Demand											
Average Day (mgd)	**0.197**	**0.217**	**0.227**	**0.240**	**0.249**	**0.258**	**0.265**	**0.272**	**0.277**	**0.281**	**0.281**
Existing Wastewater Treatment (mgd)											
OSSFs	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197
Total	**0.197**	**0.197**	**0.197**	**0.197**	**0.197**	**0.197**	**0.197**	**0.197**	**0.197**	**0.197**	**0.197**
No Action Surplus or Unmet Need	**0.000**	**(0.019)**	**(0.030)**	**(0.043)**	**(0.052)**	**(0.060)**	**(0.068)**	**(0.075)**	**(0.080)**	**(0.084)**	**(0.084)**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.019	0.030	0.043	0.052	0.060	0.068	0.075	0.080	0.084	0.084
Total	**0.000**	**0.019**	**0.030**	**0.043**	**0.052**	**0.060**	**0.068**	**0.075**	**0.080**	**0.084**	**0.084**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Wastewater Service Demand (avg day mgd)	**0.437**	**0.534**	**0.591**	**0.658**	**0.708**	**0.755**	**0.795**	**0.833**	**0.862**	**0.887**	**0.889**
Use of Existing and Capacity (avg day mgd)											
OSSFs	0.436	0.518	0.565	0.621	0.663	0.702	0.736	0.767	0.792	0.813	0.815
No-Discharge WWTP	0.001	0.017	0.026	0.037	0.045	0.053	0.059	0.065	0.070	0.074	0.075
Total Use of Existing & New Supply	**0.437**	**0.534**	**0.591**	**0.658**	**0.708**	**0.755**	**0.795**	**0.833**	**0.862**	**0.887**	**0.889**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE A-19
WATER MANAGEMENT PLAN
PLANNING AREA 12-A
SCENARIO MID

Planning Area		Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS												
Planning Area	Est./Projected Population	3,186	3,891	4,330	4,856	5,264	5,648	5,994	6,317	6,589	6,824	6,707
	Annual Growth Rate	3.3%	4.1%	2.2%	2.3%	1.6%	1.4%	1.2%	1.1%	0.8%	0.7%	-0.3%
Suburban	% of Planning Area Population	18.4%	22.3%	24.1%	25.8%	26.9%	27.8%	28.5%	29.1%	29.6%	29.9%	29.7%
	% of New Growth that is Suburban		40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
	% Reduction in Base Water Use		0.75%	1.50%	2.25%	3.00%	3.75%	4.50%	5.25%	6.00%	6.75%	7.50%
	% of Growth on Rainwater Systems	15.0%	16.5%	18.0%	19.5%	21.0%	22.5%	24.0%	25.5%	27.0%	28.5%	30.0%
	% of Growth on Central Water Systems	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	% of Exist. Demand Converting to Central Wtr Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rural	% of Planning Area Population	81.6%	77.7%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of New Growth that is Rural		60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
	% Reduction in Base Water Use		1.25%	2.50%	3.75%	5.00%	6.25%	7.50%	8.75%	10.00%	11.25%	12.50%
	% of Growth on Rainwater Systems	15.0%	16.5%	18.0%	19.5%	21.0%	22.5%	24.0%	25.5%	27.0%	28.5%	30.0%
SUBURBAN AREA												
Population		586	868	1,044	1,254	1,417	1,571	1,709	1,839	1,947	2,041	1,995
	Base Per Capita Water Use (gpcd)	132	131	129	128	127	127	126	126	126	126	126
	Per Capita Water Use w/Addit. Conservation		130	127	125	123	122	120	119	118	118	117
Water Demand												
	Annual (ac-ft)	86.6	126.9	150.8	179.8	201.6	222.6	241.2	259.5	274.8	288.1	281.5
	Average Day (mgd)	**0.077**	**0.113**	**0.135**	**0.161**	**0.180**	**0.199**	**0.215**	**0.232**	**0.245**	**0.257**	**0.251**
Use of Existing Water Supply (mgd)												
	Rainwater Collection Systems	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012
	Trinity GW - Suburban	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066
	Total	**0.077**	**0.077**	**0.077**	**0.077**	**0.077**	**0.077**	**0.077**	**0.077**	**0.077**	**0.077**	**0.077**
No Action Surplus or Unmet Need		**0.000**	**(0.036)**	**(0.057)**	**(0.083)**	**(0.103)**	**(0.121)**	**(0.138)**	**(0.154)**	**(0.168)**	**(0.180)**	**(0.174)**
Use of Additional Water Management Measures (mgd)												
	Additional Water Conservation		0.001	0.002	0.004	0.005	0.007	0.010	0.012	0.015	0.017	0.019
	Rainwater Collection Systems		0.006	0.010	0.015	0.019	0.023	0.027	0.031	0.035	0.038	0.037
	Trinity GW - Suburban		0.029	0.045	0.065	0.078	0.091	0.101	0.111	0.118	0.124	0.119
	Total	**0.000**	**0.036**	**0.057**	**0.083**	**0.103**	**0.121**	**0.138**	**0.154**	**0.168**	**0.180**	**0.174**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA												
Population		2,600	3,023	3,286	3,602	3,847	4,077	4,285	4,479	4,642	4,783	4,713
	Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
	Per Capita Water Use w/Addit. Conservation		118	115	113	110	108	105	103	101	99	96
Water Demand												
	Annual (ac-ft)	349.5	403.0	434.4	472.1	499.8	525.2	547.2	566.9	582.3	594.7	580.7
	Average Day (mgd)	**0.312**	**0.360**	**0.388**	**0.422**	**0.446**	**0.469**	**0.489**	**0.506**	**0.520**	**0.531**	**0.518**
Existing Water Supply (avg day mgd)												
	Rainwater Collection Systems	0.047	0.047	0.047	0.047	0.047	0.047	0.047	0.047	0.047	0.047	0.047
	Trinity GW - Rural	0.265	0.265	0.265	0.265	0.265	0.265	0.265	0.265	0.265	0.265	0.265
	Total	**0.312**	**0.312**	**0.312**	**0.312**	**0.312**	**0.312**	**0.312**	**0.312**	**0.312**	**0.312**	**0.312**
No Action Surplus or Unmet Need		**0.000**	**(0.048)**	**(0.076)**	**(0.109)**	**(0.134)**	**(0.157)**	**(0.177)**	**(0.194)**	**(0.208)**	**(0.219)**	**(0.206)**
Use of Additional Water Management Measures (avg day mgd)												
	Additional Water Conservation		0.004	0.010	0.016	0.022	0.029	0.037	0.044	0.052	0.060	0.065
	Rainwater Collection Systems		0.008	0.013	0.019	0.025	0.030	0.034	0.039	0.043	0.046	0.042
	Trinity GW - Rural		0.035	0.053	0.074	0.087	0.098	0.105	0.111	0.113	0.113	0.100
	Total	**0.000**	**0.048**	**0.076**	**0.109**	**0.134**	**0.157**	**0.177**	**0.194**	**0.208**	**0.219**	**0.206**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA												
Water Service Demand (avg day mgd)		**0.389**	**0.473**	**0.522**	**0.582**	**0.626**	**0.668**	**0.704**	**0.738**	**0.765**	**0.788**	**0.770**
Use of Existing and New Supply (avg day mgd)												
	Additional Water Conservation	-	0.005	0.012	0.019	0.028	0.037	0.046	0.056	0.067	0.077	0.084
	Rainwater Collection Systems	0.058	0.072	0.081	0.093	0.102	0.111	0.120	0.129	0.136	0.143	0.137
	Trinity GW	0.331	0.396	0.430	0.470	0.497	0.520	0.538	0.553	0.563	0.568	0.549
	Total Use of Existing & New Supply	**0.389**	**0.473**	**0.522**	**0.582**	**0.626**	**0.668**	**0.704**	**0.738**	**0.765**	**0.788**	**0.770**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE A-20
WASTEWATER MANAGEMENT PLAN
PLANNING AREA 12-A
SCENARIO MID

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	3,186	3,891	4,330	4,856	5,264	5,648	5,994	6,317	6,589	6,824	6,707
Annual Growth Rate	3.3%	4.1%	2.2%	2.3%	1.6%	1.4%	1.2%	1.1%	0.8%	0.7%	-0.3%
Suburban % of Planning Area Population	18.4%	22.3%	24.1%	25.8%	26.9%	27.8%	28.5%	29.1%	29.6%	29.9%	29.7%
% of New Growth that is Suburban		40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rural % of Planning Area Population	81.6%	77.7%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
% of New Growth that is Rural		60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA											
Population	586	868	1,044	1,254	1,417	1,571	1,709	1,839	1,947	2,041	1,995
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand											
Average Day (mgd)	**0.042**	**0.062**	**0.074**	**0.088**	**0.099**	**0.109**	**0.118**	**0.126**	**0.133**	**0.138**	**0.134**
Existing Wastewater Treatment (mgd)											
OSSFs	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042
No-Discharge WWTP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**
Suburban - No Action Surplus or Unmet Need	**0.000**	**(0.020)**	**(0.032)**	**(0.047)**	**(0.057)**	**(0.067)**	**(0.076)**	**(0.084)**	**(0.091)**	**(0.096)**	**(0.092)**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.020	0.032	0.047	0.057	0.067	0.076	0.084	0.091	0.096	0.092
No-Discharge WWTP		0.000	0.000	0.000	0.000	**0.000**	0.000	0.000	0.000	0.000	0.000
Total	**0.000**	**0.020**	**0.032**	**0.047**	**0.057**	**0.067**	**0.076**	**0.084**	**0.091**	**0.096**	**0.092**
Suburban - Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	2,600	3,023	3,286	3,602	3,847	4,077	4,285	4,479	4,642	4,783	4,713
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Wastewater Service Demand											
Average Day (mgd)	**0.186**	**0.216**	**0.233**	**0.254**	**0.270**	**0.284**	**0.296**	**0.307**	**0.316**	**0.324**	**0.317**
Existing Wastewater Treatment (mgd)											
OSSFs	0.186	0.186	0.186	0.186	0.186	0.186	0.186	0.186	0.186	0.186	0.186
Total	**0.186**	**0.186**	**0.186**	**0.186**	**0.186**	**0.186**	**0.186**	**0.186**	**0.186**	**0.186**	**0.186**
No Action Surplus or Unmet Need	**0.000**	**(0.030)**	**(0.048)**	**(0.068)**	**(0.084)**	**(0.098)**	**(0.110)**	**(0.121)**	**(0.130)**	**(0.138)**	**(0.131)**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.030	0.048	0.068	0.084	0.098	0.110	0.121	0.130	0.138	0.131
Total	**0.000**	**0.030**	**0.048**	**0.068**	**0.084**	**0.098**	**0.110**	**0.121**	**0.130**	**0.138**	**0.131**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Wastewater Service Demand (avg day mgd)	**0.228**	**0.278**	**0.308**	**0.343**	**0.369**	**0.393**	**0.414**	**0.434**	**0.449**	**0.462**	**0.451**
Use of Existing and Capacity (avg day mgd)											
OSSFs	0.228	0.278	0.308	0.343	0.369	0.393	0.414	0.434	0.449	0.462	0.451
No-Discharge WWTP	-	-	-	-	-	-	-	-	-	-	-
Total Use of Existing & New Supply	**0.228**	**0.278**	**0.308**	**0.343**	**0.369**	**0.393**	**0.414**	**0.434**	**0.449**	**0.462**	**0.451**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE A-21
WATER MANAGEMENT PLAN
PLANNING AREA 290-SW
SCENARIO MID

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	1,300	1,588	1,767	1,982	2,148	2,305	2,446	2,578	2,689	2,785	2,783
Annual Growth Rate	2.3%	4.1%	2.2%	2.3%	1.6%	1.4%	1.2%	1.1%	0.8%	0.7%	0.0%
Suburban % of Planning Area Population	13.1%	18.0%	20.2%	22.3%	23.7%	24.8%	25.7%	26.4%	27.0%	27.4%	27.4%
% of New Growth that is Suburban		40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
% Reduction in Base Water Use		0.75%	1.50%	2.25%	3.00%	3.75%	4.50%	5.25%	6.00%	6.75%	7.50%
% of Growth on Rainwater Systems	15.0%	16.5%	18.0%	19.5%	21.0%	22.5%	24.0%	25.5%	27.0%	28.5%	30.0%
% of Growth on Central Water Systems	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
% of Exist. Demand Converting to Central Wtr Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rural % of Planning Area Population	86.9%	82.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
% of New Growth that is Rural		60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
% Reduction in Base Water Use		1.25%	2.50%	3.75%	5.00%	6.25%	7.50%	8.75%	10.00%	11.25%	12.50%
% of Growth on Rainwater Systems	15.0%	16.5%	18.0%	19.5%	21.0%	22.5%	24.0%	25.5%	27.0%	28.5%	30.0%
SUBURBAN AREA											
Population	170	285	357	443	509	572	628	681	725	764	763
Base Per Capita Water Use (gpcd)	132	131	129	128	127	127	126	126	126	126	126
Per Capita Water Use w/Addit. Conservation		130	127	125	123	122	120	119	118	118	117
Water Demand											
Annual (ac-ft)	25.1	41.7	51.5	63.5	72.4	81.0	88.7	96.1	102.4	107.8	107.7
Average Day (mgd)	**0.022**	**0.037**	**0.046**	**0.057**	**0.065**	**0.072**	**0.079**	**0.086**	**0.091**	**0.096**	**0.096**
Use of Existing Water Supply (mgd)											
Rainwater Collection Systems	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
Trinity GW - Suburban	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019
Total	**0.022**	**0.022**	**0.022**	**0.022**	**0.022**	**0.022**	**0.022**	**0.022**	**0.022**	**0.022**	**0.022**
No Action Surplus or Unmet Need	**0.000**	**(0.015)**	**(0.024)**	**(0.034)**	**(0.042)**	**(0.050)**	**(0.057)**	**(0.063)**	**(0.069)**	**(0.074)**	**(0.074)**
Use of Additional Water Management Measures (mgd)											
Additional Water Conservation		0.000	0.001	0.001	0.002	0.003	0.004	0.005	0.005	0.006	0.007
Rainwater Collection Systems		0.002	0.004	0.006	0.008	0.010	0.011	0.013	0.014	0.016	0.016
Trinity GW - Suburban		0.012	0.019	0.027	0.033	0.038	0.042	0.046	0.049	0.052	0.051
Total	**0.000**	**0.015**	**0.024**	**0.034**	**0.042**	**0.050**	**0.057**	**0.063**	**0.069**	**0.074**	**0.074**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	1,130	1,303	1,410	1,539	1,639	1,733	1,818	1,897	1,963	2,021	2,020
Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
Per Capita Water Use w/Addit. Conservation		118	115	113	110	108	105	103	101	99	96
Water Demand											
Annual (ac-ft)	151.9	173.6	186.4	201.7	212.9	223.2	232.1	240.1	246.3	251.2	248.8
Average Day (mgd)	**0.136**	**0.155**	**0.166**	**0.180**	**0.190**	**0.199**	**0.207**	**0.214**	**0.220**	**0.224**	**0.222**
Existing Water Supply (avg day mgd)											
Rainwater Collection Systems	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020
Trinity GW - Rural	0.115	0.115	0.115	0.115	0.115	0.115	0.115	0.115	0.115	0.115	0.115
Total	**0.136**	**0.136**	**0.136**	**0.136**	**0.136**	**0.136**	**0.136**	**0.136**	**0.136**	**0.136**	**0.136**
No Action Surplus or Unmet Need	**0.000**	**(0.019)**	**(0.031)**	**(0.044)**	**(0.054)**	**(0.064)**	**(0.072)**	**(0.079)**	**(0.084)**	**(0.089)**	**(0.087)**
Use of Additional Water Management Measures (avg day mgd)											
Additional Water Conservation		0.002	0.004	0.007	0.010	0.012	0.016	0.019	0.022	0.025	0.028
Rainwater Collection Systems		0.003	0.005	0.008	0.010	0.012	0.014	0.016	0.017	0.019	0.018
Trinity GW - Rural		0.014	0.021	0.030	0.035	0.039	0.042	0.044	0.045	0.045	0.041
Total	**0.000**	**0.019**	**0.031**	**0.044**	**0.054**	**0.064**	**0.072**	**0.079**	**0.084**	**0.089**	**0.087**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Water Service Demand (avg day mgd)	**0.158**	**0.192**	**0.212**	**0.237**	**0.255**	**0.272**	**0.286**	**0.300**	**0.311**	**0.321**	**0.318**
Use of Existing and New Supply (avg day mgd)											
Additional Water Conservation	-	0.002	0.005	0.008	0.011	0.015	0.019	0.023	0.027	0.032	0.035
Rainwater Collection Systems	0.024	0.029	0.033	0.038	0.042	0.045	0.049	0.052	0.055	0.058	0.057
Trinity GW	0.134	0.161	0.175	0.191	0.202	0.211	0.218	0.225	0.228	0.231	0.226
Total Use of Existing & New Supply	**0.158**	**0.192**	**0.212**	**0.237**	**0.255**	**0.272**	**0.286**	**0.300**	**0.311**	**0.321**	**0.318**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE A-22
WASTEWATER MANAGEMENT PLAN
PLANNING AREA 290-SW
SCENARIO MID

Planning Area		Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS												
Planning Area	Est./Projected Population	1,300	1,588	1,767	1,982	2,148	2,305	2,446	2,578	2,689	2,785	2,783
	Annual Growth Rate	2.3%	4.1%	2.2%	2.3%	1.6%	1.4%	1.2%	1.1%	0.8%	0.7%	0.0%
Suburban	% of Planning Area Population	13.1%	18.0%	20.2%	22.3%	23.7%	24.8%	25.7%	26.4%	27.0%	27.4%	27.4%
	% of New Growth that is Suburban		40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
	% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rural	% of Planning Area Population	86.9%	82.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of New Growth that is Rural		60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
	% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA												
Population		170	285	357	443	509	572	628	681	725	764	763
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand												
	Average Day (mgd)	**0.012**	**0.020**	**0.025**	**0.031**	**0.036**	**0.040**	**0.043**	**0.047**	**0.049**	**0.052**	**0.051**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012
	No-Discharge WWTP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Total	**0.012**	**0.012**	**0.012**	**0.012**	**0.012**	**0.012**	**0.012**	**0.012**	**0.012**	**0.012**	**0.012**
Suburban - No Action Surplus or Unmet Need		**0.000**	**(0.008)**	**(0.013)**	**(0.019)**	**(0.024)**	**(0.028)**	**(0.031)**	**(0.035)**	**(0.037)**	**(0.040)**	**(0.039)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.008	0.013	0.019	0.024	0.028	0.031	0.035	0.037	0.040	0.039
	No-Discharge WWTP		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Total	**0.000**	**0.008**	**0.013**	**0.019**	**0.024**	**0.028**	**0.031**	**0.035**	**0.037**	**0.040**	**0.039**
Suburban - Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA												
Population		1,130	1,303	1,410	1,539	1,639	1,733	1,818	1,897	1,963	2,021	2,020
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Wastewater Service Demand												
	Average Day (mgd)	**0.081**	**0.093**	**0.100**	**0.109**	**0.115**	**0.121**	**0.126**	**0.130**	**0.134**	**0.137**	**0.136**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081
	Total	**0.081**	**0.081**	**0.081**	**0.081**	**0.081**	**0.081**	**0.081**	**0.081**	**0.081**	**0.081**	**0.081**
No Action Surplus or Unmet Need		**0.000**	**(0.012)**	**(0.019)**	**(0.028)**	**(0.034)**	**(0.040)**	**(0.045)**	**(0.049)**	**(0.053)**	**(0.056)**	**(0.055)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.012	0.019	0.028	0.034	0.040	0.045	0.049	0.053	0.056	0.055
	Total	**0.000**	**0.012**	**0.019**	**0.028**	**0.034**	**0.040**	**0.045**	**0.049**	**0.053**	**0.056**	**0.055**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA												
Wastewater Service Demand (avg day mgd)		**0.093**	**0.114**	**0.126**	**0.140**	**0.151**	**0.160**	**0.169**	**0.177**	**0.183**	**0.188**	**0.187**
Use of Existing and Capacity (avg day mgd)												
	OSSFs	0.093	0.114	0.126	0.140	0.151	0.160	0.169	0.177	0.183	0.188	0.187
	No-Discharge WWTP	-	-	-	-	-	-	-	-	-	-	-
	Total Use of Existing & New Supply	**0.093**	**0.114**	**0.126**	**0.140**	**0.151**	**0.160**	**0.169**	**0.177**	**0.183**	**0.188**	**0.187**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE A-23
WATER MANAGEMENT PLAN
PLANNING AREA 2325
SCENARIO MID

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	4,278	5,224	5,814	6,520	7,067	7,583	8,048	8,482	8,846	9,162	9,068
Annual Growth Rate	2.8%	4.1%	2.2%	2.3%	1.6%	1.4%	1.2%	1.1%	0.8%	0.7%	-0.2%
Suburban % of Planning Area Population	21.7%	32.3%	37.1%	41.7%	44.7%	47.1%	49.0%	50.6%	51.8%	52.8%	52.5%
% of New Growth that is Suburban		80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%
% Reduction in Base Water Use		0.75%	1.50%	2.25%	3.00%	3.75%	4.50%	5.25%	6.00%	6.75%	7.50%
% of Growth on Rainwater Systems	10.0%	11.0%	12.0%	13.0%	14.0%	15.0%	16.0%	17.0%	18.0%	19.0%	20.0%
% of Growth on Central Water Systems	0.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%
% of Exist. Demand Converting to Central Wtr Systems		2.5%	2.8%	3.0%	3.3%	3.5%	3.8%	4.0%	4.3%	4.5%	5.0%
Rural % of Planning Area Population	78.3%	67.7%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
% of New Growth that is Rural		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
% Reduction in Base Water Use		1.00%	2.00%	3.00%	4.00%	5.00%	6.00%	7.00%	8.00%	9.00%	10.00%
% of Growth on Rainwater Systems	10.0%	11.0%	12.0%	13.0%	14.0%	15.0%	16.0%	17.0%	18.0%	19.0%	20.0%
SUBURBAN AREA											
Population	928	1,686	2,157	2,722	3,160	3,572	3,944	4,291	4,583	4,836	4,761
Base Per Capita Water Use (gpcd)	132	131	129	128	127	127	126	126	126	126	126
Per Capita Water Use w/Addit. Conservation		130	127	125	123	122	120	119	118	118	117
Water Demand											
Annual (ac-ft)	137.2	246.4	311.7	390.3	449.5	506.2	556.7	605.7	646.9	682.5	671.9
Average Day (mgd)	**0.123**	**0.220**	**0.278**	**0.348**	**0.401**	**0.452**	**0.497**	**0.541**	**0.578**	**0.609**	**0.600**
Use of Existing Water Supply (mgd)											
Rainwater Collection Systems	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012
Trinity GW - Suburban	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110
Total	**0.123**	**0.123**	**0.123**	**0.123**	**0.123**	**0.123**	**0.123**	**0.123**	**0.123**	**0.123**	**0.123**
No Action Surplus or Unmet Need	**0.000**	**(0.097)**	**(0.156)**	**(0.226)**	**(0.279)**	**(0.329)**	**(0.375)**	**(0.418)**	**(0.455)**	**(0.487)**	**(0.477)**
Use of Additional Water Management Measures (mgd)											
Additional Water Conservation		0.002	0.004	0.008	0.012	0.017	0.022	0.028	0.035	0.041	0.045
Rainwater Collection Systems		0.011	0.018	0.027	0.034	0.042	0.049	0.056	0.063	0.069	0.067
Trinity GW - Suburban		0.067	0.104	0.147	0.177	0.203	0.224	0.243	0.256	0.265	0.249
Canyon Lake WSC		0.018	0.030	0.044							
GBRA					0.056	0.068	0.079	0.091	0.101	0.112	0.116
Total	**0.000**	**0.097**	**0.156**	**0.226**	**0.279**	**0.329**	**0.375**	**0.418**	**0.455**	**0.487**	**0.477**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	3,349	3,538	3,656	3,798	3,907	4,010	4,103	4,190	4,263	4,326	4,307
Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
Per Capita Water Use w/Addit. Conservation		118	116	114	111	109	107	105	103	101	99
Water Demand											
Annual (ac-ft)	450.2	471.7	483.3	497.7	507.7	516.6	523.9	530.3	534.8	537.9	530.7
Average Day (mgd)	**0.402**	**0.421**	**0.431**	**0.444**	**0.453**	**0.461**	**0.468**	**0.474**	**0.477**	**0.480**	**0.474**
Existing Water Supply (avg day mgd)											
Rainwater Collection Systems	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040
Trinity GW - Rural	0.362	0.362	0.362	0.362	0.362	0.362	0.362	0.362	0.362	0.362	0.362
Total	**0.402**	**0.402**	**0.402**	**0.402**	**0.402**	**0.402**	**0.402**	**0.402**	**0.402**	**0.402**	**0.402**
No Action Surplus or Unmet Need	**0.000**	**(0.019)**	**(0.030)**	**(0.042)**	**(0.051)**	**(0.059)**	**(0.066)**	**(0.072)**	**(0.076)**	**(0.078)**	**(0.072)**
Use of Additional Water Management Measures (avg day mgd)											
Additional Water Conservation		0.004	0.009	0.013	0.018	0.023	0.028	0.033	0.038	0.043	0.047
Rainwater Collection Systems		0.002	0.003	0.005	0.006	0.007	0.009	0.009	0.010	0.011	0.009
Trinity GW - Rural		0.013	0.018	0.024	0.027	0.029	0.029	0.029	0.027	0.024	0.015
Total	**0.000**	**0.019**	**0.030**	**0.042**	**0.051**	**0.059**	**0.066**	**0.072**	**0.076**	**0.078**	**0.072**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Water Service Demand (avg day mgd)	**0.524**	**0.641**	**0.710**	**0.793**	**0.855**	**0.913**	**0.965**	**1.014**	**1.055**	**1.090**	**1.074**
Use of Existing and New Supply (avg day mgd)											
Additional Water Conservation	-	0.006	0.013	0.021	0.030	0.040	0.050	0.062	0.073	0.084	0.092
Rainwater Collection Systems	0.052	0.065	0.074	0.084	0.093	0.102	0.110	0.118	0.126	0.132	0.129
Trinity GW	0.472	0.552	0.594	0.643	0.676	0.704	0.725	0.744	0.755	0.761	0.736
Canyon Lake WSC	-	0.018	0.030	0.044	-	-	-	-	-	-	-
GBRA	-	-	-	-	0.056	0.068	0.079	0.091	0.101	0.112	0.116
Total Use of Existing & New Supply	**0.524**	**0.641**	**0.710**	**0.793**	**0.855**	**0.913**	**0.965**	**1.014**	**1.055**	**1.090**	**1.074**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE A-24
WASTEWATER MANAGEMENT PLAN
PLANNING AREA 2325
SCENARIO MID

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	4,278	5,224	5,814	6,520	7,067	7,583	8,048	8,482	8,846	9,162	9,068
Annual Growth Rate	2.8%	4.1%	2.2%	2.3%	1.6%	1.4%	1.2%	1.1%	0.8%	0.7%	-0.2%
Suburban % of Planning Area Population	21.7%	32.3%	37.1%	41.7%	44.7%	47.1%	49.0%	50.6%	51.8%	52.8%	52.5%
% of New Growth that is Suburban		80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%
% of Growth served by Central Wastewater Systems		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
Rural % of Planning Area Population	78.3%	67.7%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
% of New Growth that is Rural		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA											
Population	928	1,686	2,157	2,722	3,160	3,572	3,944	4,291	4,583	4,836	4,761
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand											
Average Day (mgd)	**0.066**	**0.121**	**0.153**	**0.192**	**0.221**	**0.249**	**0.273**	**0.295**	**0.312**	**0.327**	**0.320**
Existing Wastewater Treatment (mgd)											
OSSFs	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066
No-Discharge WWTP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	**0.066**	**0.066**	**0.066**	**0.066**	**0.066**	**0.066**	**0.066**	**0.066**	**0.066**	**0.066**	**0.066**
Suburban - No Action Surplus or Unmet Need	**0.000**	**(0.054)**	**(0.087)**	**(0.126)**	**(0.155)**	**(0.182)**	**(0.206)**	**(0.228)**	**(0.246)**	**(0.261)**	**(0.254)**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.043	0.069	0.101	0.124	0.146	0.165	0.183	0.197	0.209	0.203
No-Discharge WWTP		0.011	0.017	0.025	0.031	0.036	0.041	0.046	0.049	0.052	0.051
Total	**0.000**	**0.054**	**0.087**	**0.126**	**0.155**	**0.182**	**0.206**	**0.228**	**0.246**	**0.261**	**0.254**
Suburban - Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	3,349	3,538	3,656	3,798	3,907	4,010	4,103	4,190	4,263	4,326	4,307
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Wastewater Service Demand											
Average Day (mgd)	**0.240**	**0.253**	**0.260**	**0.268**	**0.274**	**0.279**	**0.284**	**0.288**	**0.291**	**0.293**	**0.289**
Existing Wastewater Treatment (mgd)											
OSSFs	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240
Total	**0.240**	**0.240**	**0.240**	**0.240**	**0.240**	**0.240**	**0.240**	**0.240**	**0.240**	**0.240**	**0.240**
No Action Surplus or Unmet Need	**0.000**	**(0.014)**	**(0.020)**	**(0.028)**	**(0.034)**	**(0.040)**	**(0.044)**	**(0.048)**	**(0.051)**	**(0.053)**	**(0.050)**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.014	0.020	0.028	0.034	0.040	0.044	0.048	0.051	0.053	0.050
Total	**0.000**	**0.014**	**0.020**	**0.028**	**0.034**	**0.040**	**0.044**	**0.048**	**0.051**	**0.053**	**0.050**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Wastewater Service Demand (avg day mgd)	**0.306**	**0.374**	**0.413**	**0.460**	**0.495**	**0.528**	**0.556**	**0.582**	**0.603**	**0.620**	**0.609**
Use of Existing and Capacity (avg day mgd)											
OSSFs	0.306	0.363	0.396	0.435	0.464	0.491	0.515	0.537	0.554	0.568	0.559
No-Discharge WWTP	-	0.011	0.017	0.025	0.031	0.036	0.041	0.046	0.049	0.052	0.051
Total Use of Existing & New Supply	**0.306**	**0.374**	**0.413**	**0.460**	**0.495**	**0.528**	**0.556**	**0.582**	**0.603**	**0.620**	**0.609**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE A-25
WATER MANAGEMENT PLAN
PLANNING AREA WIMBERLEY AREA
SCENARIO MID

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	10,313	12,596	14,017	15,721	17,039	18,282	19,404	20,449	21,329	22,090	21,895
Annual Growth Rate	2.2%	4.1%	2.2%	2.3%	1.6%	1.4%	1.2%	1.1%	0.8%	0.7%	-0.2%
Suburban % of Planning Area Population	77.9%	80.1%	82.3%	84.6%	86.8%	89.0%	91.2%	93.4%	95.6%	97.8%	100.0%
Rural % of Planning Area Population	22.1%	19.9%	17.7%	15.4%	13.2%	11.0%	8.8%	6.6%	4.4%	2.2%	0.0%
SUBURBAN AREA											
Population	8,038	10,095	11,542	13,292	14,783	16,265	17,691	19,095	20,388	21,603	21,895
Base Per Capita Water Use (gpcd)	132	131	129	128	127	127	126	126	126	126	126
Per Capita Water Use w/Addit. Conservation		184	176	168	163	158	154	150	147	145	143
Water Demand											
Annual (ac-ft)	1,790.7	2,090.6	2,294.4	2,541.4	2,746.4	2,949.0	3,140.4	3,333.2	3,508.2	3,670.4	3,699.1
Average Day (mgd)	**1.599**	**1.867**	**2.049**	**2.269**	**2.452**	**2.633**	**2.804**	**2.976**	**3.132**	**3.277**	**3.303**
Use of Existing Water Supply (mgd)											
Rainwater Collection Systems	0.036	0.048	0.058	0.070	0.082	0.096	0.110	0.124	0.139	0.154	0.164
Trinity GW - Suburban	1.562	1.562	1.562	1.562	1.562	1.562	1.562	1.562	1.562	1.562	1.562
Total	**1.599**	**1.610**	**1.620**	**1.633**	**1.645**	**1.658**	**1.672**	**1.687**	**1.702**	**1.717**	**1.726**
No Action Surplus or Unmet Need	**0.000**	**(0.257)**	**(0.429)**	**(0.637)**	**(0.807)**	**(0.975)**	**(1.132)**	**(1.289)**	**(1.431)**	**(1.560)**	**(1.577)**
Use of Additional Water Management Measures (mgd)											
Additional Water Conservation		0.009	0.020	0.034	0.049	0.066	0.084	0.104	0.125	0.147	0.165
Rainwater Collection Systems		0.010	0.017	0.027	0.036	0.045	0.054	0.064	0.074	0.083	0.084
Trinity GW - Suburban		(0.313)	(0.546)	(0.547)	(0.547)	(0.547)	(0.547)	(0.547)	(0.697)	(0.697)	(0.704)
Water Loss Management		0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150
Centralized Reuse		-	0.100	0.100	0.100	0.100	0.100	0.100	0.250	0.250	0.250
Canyon Lake WSC		0.401	0.687	0.872	-	-	-	-	-	-	-
GBRA		0.000	0.000	0.000	1.019	1.160	1.290	1.417	1.528	1.627	1.631
Total	**0.000**	**0.257**	**0.429**	**0.637**	**0.807**	**0.975**	**1.132**	**1.289**	**1.431**	**1.560**	**1.577**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	2,277	2,501	2,475	2,428	2,256	2,017	1,712	1,354	941	488	-
Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
Per Capita Water Use w/Addit. Conservation		118	116	114	113	111	109	107	105	104	-
Water Demand											
Annual (ac-ft)	306.0	333.4	327.1	318.2	293.1	259.8	218.7	171.4	118.1	60.6	-
Average Day (mgd)	**0.273**	**0.298**	**0.292**	**0.284**	**0.262**	**0.232**	**0.195**	**0.153**	**0.105**	**0.054**	**-**
Existing Water Supply (avg day mgd)											
Rainwater Collection Systems	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027
Trinity GW - Rural	0.246	0.246	0.246	0.246	0.246	0.246	0.246	0.246	0.246	0.246	0.246
Total	**0.273**	**0.273**	**0.273**	**0.273**	**0.273**	**0.273**	**0.273**	**0.273**	**0.273**	**0.273**	**0.273**
No Action Surplus or Unmet Need	**0.000**	**(0.024)**	**(0.019)**	**(0.011)**	**0.012**	**0.041**	**0.078**	**0.120**	**0.168**	**0.219**	**0.273**
Use of Additional Water Management Measures (avg day mgd)											
Additional Water Conservation		0.002	0.004	0.006	0.008	0.009	0.009	0.008	0.006	0.004	0.000
Rainwater Collection Systems		0.003	0.002	0.001	(0.002)	(0.007)	(0.012)	(0.020)	(0.028)	(0.038)	(0.049)
Trinity GW - Rural		0.020	0.012	0.004	(0.017)	(0.043)	(0.074)	(0.109)	(0.146)	(0.185)	(0.224)
Total	**0.000**	**0.024**	**0.019**	**0.011**	**(0.012)**	**(0.041)**	**(0.078)**	**(0.120)**	**(0.168)**	**(0.219)**	**(0.273)**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Water Service Demand (avg day mgd)	**1.872**	**2.164**	**2.341**	**2.553**	**2.714**	**2.865**	**2.999**	**3.129**	**3.238**	**3.331**	**3.303**
Use of Existing and New Supply (avg day mgd)											
Additional Water Conservation	-	0.012	0.025	0.040	0.057	0.075	0.093	0.112	0.132	0.151	0.165
Rainwater Collection Systems	0.064	0.088	0.104	0.125	0.143	0.162	0.179	0.196	0.212	0.227	0.227
Trinity GW	1.808	1.514	1.274	1.265	1.244	1.218	1.187	1.153	0.966	0.927	0.880
Water Loss Management	-	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150
Centralized Reuse	-	-	0.100	0.100	0.100	0.100	0.100	0.100	0.250	0.250	0.250
Canyon Lake WSC	-	0.401	0.687	0.872	-	-	-	-	-	-	-
GBRA	-	-	-	-	1.019	1.160	1.290	1.417	1.528	1.627	1.631
Total Use of Existing & New Supply	**1.872**	**2.164**	**2.341**	**2.553**	**2.714**	**2.865**	**2.999**	**3.129**	**3.238**	**3.331**	**3.303**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE A-26
WASTEWATER MANAGEMENT PLAN
PLANNING AREA WIMBERLEY AREA
SCENARIO MID

Planning Area		Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS												
Planning Area	Est./Projected Population	10,313	12,596	14,017	15,721	17,039	18,282	19,404	20,449	21,329	22,090	21,895
	Annual Growth Rate	2.2%	4.1%	2.2%	2.3%	1.6%	1.4%	1.2%	1.1%	0.8%	0.7%	-0.2%
Suburban	% of Planning Area Population	77.9%	80.1%	82.3%	84.6%	86.8%	89.0%	91.2%	93.4%	95.6%	97.8%	100.0%
Rural	% of Planning Area Population	22.1%	19.9%	17.7%	15.4%	13.2%	11.0%	8.8%	6.6%	4.4%	2.2%	0.0%
SUBURBAN AREA												
Population		8,038	10,095	11,542	13,292	14,783	16,265	17,691	19,095	20,388	21,603	21,895
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand												
	Average Day (mgd)	**0.575**	**0.722**	**0.820**	**0.938**	**1.036**	**1.132**	**1.223**	**1.311**	**1.390**	**1.462**	**1.471**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.522	0.522	0.522	0.522	0.522	0.522	0.522	0.522	0.522	0.522	0.522
	No-Discharge WWTP	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052
	Total	**0.575**	**0.575**	**0.575**	**0.575**	**0.575**	**0.575**	**0.575**	**0.575**	**0.575**	**0.575**	**0.575**
Suburban - No Action Surplus or Unmet Need		**0.000**	**(0.147)**	**(0.245)**	**(0.363)**	**(0.461)**	**(0.557)**	**(0.648)**	**(0.736)**	**(0.815)**	**(0.887)**	**(0.897)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.081	0.104	0.126	0.119	0.097	0.058	0.005	(0.063)	(0.145)	(0.248)
	No-Discharge WWTP		0.066	0.141	0.237	0.342	0.461	0.590	0.731	0.878	1.032	1.145
	Total	**0.000**	**0.147**	**0.245**	**0.363**	**0.461**	**0.557**	**0.648**	**0.736**	**0.815**	**0.887**	**0.897**
Suburban - Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA												
Population		2,277	2,501	2,475	2,428	2,256	2,017	1,712	1,354	941	488	-
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	0
Wastewater Service Demand												
	Average Day (mgd)	**0.163**	**0.179**	**0.176**	**0.171**	**0.158**	**0.140**	**0.118**	**0.093**	**0.064**	**0.033**	**0.000**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.163	0.163	0.163	0.163	0.163	0.163	0.163	0.163	0.163	0.163	0.163
	Total	**0.163**	**0.163**	**0.163**	**0.163**	**0.163**	**0.163**	**0.163**	**0.163**	**0.163**	**0.163**	**0.163**
No Action Surplus or Unmet Need		**0.000**	**(0.016)**	**(0.013)**	**(0.009)**	**0.005**	**0.022**	**0.044**	**0.070**	**0.099**	**0.130**	**0.163**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.016	0.013	0.009	(0.005)	(0.022)	(0.044)	(0.070)	(0.099)	(0.130)	(0.163)
	Total	**0.000**	**0.016**	**0.013**	**0.009**	**(0.005)**	**(0.022)**	**(0.044)**	**(0.070)**	**(0.099)**	**(0.130)**	**(0.163)**
Surplus or Unmet Need		**0.000**	**0.000**	**(0.000)**	**(0.000)**	**(0.000)**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA												
Wastewater Service Demand (avg day mgd)		**0.738**	**0.901**	**0.996**	**1.109**	**1.194**	**1.272**	**1.341**	**1.404**	**1.454**	**1.495**	**1.471**
Use of Existing and Capacity (avg day mgd)												
	OSSFs	0.685	0.783	0.802	0.820	0.799	0.759	0.699	0.620	0.523	0.411	0.274
	No-Discharge WWTP	0.052	0.118	0.194	0.289	0.395	0.513	0.642	0.783	0.930	1.084	1.197
	Total Use of Existing & New Supply	**0.738**	**0.901**	**0.996**	**1.109**	**1.194**	**1.272**	**1.341**	**1.404**	**1.454**	**1.495**	**1.471**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE A-27
WATER MANAGEMENT PLAN
PLANNING AREA **WIMBERLEY WSC**
SCENARIO **MID**

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	5,642	6,891	7,668	8,600	9,321	10,001	10,615	11,187	11,668	12,084	11,978
Annual Growth Rate	1.0%	4.1%	2.2%	2.3%	1.6%	1.4%	1.2%	1.1%	0.8%	0.7%	-0.2%
Suburban % of Planning Area Population	74.2%	76.8%	79.4%	81.9%	84.5%	87.1%	89.7%	92.3%	94.8%	97.4%	100.0%
% of New Growth that is Suburban		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
% Reduction in Base Water Use		0.50%	1.00%	1.50%	2.00%	2.50%	3.00%	3.50%	4.00%	4.50%	5.00%
% of Growth on Rainwater Systems	5.0%	5.5%	6.0%	6.5%	7.0%	7.5%	8.0%	8.5%	9.0%	9.5%	10.0%
% of Growth on Central Water Systems		239.0%	64.0%	65.0%	57.0%	53.0%	47.0%	42.0%	34.0%	27.0%	0.0%
% of Exist. Demand Converting to Central Wtr Systems		2.5%	2.8%	3.0%	3.3%	3.5%	3.8%	4.0%	4.3%	4.5%	0.0%
Rural % of Planning Area Population	25.8%	23.2%	20.6%	18.1%	15.5%	12.9%	10.3%	7.7%	5.2%	2.6%	0.0%
% of New Growth that is Rural		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
% Reduction in Base Water Use		0.75%	1.50%	2.25%	3.00%	3.75%	4.50%	5.25%	6.00%	6.75%	7.50%
% of Growth on Rainwater Systems	10.0%	11.0%	12.0%	13.0%	14.0%	15.0%	16.0%	17.0%	18.0%	19.0%	20.0%
SUBURBAN AREA											
Population	4,186	5,291	6,085	7,047	7,878	8,711	9,519	10,321	11,066	11,773	11,978
Base Per Capita Water Use (gpcd)	141	140	139	138	137	136	135	134	133	132	131
Per Capita Water Use w/Addit. Conservation		139	138	136	134	133	131	129	128	126	124
Water Demand											
Annual (ac-ft)	661.2	829.7	947.4	1,089.3	1,209.0	1,327.0	1,439.5	1,549.2	1,648.6	1,740.7	1,757.6
Average Day (mgd)	**0.590**	**0.741**	**0.846**	**0.973**	**1.079**	**1.185**	**1.285**	**1.383**	**1.472**	**1.554**	**1.569**
	0.590										
Use of Existing Water Supply (mgd)											
Rainwater Collection Systems	0.030	0.041	0.051	0.063	0.076	0.089	0.103	0.118	0.132	0.148	0.157
Trinity GW - Suburban	0.561	0.561	0.561	0.561	0.561	0.561	0.561	0.561	0.561	0.561	0.561
Total	**0.590**	**0.602**	**0.612**	**0.624**	**0.636**	**0.650**	**0.664**	**0.678**	**0.693**	**0.708**	**0.718**
No Action Surplus or Unmet Need	**0.000**	**(0.139)**	**(0.234)**	**(0.349)**	**(0.443)**	**(0.535)**	**(0.622)**	**(0.705)**	**(0.779)**	**(0.846)**	**(0.852)**
Use of Additional Water Management Measures (mgd)											
Additional Water Conservation		0.004	0.008	0.015	0.022	0.030	0.039	0.048	0.059	0.070	0.078
Rainwater Collection Systems		0.008	0.015	0.023	0.030	0.038	0.046	0.055	0.063	0.070	0.072
Trinity GW - Suburban		(0.247)	(0.247)	(0.247)	(0.247)	(0.247)	(0.247)	(0.247)	(0.247)	(0.247)	(0.251)
Canyon Lake WSC		0.374	0.458	0.558							
GBRA					0.638	0.715	0.784	0.849	0.904	0.953	0.953
Total	**0.000**	**0.139**	**0.234**	**0.349**	**0.443**	**0.535**	**0.622**	**0.705**	**0.779**	**0.846**	**0.852**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
		0.314	0.314	0.314	0.314	0.314	0.314	0.314	0.314	0.314	0.309
RURAL AREA											
Population	1,456	1,600	1,583	1,553	1,443	1,290	1,095	866	602	312	-
Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
Per Capita Water Use w/Addit. Conservation		118	116	114	113	111	109	107	105	104	-
Water Demand											
Annual (ac-ft)	195.7	213.3	209.2	203.5	187.5	166.2	139.9	109.6	75.5	38.8	-
Average Day (mgd)	**0.175**	**0.190**	**0.187**	**0.182**	**0.167**	**0.148**	**0.125**	**0.098**	**0.067**	**0.035**	**-**
Existing Water Supply (avg day mgd)											
Rainwater Collection Systems	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017
Trinity GW - Rural	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157
Total	**0.175**	**0.175**	**0.175**	**0.175**	**0.175**	**0.175**	**0.175**	**0.175**	**0.175**	**0.175**	**0.175**
No Action Surplus or Unmet Need	**0.000**	**(0.016)**	**(0.012)**	**(0.007)**	**0.007**	**0.026**	**0.050**	**0.077**	**0.107**	**0.140**	**0.175**
Use of Additional Water Management Measures (avg day mgd)											
Additional Water Conservation		0.001	0.003	0.004	0.005	0.006	0.006	0.005	0.004	0.002	0.000
Rainwater Collection Systems		0.002	0.001	0.001	(0.001)	(0.004)	(0.008)	(0.013)	(0.018)	(0.024)	(0.031)
Trinity GW - Rural		0.013	0.008	0.002	(0.011)	(0.028)	(0.047)	(0.069)	(0.093)	(0.118)	(0.143)
Total	**0.000**	**0.016**	**0.012**	**0.007**	**(0.007)**	**(0.026)**	**(0.050)**	**(0.077)**	**(0.107)**	**(0.140)**	**(0.175)**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Water Service Demand (avg day mgd)	**0.765**	**0.931**	**1.033**	**1.154**	**1.247**	**1.333**	**1.410**	**1.481**	**1.539**	**1.589**	**1.569**
Use of Existing and New Supply (avg day mgd)											
Additional Water Conservation	-	0.005	0.011	0.019	0.027	0.035	0.044	0.054	0.063	0.072	0.078
Rainwater Collection Systems	0.047	0.068	0.084	0.104	0.122	0.140	0.159	0.177	0.194	0.211	0.215
Trinity GW	0.718	0.483	0.479	0.474	0.460	0.443	0.424	0.402	0.378	0.353	0.323
Canyon Lake WSC	-	0.374	0.458	0.558	-	-	-	-	-	-	-
GBRA	-	-	-	-	0.638	0.715	0.784	0.849	0.904	0.953	0.953
Total Use of Existing & New Supply	**0.765**	**0.931**	**1.033**	**1.154**	**1.247**	**1.333**	**1.410**	**1.481**	**1.539**	**1.589**	**1.569**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE A-28
WASTEWATER MANAGEMENT PLAN
PLANNING AREA WIMBERLEY WSC
SCENARIO MID

Planning Area		Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS												
Planning Area	Est./Projected Population	5,642	6,891	7,668	8,600	9,321	10,001	10,615	11,187	11,668	12,084	11,978
	Annual Growth Rate	1.0%	4.1%	2.2%	2.3%	1.6%	1.4%	1.2%	1.1%	0.8%	0.7%	-0.2%
Suburban	% of Planning Area Population	74.2%	76.8%	79.4%	81.9%	84.5%	87.1%	89.7%	92.3%	94.8%	97.4%	100.0%
	% of New Growth that is Suburban		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Growth served by Central Wastewater Systems	8.3%	14.5%	20.6%	26.8%	33.0%	39.2%	45.3%	51.5%	57.7%	63.8%	70.0%
Rural	% of Planning Area Population	25.8%	23.2%	20.6%	18.1%	15.5%	12.9%	10.3%	7.7%	5.2%	2.6%	0.0%
	% of New Growth that is Rural		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA												
Population		4,186	5,291	6,085	7,047	7,878	8,711	9,519	10,321	11,066	11,773	11,978
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand												
	Average Day (mgd)	**0.299**	**0.378**	**0.432**	**0.497**	**0.552**	**0.606**	**0.658**	**0.708**	**0.754**	**0.797**	**0.805**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275
	No-Discharge WWTP	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
	Total	**0.299**	**0.299**	**0.299**	**0.299**	**0.299**	**0.299**	**0.299**	**0.299**	**0.299**	**0.299**	**0.299**
Suburban - No Action Surplus or Unmet Need		**0.000**	**(0.079)**	**(0.133)**	**(0.198)**	**(0.253)**	**(0.307)**	**(0.359)**	**(0.409)**	**(0.455)**	**(0.497)**	**(0.506)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.049	0.069	0.089	0.095	0.094	0.085	0.069	0.045	0.014	(0.033)
	No-Discharge WWTP		0.030	0.064	0.108	0.157	0.213	0.273	0.340	0.410	0.484	0.539
	Total	**0.000**	**0.079**	**0.133**	**0.198**	**0.253**	**0.307**	**0.359**	**0.409**	**0.455**	**0.497**	**0.506**
Suburban - Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA												
Population		1,456	1,600	1,583	1,553	1,443	1,290	1,095	866	602	312	-
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Wastewater Service Demand												
	Average Day (mgd)	**0.104**	**0.114**	**0.112**	**0.110**	**0.101**	**0.090**	**0.076**	**0.059**	**0.041**	**0.021**	**0.000**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.104	0.104	0.104	0.104	0.104	0.104	0.104	0.104	0.104	0.104	0.104
	Total	**0.104**	**0.104**	**0.104**	**0.104**	**0.104**	**0.104**	**0.104**	**0.104**	**0.104**	**0.104**	**0.104**
No Action Surplus or Unmet Need		**0.000**	**(0.010)**	**(0.008)**	**(0.005)**	**0.003**	**0.014**	**0.028**	**0.045**	**0.063**	**0.083**	**0.104**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.010	0.008	0.005	(0.003)	(0.014)	(0.028)	(0.045)	(0.063)	(0.083)	(0.104)
	Total	**0.000**	**0.010**	**0.008**	**0.005**	**(0.003)**	**(0.014)**	**(0.028)**	**(0.045)**	**(0.063)**	**(0.083)**	**(0.104)**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA												
Wastewater Service Demand (avg day mgd)		**0.403**	**0.493**	**0.545**	**0.607**	**0.653**	**0.696**	**0.734**	**0.768**	**0.795**	**0.818**	**0.805**
Use of Existing and Capacity (avg day mgd)												
	OSSFs	0.379	0.438	0.455	0.474	0.471	0.459	0.435	0.403	0.360	0.309	0.241
	No-Discharge WWTP	0.025	0.055	0.089	0.133	0.182	0.237	0.298	0.365	0.435	0.509	0.563
	Total Use of Existing & New Supply	**0.403**	**0.493**	**0.545**	**0.607**	**0.653**	**0.696**	**0.734**	**0.768**	**0.795**	**0.818**	**0.805**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE A-29
WATER MANAGEMENT PLAN
PLANNING AREA **CITY OF WOODCREEK & GOLF COURSE**
SCENARIO **MID**

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	2,370	2,895	3,221	3,613	3,916	4,202	4,459	4,700	4,902	5,077	5,032
Annual Growth Rate	1.8%	4.1%	2.2%	2.3%	1.6%	1.4%	1.2%	1.1%	0.8%	0.7%	-0.2%
Suburban % of Planning Area Population	75.0%	77.5%	80.0%	82.5%	85.0%	87.5%	90.0%	92.5%	95.0%	97.5%	100.0%
% of New Growth that is Suburban		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
% Reduction in Base Water Use		0.50%	1.00%	1.50%	2.00%	2.50%	3.00%	3.50%	4.00%	4.50%	5.00%
% of Growth on Rainwater Systems	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
% of Growth on Central Water Systems		46.0%	90.0%	89.0%	88.0%	86.0%	84.0%	84.0%	83.0%	80.0%	40.0%
% of Exist. Demand Converting to Central Wtr Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rural % of Planning Area Population	25.0%	22.5%	20.0%	17.5%	15.0%	12.5%	10.0%	7.5%	5.0%	2.5%	0.0%
% of New Growth that is Rural		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
% Reduction in Base Water Use		0.75%	1.50%	2.25%	3.00%	3.75%	4.50%	5.25%	6.00%	6.75%	7.50%
% of Growth on Rainwater Systems	10.0%	11.0%	12.0%	13.0%	14.0%	15.0%	16.0%	17.0%	18.0%	19.0%	20.0%
SUBURBAN AREA											
Population	1,778	2,244	2,577	2,981	3,329	3,677	4,014	4,347	4,657	4,950	5,032
Base Per Capita Water Use (gpcd)	127	126	125	124	123	122	121	121	121	121	121
Per Capita Water Use w/Addit. Conservation		351	319	290	270	254	240	230	221	214	211
Water Demand											
Annual (ac-ft) also includes golf course demand	822.9	886.7	930.8	984.1	1,028.7	1,072.5	1,114.0	1,159.2	1,201.2	1,240.9	1,252.0
Average Day (mgd)	**0.735**	**0.792**	**0.831**	**0.879**	**0.918**	**0.958**	**0.995**	**1.035**	**1.072**	**1.108**	**1.118**
Use of Existing Water Supply (mgd)											
Rainwater Collection Systems	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Trinity GW - Suburban	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735
Total	**0.735**	**0.735**	**0.735**	**0.735**	**0.735**	**0.735**	**0.735**	**0.735**	**0.735**	**0.735**	**0.735**
No Action Surplus or Unmet Need	**0.000**	**(0.057)**	**(0.096)**	**(0.144)**	**(0.184)**	**(0.223)**	**(0.260)**	**(0.300)**	**(0.338)**	**(0.373)**	**(0.383)**
Use of Additional Water Management Measures (mgd)											
Additional Water Conservation		0.004	0.008	0.013	0.018	0.024	0.030	0.036	0.043	0.050	0.056
Rainwater Collection Systems		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Trinity GW - Suburban		(0.083)	(0.184)	(0.183)	(0.184)	(0.184)	(0.184)	(0.184)	(0.334)	(0.334)	(0.334)
Water Loss Management		0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110
Centralized Reuse			0.100	0.100	0.100	0.100	0.100	0.100	0.250	0.250	0.250
Canyon Lake WSC		0.026	0.062	0.104							
GBRA					0.139	0.173	0.204	0.238	0.269	0.297	0.301
Total	**0.000**	**0.057**	**0.096**	**0.144**	**0.184**	**0.223**	**0.260**	**0.300**	**0.338**	**0.373**	**0.383**
		0.151	0.151	0.151	0.151	0.151	0.151	0.151	0.151	0.151	0.151
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	593	651	644	632	587	525	446	352	245	127	-
Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
Per Capita Water Use w/Addit. Conservation		118	116	114	113	111	109	107	105	104	-
Water Demand											
Annual (ac-ft)	79.7	86.8	85.1	82.8	76.3	67.6	57.0	44.6	30.7	15.8	-
Average Day (mgd)	**0.071**	**0.077**	**0.076**	**0.074**	**0.068**	**0.060**	**0.051**	**0.040**	**0.027**	**0.014**	**-**
Existing Water Supply (avg day mgd)											
Rainwater Collection Systems	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007
Trinity GW - Rural	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064
Total	**0.071**	**0.071**	**0.071**	**0.071**	**0.071**	**0.071**	**0.071**	**0.071**	**0.071**	**0.071**	**0.071**
No Action Surplus or Unmet Need	**0.000**	**(0.006)**	**(0.005)**	**(0.003)**	**0.003**	**0.011**	**0.020**	**0.031**	**0.044**	**0.057**	**0.071**
Use of Additional Water Management Measures (avg day mgd)											
Additional Water Conservation		0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.001	0.000
Rainwater Collection Systems		0.001	0.001	0.000	(0.001)	(0.002)	(0.003)	(0.005)	(0.007)	(0.010)	(0.013)
Trinity GW - Rural		0.005	0.003	0.001	(0.005)	(0.011)	(0.019)	(0.028)	(0.038)	(0.048)	(0.058)
Total	**0.000**	**0.006**	**0.005**	**0.003**	**(0.003)**	**(0.011)**	**(0.020)**	**(0.031)**	**(0.044)**	**(0.057)**	**(0.071)**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Water Service Demand (avg day mgd)	**0.806**	**0.869**	**0.907**	**0.953**	**0.987**	**1.018**	**1.046**	**1.075**	**1.100**	**1.122**	**1.118**
Use of Existing and New Supply (avg day mgd)											
Additional Water Conservation	-	0.005	0.009	0.015	0.020	0.026	0.032	0.038	0.045	0.051	0.056
Rainwater Collection Systems	0.007	0.008	0.008	0.007	0.007	0.005	0.004	0.002	(0.000)	(0.003)	(0.006)
Trinity GW	0.799	0.720	0.618	0.616	0.610	0.604	0.596	0.587	0.427	0.417	0.406
Water Loss Management	-	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110	0.110
Centralized Reuse	-	-	0.100	0.100	0.100	0.100	0.100	0.100	0.250	0.250	0.250
Canyon Lake WSC	-	0.026	0.062	0.104	-	-	-	-	-	-	-
GBRA	-	-	-	-	0.139	0.173	0.204	0.238	0.269	0.297	0.301
Total Use of Existing & New Supply	**0.806**	**0.869**	**0.907**	**0.953**	**0.987**	**1.018**	**1.046**	**1.075**	**1.100**	**1.122**	**1.118**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE A-30
WASTEWATER MANAGEMENT PLAN
PLANNING AREA CITY OF WOODCREEK
SCENARIO MID

Planning Area		Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS												
Planning Area	Est./Projected Population	2,370	2,895	3,221	3,613	3,916	4,202	4,459	4,700	4,902	5,077	5,032
	Annual Growth Rate	1.8%	4.1%	2.2%	2.3%	1.6%	1.4%	1.2%	1.1%	0.8%	0.7%	-0.2%
Suburban	% of Planning Area Population	75.0%	77.5%	80.0%	82.5%	85.0%	87.5%	90.0%	92.5%	95.0%	97.5%	100.0%
	% of New Growth that is Suburban		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Demand served by Central Wastewater Systems	10.0%	19.0%	28.0%	37.0%	46.0%	55.0%	64.0%	73.0%	82.0%	91.0%	100.0%
Rural	% of Planning Area Population	25.0%	22.5%	20.0%	17.5%	15.0%	12.5%	10.0%	7.5%	5.0%	2.5%	0.0%
	% of New Growth that is Rural		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	% of Demand served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA												
Population		1,778	2,244	2,577	2,981	3,329	3,677	4,014	4,347	4,657	4,950	5,032
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand												
	Average Day (mgd)	**0.127**	**0.160**	**0.183**	**0.210**	**0.233**	**0.256**	**0.277**	**0.298**	**0.317**	**0.335**	**0.338**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.114	0.114	0.114	0.114	0.114	0.114	0.114	0.114	0.114	0.114	0.114
	No-Discharge WWTP	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013
	Total	**0.127**	**0.127**	**0.127**	**0.127**	**0.127**	**0.127**	**0.127**	**0.127**	**0.127**	**0.127**	**0.127**
Suburban - No Action Surplus or Unmet Need		**0.000**	**(0.033)**	**(0.056)**	**(0.083)**	**(0.106)**	**(0.129)**	**(0.150)**	**(0.171)**	**(0.190)**	**(0.208)**	**(0.211)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.016	0.017	0.018	0.012	0.001	(0.015)	(0.034)	(0.057)	(0.084)	(0.114)
	No-Discharge WWTP		0.018	0.039	0.065	0.095	0.128	0.165	0.205	0.248	0.292	0.325
	Total	**0.000**	**0.033**	**0.056**	**0.083**	**0.106**	**0.129**	**0.150**	**0.171**	**0.190**	**0.208**	**0.211**
Suburban - Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA												
Population		593	651	644	632	587	525	446	352	245	127	-
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Wastewater Service Demand												
	Average Day (mgd)	**0.042**	**0.047**	**0.046**	**0.045**	**0.041**	**0.037**	**0.031**	**0.024**	**0.017**	**0.009**	**0.000**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042
	Total	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**
No Action Surplus or Unmet Need		**0.000**	**(0.004)**	**(0.003)**	**(0.002)**	**0.001**	**0.006**	**0.012**	**0.018**	**0.026**	**0.034**	**0.042**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.004	0.003	0.002	(0.001)	(0.006)	(0.012)	(0.018)	(0.026)	(0.034)	(0.042)
	Total	**0.000**	**0.004**	**0.003**	**0.002**	**(0.001)**	**(0.006)**	**(0.012)**	**(0.018)**	**(0.026)**	**(0.034)**	**(0.042)**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA												
Wastewater Service Demand (avg day mgd)		**0.170**	**0.207**	**0.229**	**0.255**	**0.274**	**0.292**	**0.308**	**0.323**	**0.334**	**0.344**	**0.338**
Use of Existing and Capacity (avg day mgd)												
	OSSFs	0.157	0.177	0.178	0.177	0.167	0.152	0.131	0.105	0.074	0.039	-
	No-Discharge WWTP	0.013	0.030	0.051	0.078	0.107	0.141	0.178	0.218	0.260	0.305	0.338
	Total Use of Existing & New Supply	**0.170**	**0.207**	**0.229**	**0.255**	**0.274**	**0.292**	**0.308**	**0.323**	**0.334**	**0.344**	**0.338**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE A-31
WATER MANAGEMENT PLAN
PLANNING AREA **WOODCREEK UTILITIES**
SCENARIO **MID**

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	2,301	2,811	3,127	3,508	3,802	4,079	4,329	4,563	4,759	4,929	4,885
Annual Growth Rate	6.3%	4.1%	2.2%	2.3%	1.6%	1.4%	1.2%	1.1%	0.8%	0.7%	-0.2%
Suburban % of Planning Area Population	90.1%	91.1%	92.1%	93.1%	94.1%	95.1%	96.0%	97.0%	98.0%	99.0%	100.0%
% of New Growth that is Suburban		95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%
% Reduction in Base Water Use		0.50%	1.00%	1.50%	2.00%	2.50%	3.00%	3.50%	4.00%	4.50%	5.00%
% of Growth on Rainwater Systems	2.5%	2.8%	3.0%	3.3%	3.5%	3.8%	4.0%	4.3%	4.5%	4.8%	5.0%
% of Growth on Central Water Systems			90.0%	92.0%	88.0%	86.0%	86.0%	86.0%	82.0%	78.0%	60.0%
% of Exist. Demand Converting to Central Wtr Systems		0.0%	48.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rural % of Planning Area Population	9.9%	8.9%	7.9%	6.9%	5.9%	5.0%	4.0%	3.0%	2.0%	1.0%	0.0%
% of New Growth that is Rural		5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
% Reduction in Base Water Use		0.75%	1.50%	2.25%	3.00%	3.75%	4.50%	5.25%	6.00%	6.75%	7.50%
% of Growth on Rainwater Systems	10.0%	11.0%	12.0%	13.0%	14.0%	15.0%	16.0%	17.0%	18.0%	19.0%	20.0%
SUBURBAN AREA											
Population	2,073	2,560	2,880	3,265	3,576	3,877	4,158	4,427	4,665	4,880	4,885
Base Per Capita Water Use (gpcd)	132	131	129	128	127	127	126	126	126	126	126
Per Capita Water Use w/Addit. Conservation		130	128	126	124	123	122	122	121	120	120
Water Demand											
Annual (ac-ft)	306.6	374.2	416.1	468.1	508.7	549.4	586.9	624.9	658.4	688.8	689.5
Average Day (mgd)	**0.274**	**0.334**	**0.372**	**0.418**	**0.454**	**0.491**	**0.524**	**0.558**	**0.588**	**0.615**	**0.616**
					0.03						
Use of Existing Water Supply (mgd)											
Rainwater Collection Systems	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007
Trinity GW - Suburban	0.267	0.267	0.267	0.267	0.267	0.267	0.267	0.267	0.267	0.267	0.267
Total	**0.274**	**0.274**	**0.274**	**0.274**	**0.274**	**0.274**	**0.274**	**0.274**	**0.274**	**0.274**	**0.274**
No Action Surplus or Unmet Need	**0.000**	**(0.060)**	**(0.098)**	**(0.144)**	**(0.181)**	**(0.217)**	**(0.250)**	**(0.284)**	**(0.314)**	**(0.341)**	**(0.342)**
Use of Additional Water Management Measures (mgd)											
Additional Water Conservation		0.002	0.004	0.006	0.009	0.012	0.016	0.020	0.024	0.028	0.031
Rainwater Collection Systems		0.002	0.003	0.004	0.006	0.007	0.008	0.010	0.011	0.012	0.012
Trinity GW - Suburban		0.017	(0.116)	(0.116)	(0.116)	(0.115)	(0.116)	(0.116)	(0.116)	(0.116)	(0.118)
Water Loss Management		0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040
Canyon Lake WSC			0.167	0.210							
GBRA					0.242	0.273	0.302	0.331	0.356	0.377	0.377
Total	**0.000**	**0.060**	**0.098**	**0.144**	**0.181**	**0.217**	**0.250**	**0.284**	**0.314**	**0.341**	**0.342**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
		0.284	0.151	0.151	0.151	0.151	0.151	0.151	0.151	0.151	0.148
RURAL AREA											
Population	228	250	248	243	226	202	171	136	94	49	-
Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
Per Capita Water Use w/Addit. Conservation		118	116	114	113	111	109	107	105	104	-
Water Demand											
Annual (ac-ft)	30.6	33.3	32.8	31.8	29.4	26.0	21.8	17.2	11.8	6.1	-
Average Day (mgd)	**0.027**	**0.030**	**0.029**	**0.028**	**0.026**	**0.023**	**0.019**	**0.015**	**0.011**	**0.005**	**-**
Existing Water Supply (avg day mgd)											
Rainwater Collection Systems	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
Trinity GW - Rural	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
Total	**0.027**	**0.027**	**0.027**	**0.027**	**0.027**	**0.027**	**0.027**	**0.027**	**0.027**	**0.027**	**0.027**
No Action Surplus or Unmet Need	**0.000**	**(0.002)**	**(0.002)**	**(0.001)**	**0.001**	**0.004**	**0.008**	**0.012**	**0.017**	**0.022**	**0.027**
		(0.063)	(0.100)	(0.145)	(0.179)	(0.213)	(0.242)	(0.272)	(0.297)	(0.319)	(0.315)
Use of Additional Water Management Measures (avg day mgd)											(1.045)
Additional Water Conservation		0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000
Rainwater Collection Systems		0.000	0.000	0.000	(0.000)	(0.001)	(0.001)	(0.002)	(0.003)	(0.004)	(0.005)
Trinity GW - Rural		0.002	0.001	0.000	(0.002)	(0.004)	(0.007)	(0.011)	(0.015)	(0.018)	(0.022)
Total	**0.000**	**0.002**	**0.002**	**0.001**	**(0.001)**	**(0.004)**	**(0.008)**	**(0.012)**	**(0.017)**	**(0.022)**	**(0.027)**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Water Service Demand (avg day mgd)	**0.301**	**0.364**	**0.401**	**0.446**	**0.480**	**0.514**	**0.543**	**0.573**	**0.598**	**0.620**	**0.616**
Use of Existing and New Supply (avg day mgd)											
Additional Water Conservation	-	0.002	0.004	0.007	0.010	0.013	0.017	0.020	0.024	0.028	0.031
Rainwater Collection Systems	0.010	0.012	0.013	0.014	0.015	0.016	0.017	0.017	0.018	0.018	0.017
Trinity GW	0.292	0.310	0.177	0.176	0.174	0.172	0.168	0.165	0.161	0.158	0.151
Water Loss Management	-	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040
Canyon Lake WSC	-	-	0.167	0.210	-	-	-	-	-	-	-
GBRA	-	-	-	-	0.242	0.273	0.302	0.331	0.356	0.377	0.377
Total Use of Existing & New Supply	**0.301**	**0.364**	**0.401**	**0.446**	**0.480**	**0.514**	**0.543**	**0.573**	**0.598**	**0.620**	**0.616**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE A-32
WASTEWATER MANAGEMENT PLAN
PLANNING AREA WOODCREEK UTILITIES
SCENARIO MID

Planning Area		Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS												
Planning Area	Est./Projected Population	2,301	2,811	3,127	3,508	3,802	4,079	4,329	4,563	4,759	4,929	4,885
	Annual Growth Rate	6.3%	4.1%	2.2%	2.3%	1.6%	1.4%	1.2%	1.1%	0.8%	0.7%	-0.2%
Suburban	% of Planning Area Population	90.1%	91.1%	92.1%	93.1%	94.1%	95.1%	96.0%	97.0%	98.0%	99.0%	100.0%
	% of New Growth that is Suburban		95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%
	% of Demand served by Central Wastewater System	10.0%	18.0%	26.0%	34.0%	42.0%	50.0%	58.0%	66.0%	74.0%	82.0%	90.0%
Rural	% of Planning Area Population	9.9%	8.9%	7.9%	6.9%	5.9%	5.0%	4.0%	3.0%	2.0%	1.0%	0.0%
	% of New Growth that is Rural		5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
	% of Demand served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA												
Population		2,073	2,560	2,880	3,265	3,576	3,877	4,158	4,427	4,665	4,880	4,885
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand												
	Average Day (mgd)	**0.148**	**0.183**	**0.205**	**0.230**	**0.251**	**0.270**	**0.287**	**0.304**	**0.318**	**0.330**	**0.328**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.133	0.133	0.133	0.133	0.133	0.133	0.133	0.133	0.133	0.133	0.133
	No-Discharge WWTP	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015
	Total	**0.148**	**0.148**	**0.148**	**0.148**	**0.148**	**0.148**	**0.148**	**0.148**	**0.148**	**0.148**	**0.148**
Suburban - No Action Surplus or Unmet Need		**0.000**	**(0.035)**	**(0.056)**	**(0.082)**	**(0.102)**	**(0.122)**	**(0.139)**	**(0.156)**	**(0.170)**	**(0.182)**	**(0.180)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.017	0.018	0.019	0.012	0.001	(0.013)	(0.030)	(0.051)	(0.074)	(0.101)
	No-Discharge WWTP		0.018	0.038	0.063	0.090	0.120	0.152	0.186	0.220	0.256	0.281
	Total	**0.000**	**0.035**	**0.056**	**0.082**	**0.102**	**0.122**	**0.139**	**0.156**	**0.170**	**0.182**	**0.180**
Suburban - Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA												
Population		228	250	248	243	226	202	171	136	94	49	-
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Wastewater Service Demand												
	Average Day (mgd)	**0.016**	**0.018**	**0.018**	**0.017**	**0.016**	**0.014**	**0.012**	**0.009**	**0.006**	**0.003**	**0.000**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016
	Total	**0.016**	**0.016**	**0.016**	**0.016**	**0.016**	**0.016**	**0.016**	**0.016**	**0.016**	**0.016**	**0.016**
No Action Surplus or Unmet Need		**0.000**	**(0.002)**	**(0.001)**	**(0.001)**	**0.000**	**0.002**	**0.004**	**0.007**	**0.010**	**0.013**	**0.016**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.002	0.001	0.001	(0.000)	(0.002)	(0.004)	(0.007)	(0.010)	(0.013)	(0.016)
	Total	**0.000**	**0.002**	**0.001**	**0.001**	**(0.000)**	**(0.002)**	**(0.004)**	**(0.007)**	**(0.010)**	**(0.013)**	**(0.016)**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA												
Wastewater Service Demand (avg day mgd)		**0.165**	**0.201**	**0.222**	**0.247**	**0.266**	**0.284**	**0.299**	**0.313**	**0.324**	**0.334**	**0.328**
Use of Existing and Capacity (avg day mgd)												
	OSSFs	0.150	0.168	0.169	0.169	0.161	0.149	0.133	0.113	0.089	0.063	0.033
	No-Discharge WWTP	0.015	0.033	0.053	0.078	0.105	0.135	0.167	0.201	0.235	0.271	0.295
	Total Use of Existing & New Supply	**0.165**	**0.201**	**0.222**	**0.247**	**0.266**	**0.284**	**0.299**	**0.313**	**0.324**	**0.334**	**0.328**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE A-33
WATER MANAGEMENT PLAN
PLANNING AREA HILLIARD
SCENARIO MID

Planning Area		Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS												
Planning Area	Est./Projected Population	2,493	3,044	3,388	3,799	4,118	4,419	4,689	4,942	5,155	5,339	5,390
	Annual Growth Rate	2.3%	4.1%	2.2%	2.3%	1.6%	1.4%	1.2%	1.1%	0.8%	0.7%	0.2%
Suburban	% of Planning Area Population	46.1%	45.0%	44.5%	44.0%	43.7%	43.4%	43.2%	43.1%	42.9%	42.8%	42.8%
	% of New Growth that is Suburban		40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
	% Reduction in Base Water Use		0.75%	1.50%	2.25%	3.00%	3.75%	4.50%	5.25%	6.00%	6.75%	7.50%
	% of Growth on Rainwater Systems	10.0%	11.0%	12.0%	13.0%	14.0%	15.0%	16.0%	17.0%	18.0%	19.0%	20.0%
	% of Growth on Central Water Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	% of Exist. Demand Converting to Central Wtr Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rural	% of Planning Area Population	53.9%	55.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of New Growth that is Rural		60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
	% Reduction in Base Water Use		1.25%	2.50%	3.75%	5.00%	6.25%	7.50%	8.75%	10.00%	11.25%	12.50%
	% of Growth on Rainwater Systems	10.0%	11.0%	12.0%	13.0%	14.0%	15.0%	16.0%	17.0%	18.0%	19.0%	20.0%
SUBURBAN AREA												
Population		1,149	1,370	1,507	1,672	1,799	1,919	2,028	2,129	2,214	2,288	2,308
	Base Per Capita Water Use (gpcd)	132	131	129	128	127	127	126	126	126	126	126
	Per Capita Water Use w/Addit. Conservation		130	127	125	123	122	120	119	118	118	117
Water Demand												
	Annual (ac-ft)	169.9	200.2	217.8	239.7	256.0	272.0	286.2	300.5	312.5	322.9	325.8
	Average Day (mgd)	**0.152**	**0.179**	**0.194**	**0.214**	**0.229**	**0.243**	**0.256**	**0.268**	**0.279**	**0.288**	**0.291**
Use of Existing Water Supply (mgd)												
	Rainwater Collection Systems	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015
	Edwards GW	0.123	0.123	0.123	0.123	0.123	0.123	0.123	0.123	0.123	0.123	0.123
	Trinity GW - Suburban	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014
	Total	**0.152**	**0.152**	**0.152**	**0.152**	**0.152**	**0.152**	**0.152**	**0.152**	**0.152**	**0.152**	**0.152**
No Action Surplus or Unmet Need		**0.000**	**(0.027)**	**(0.043)**	**(0.062)**	**(0.077)**	**(0.091)**	**(0.104)**	**(0.117)**	**(0.127)**	**(0.137)**	**(0.139)**
Use of Additional Water Management Measures (mgd)												
	Additional Water Conservation		0.001	0.003	0.005	0.007	0.009	0.011	0.014	0.017	0.019	0.022
	Rainwater Collection Systems		0.003	0.005	0.007	0.009	0.012	0.014	0.016	0.018	0.019	0.020
	Edwards GW		0.020	0.031	0.045	0.054	0.063	0.071	0.078	0.084	0.088	0.088
	Trinity GW - Suburban		0.002	0.004	0.005	0.006	0.007	0.008	0.009	0.009	0.010	0.010
	Total	**0.000**	**0.027**	**0.043**	**0.062**	**0.077**	**0.091**	**0.104**	**0.117**	**0.127**	**0.137**	**0.139**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA												
Population		1,343	1,674	1,880	2,127	2,318	2,499	2,661	2,813	2,940	3,051	3,082
	Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
	Per Capita Water Use w/Addit. Conservation		118	115	113	110	108	105	103	101	99	96
Water Demand												
	Annual (ac-ft)	180.5	223.1	248.5	278.8	301.2	321.9	339.8	356.0	368.9	379.3	379.7
	Average Day (mgd)	**0.161**	**0.199**	**0.222**	**0.249**	**0.269**	**0.287**	**0.303**	**0.318**	**0.329**	**0.339**	**0.339**
Existing Water Supply (avg day mgd)												
	Rainwater Collection Systems	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016
	Edwards GW	0.131	0.131	0.131	0.131	0.131	0.131	0.131	0.131	0.131	0.131	0.131
	Trinity GW - Rural	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015
	Total	**0.161**	**0.161**	**0.161**	**0.161**	**0.161**	**0.161**	**0.161**	**0.161**	**0.161**	**0.161**	**0.161**
No Action Surplus or Unmet Need		**0.000**	**(0.038)**	**(0.061)**	**(0.088)**	**(0.108)**	**(0.126)**	**(0.142)**	**(0.157)**	**(0.168)**	**(0.178)**	**(0.178)**
Use of Additional Water Management Measures (avg day mgd)												
	Additional Water Conservation		0.002	0.006	0.009	0.013	0.018	0.023	0.028	0.033	0.038	0.042
	Rainwater Collection Systems		0.004	0.007	0.010	0.013	0.016	0.019	0.021	0.023	0.025	0.025
	Edwards GW		0.028	0.043	0.061	0.073	0.083	0.091	0.097	0.101	0.103	0.099
	Trinity GW - Rural		0.003	0.005	0.007	0.008	0.009	0.010	0.011	0.011	0.011	0.011
	Total	**0.000**	**0.038**	**0.061**	**0.088**	**0.108**	**0.126**	**0.142**	**0.157**	**0.168**	**0.178**	**0.178**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA												
Water Service Demand (avg day mgd)		**0.313**	**0.378**	**0.416**	**0.463**	**0.497**	**0.530**	**0.559**	**0.586**	**0.608**	**0.627**	**0.630**
Use of Existing and New Supply (avg day mgd)												
	Additional Water Conservation	-	0.004	0.008	0.014	0.020	0.027	0.034	0.042	0.050	0.058	0.064
	Rainwater Collection Systems	0.031	0.038	0.043	0.049	0.054	0.059	0.063	0.068	0.072	0.076	0.076
	Edwards GW	0.253	0.302	0.328	0.360	0.381	0.400	0.415	0.428	0.438	0.444	0.440
	Trinity GW	0.028	0.034	0.037	0.040	0.042	0.045	0.046	0.048	0.049	0.049	0.049
	Total Use of Existing & New Supply	**0.313**	**0.378**	**0.416**	**0.463**	**0.497**	**0.530**	**0.559**	**0.586**	**0.608**	**0.627**	**0.630**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE A-34
WASTEWATER MANAGEMENT PLAN
PLANNING AREA HILLIARD
SCENARIO MID

Planning Area		Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS												
Planning Area	Est./Projected Population	2,493	3,044	3,388	3,799	4,118	4,419	4,689	4,942	5,155	5,339	5,390
	Annual Growth Rate	2.3%	4.1%	2.2%	2.3%	1.6%	1.4%	1.2%	1.1%	0.8%	0.7%	0.2%
Suburban	% of Planning Area Population	46.1%	45.0%	44.5%	44.0%	43.7%	43.4%	43.2%	43.1%	42.9%	42.8%	42.8%
	% of New Growth that is Suburban		40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
	% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rural	% of Planning Area Population	53.9%	55.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of New Growth that is Rural		60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
	% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA												
Population		1,149	1,370	1,507	1,672	1,799	1,919	2,028	2,129	2,214	2,288	2,308
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand												
	Average Day (mgd)	**0.082**	**0.098**	**0.107**	**0.118**	**0.126**	**0.134**	**0.140**	**0.146**	**0.151**	**0.155**	**0.155**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082
	No-Discharge WWTP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Total	**0.082**	**0.082**	**0.082**	**0.082**	**0.082**	**0.082**	**0.082**	**0.082**	**0.082**	**0.082**	**0.082**
Suburban - No Action Surplus or Unmet Need		**0.000**	**(0.016)**	**(0.025)**	**(0.036)**	**(0.044)**	**(0.051)**	**(0.058)**	**(0.064)**	**(0.069)**	**(0.073)**	**(0.073)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.016	0.025	0.036	0.044	0.051	0.058	0.064	0.069	0.073	0.073
	No-Discharge WWTP		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Total	**0.000**	**0.016**	**0.025**	**0.036**	**0.044**	**0.051**	**0.058**	**0.064**	**0.069**	**0.073**	**0.073**
Suburban - Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA												
Population		1,343	1,674	1,880	2,127	2,318	2,499	2,661	2,813	2,940	3,051	3,082
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Wastewater Service Demand												
	Average Day (mgd)	**0.096**	**0.120**	**0.134**	**0.150**	**0.162**	**0.174**	**0.184**	**0.193**	**0.200**	**0.206**	**0.207**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.096	0.096	0.096	0.096	0.096	0.096	0.096	0.096	0.096	0.096	0.096
	Total	**0.096**	**0.096**	**0.096**	**0.096**	**0.096**	**0.096**	**0.096**	**0.096**	**0.096**	**0.096**	**0.096**
No Action Surplus or Unmet Need		**0.000**	**(0.024)**	**(0.038)**	**(0.054)**	**(0.066)**	**(0.078)**	**(0.088)**	**(0.097)**	**(0.104)**	**(0.110)**	**(0.111)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.024	0.038	0.054	0.066	0.078	0.088	0.097	0.104	0.110	0.111
	Total	**0.000**	**0.024**	**0.038**	**0.054**	**0.066**	**0.078**	**0.088**	**0.097**	**0.104**	**0.110**	**0.111**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA												
Wastewater Service Demand (avg day mgd)		**0.178**	**0.218**	**0.241**	**0.268**	**0.289**	**0.307**	**0.324**	**0.339**	**0.351**	**0.361**	**0.362**
Use of Existing and Capacity (avg day mgd)												
	OSSFs	0.178	0.218	0.241	0.268	0.289	0.307	0.324	0.339	0.351	0.361	0.362
	No-Discharge WWTP	-	-	-	-	-	-	-	-	-	-	-
	Total Use of Existing & New Supply	**0.178**	**0.218**	**0.241**	**0.268**	**0.289**	**0.307**	**0.324**	**0.339**	**0.351**	**0.361**	**0.362**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE A-35
WATER MANAGEMENT PLAN
PLANNING AREA 12-B
SCENARIO MID

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	2,410	2,944	3,275	3,674	3,982	4,272	4,534	4,779	4,984	5,162	5,069
Annual Growth Rate	3.0%	4.1%	2.2%	2.3%	1.6%	1.4%	1.2%	1.1%	0.8%	0.7%	-0.4%
Suburban % of Planning Area Population	54.0%	58.7%	60.9%	62.9%	64.3%	65.3%	66.2%	66.9%	67.4%	67.9%	67.6%
% of New Growth that is Suburban		80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%
% Reduction in Base Water Use		0.75%	1.50%	2.25%	3.00%	3.75%	4.50%	5.25%	6.00%	6.75%	7.50%
% of Growth on Rainwater Systems	5.0%	5.5%	6.0%	6.5%	7.0%	7.5%	8.0%	8.5%	9.0%	9.5%	10.0%
% of Growth on Central Water Systems		0.0%	0.0%	0.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
% of Exist. Demand Converting to Central Wtr Systems		0.0%	0.0%	0.0%	3.3%	3.5%	3.8%	4.0%	4.3%	4.5%	5.0%
Rural % of Planning Area Population	46.0%	41.3%	39.1%	37.1%	35.7%	34.7%	33.8%	33.1%	32.6%	32.1%	32.4%
% of New Growth that is Rural		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
% Reduction in Base Water Use		1.25%	2.50%	3.75%	5.00%	6.25%	7.50%	8.75%	10.00%	11.25%	12.50%
% of Growth on Rainwater Systems	10.0%	11.0%	12.0%	13.0%	14.0%	15.0%	16.0%	17.0%	18.0%	19.0%	20.0%
SUBURBAN AREA											
Population	1,301	1,728	1,993	2,312	2,558	2,791	3,000	3,196	3,360	3,503	3,428
Base Per Capita Water Use (gpcd)	132	131	129	128	127	127	126	126	126	126	126
Per Capita Water Use w/Addit. Conservation		130	127	125	123	122	120	119	118	118	117
Water Demand											
Annual (ac-ft)	192.4	252.6	288.0	331.5	363.9	395.5	423.5	451.1	474.3	494.4	483.9
Average Day (mgd)	**0.172**	**0.226**	**0.257**	**0.296**	**0.325**	**0.353**	**0.378**	**0.403**	**0.423**	**0.441**	**0.432**
Use of Existing Water Supply (mgd)											
Rainwater Collection Systems	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009
Edwards GW	0.104	0.104	0.104	0.104	0.104	0.104	0.104	0.104	0.104	0.104	0.104
Trinity GW - Suburban	0.059	0.059	0.059	0.059	0.059	0.059	0.059	0.059	0.059	0.059	0.059
Total	**0.172**	**0.172**	**0.172**	**0.172**	**0.172**	**0.172**	**0.172**	**0.172**	**0.172**	**0.172**	**0.172**
No Action Surplus or Unmet Need	**0.000**	**(0.054)**	**(0.085)**	**(0.124)**	**(0.153)**	**(0.181)**	**(0.206)**	**(0.231)**	**(0.252)**	**(0.270)**	**(0.260)**
Use of Additional Water Management Measures (mgd)											
Additional Water Conservation		0.002	0.004	0.007	0.010	0.013	0.017	0.021	0.025	0.030	0.032
Rainwater Collection Systems		0.003	0.005	0.007	0.009	0.012	0.014	0.016	0.017	0.019	0.018
Edwards GW		0.031	0.049	0.070	0.078	0.084	0.088	0.091	0.093	0.092	0.081
Trinity GW - Suburban		0.018	0.028	0.040	0.044	0.047	0.049	0.051	0.052	0.052	0.046
GBRA		0.000	0.000	0.000	0.013	0.026	0.039	0.052	0.064	0.076	0.083
Total	**0.000**	**0.054**	**0.085**	**0.124**	**0.153**	**0.181**	**0.206**	**0.231**	**0.252**	**0.270**	**0.260**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	1,109	1,216	1,282	1,362	1,423	1,481	1,534	1,583	1,624	1,659	1,641
Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
Per Capita Water Use w/Addit. Conservation		118	115	113	110	108	105	103	101	99	96
Water Demand											
Annual (ac-ft)	149.1	162.1	169.5	178.5	184.9	190.8	195.9	200.3	203.7	206.3	202.2
Average Day (mgd)	**0.133**	**0.145**	**0.151**	**0.159**	**0.165**	**0.170**	**0.175**	**0.179**	**0.182**	**0.184**	**0.181**
Existing Water Supply (avg day mgd)											
Rainwater Collection Systems	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013
Edwards GW	0.077	0.077	0.077	0.077	0.077	0.077	0.077	0.077	0.077	0.077	0.077
Trinity GW - Rural	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043
Total	**0.133**	**0.133**	**0.133**	**0.133**	**0.133**	**0.133**	**0.133**	**0.133**	**0.133**	**0.133**	**0.133**
No Action Surplus or Unmet Need	**0.000**	**(0.012)**	**(0.018)**	**(0.026)**	**(0.032)**	**(0.037)**	**(0.042)**	**(0.046)**	**(0.049)**	**(0.051)**	**(0.047)**
Use of Additional Water Management Measures (avg day mgd)											
Additional Water Conservation		0.002	0.004	0.006	0.008	0.011	0.013	0.016	0.018	0.021	0.023
Rainwater Collection Systems		0.001	0.002	0.003	0.004	0.005	0.005	0.006	0.007	0.007	0.006
Edwards GW		0.005	0.008	0.011	0.013	0.014	0.015	0.015	0.015	0.015	0.012
Trinity GW - Rural		0.003	0.004	0.006	0.007	0.008	0.008	0.009	0.009	0.008	0.007
Total	**0.000**	**0.012**	**0.018**	**0.026**	**0.032**	**0.037**	**0.042**	**0.046**	**0.049**	**0.051**	**0.047**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Water Service Demand (avg day mgd)	**0.305**	**0.370**	**0.408**	**0.455**	**0.490**	**0.523**	**0.553**	**0.582**	**0.605**	**0.626**	**0.613**
Use of Existing and New Supply (avg day mgd)											
Additional Water Conservation	-	0.003	0.008	0.013	0.018	0.024	0.030	0.037	0.044	0.051	0.055
Rainwater Collection Systems	0.022	0.026	0.029	0.032	0.035	0.038	0.041	0.044	0.046	0.048	0.046
Edwards GW	0.181	0.218	0.238	0.262	0.271	0.279	0.284	0.288	0.289	0.288	0.274
Trinity GW	0.102	0.123	0.134	0.148	0.153	0.157	0.160	0.162	0.163	0.162	0.154
GBRA	-	-	-	-	0.013	0.026	0.039	0.052	0.064	0.076	0.083
Total Use of Existing & New Supply	**0.305**	**0.370**	**0.408**	**0.455**	**0.490**	**0.523**	**0.553**	**0.582**	**0.605**	**0.626**	**0.613**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE A-36
WASTEWATER MANAGEMENT PLAN
PLANNING AREA 12-B
SCENARIO MID

Planning Area		Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS												
Planning Area	Est./Projected Population	2,410	2,944	3,275	3,674	3,982	4,272	4,534	4,779	4,984	5,162	5,069
	Annual Growth Rate	3.0%	4.1%	2.2%	2.3%	1.6%	1.4%	1.2%	1.1%	0.8%	0.7%	-0.4%
Suburban	% of Planning Area Population	54.0%	58.7%	60.9%	62.9%	64.3%	65.3%	66.2%	66.9%	67.4%	67.9%	67.6%
	% of New Growth that is Suburban		80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%
	% of Growth served by Central Wastewater Systems		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
Rural	% of Planning Area Population	46.0%	41.3%	39.1%	37.1%	35.7%	34.7%	33.8%	33.1%	32.6%	32.1%	32.4%
	% of New Growth that is Rural		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
	% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA												
Population		1,301	1,728	1,993	2,312	2,558	2,791	3,000	3,196	3,360	3,503	3,428
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand												
	Average Day (mgd)	**0.093**	**0.124**	**0.142**	**0.163**	**0.179**	**0.194**	**0.207**	**0.219**	**0.229**	**0.237**	**0.230**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.093	0.093	0.093	0.093	0.093	0.093	0.093	0.093	0.093	0.093	0.093
	No-Discharge WWTP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Total	**0.093**	**0.093**	**0.093**	**0.093**	**0.093**	**0.093**	**0.093**	**0.093**	**0.093**	**0.093**	**0.093**
Suburban - No Action Surplus or Unmet Need		**0.000**	**(0.031)**	**(0.049)**	**(0.070)**	**(0.086)**	**(0.101)**	**(0.114)**	**(0.126)**	**(0.136)**	**(0.144)**	**(0.137)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.024	0.039	0.056	0.069	0.081	0.091	0.101	0.109	0.115	0.110
	No-Discharge WWTP		0.006	0.010	0.014	0.017	0.020	0.023	0.025	0.027	0.029	0.027
	Total	**0.000**	**0.031**	**0.049**	**0.070**	**0.086**	**0.101**	**0.114**	**0.126**	**0.136**	**0.144**	**0.137**
Suburban - Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA												
Population		1,109	1,216	1,282	1,362	1,423	1,481	1,534	1,583	1,624	1,659	1,641
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Wastewater Service Demand												
	Average Day (mgd)	**0.079**	**0.087**	**0.091**	**0.096**	**0.100**	**0.103**	**0.106**	**0.109**	**0.111**	**0.112**	**0.110**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079
	Total	**0.079**	**0.079**	**0.079**	**0.079**	**0.079**	**0.079**	**0.079**	**0.079**	**0.079**	**0.079**	**0.079**
No Action Surplus or Unmet Need		**0.000**	**(0.008)**	**(0.012)**	**(0.017)**	**(0.020)**	**(0.024)**	**(0.027)**	**(0.029)**	**(0.031)**	**(0.033)**	**(0.031)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.008	0.012	0.017	0.020	0.024	0.027	0.029	0.031	0.033	0.031
	Total	**0.000**	**0.008**	**0.012**	**0.017**	**0.020**	**0.024**	**0.027**	**0.029**	**0.031**	**0.033**	**0.031**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA												
Wastewater Service Demand (avg day mgd)		**0.172**	**0.211**	**0.233**	**0.259**	**0.279**	**0.297**	**0.313**	**0.328**	**0.340**	**0.349**	**0.341**
Use of Existing and Capacity (avg day mgd)												
	OSSFs	0.172	0.204	0.223	0.245	0.262	0.277	0.291	0.303	0.313	0.321	0.313
	No-Discharge WWTP	-	0.006	0.010	0.014	0.017	0.020	0.023	0.025	0.027	0.029	0.027
	Total Use of Existing & New Supply	**0.172**	**0.211**	**0.233**	**0.259**	**0.279**	**0.297**	**0.313**	**0.328**	**0.340**	**0.349**	**0.341**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

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APPENDIX B
NO ACTION CASE MANAGEMENT PLANS FORECASTS

TABLE B-1
WATER MANAGEMENT PLAN
PLANNING AREA 3238
SCENARIO NA

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	2,490	2,895	3,228	3,482	3,667	3,802	3,914	3,986	4,029	4,029	4,022
Annual Growth Rate	2.8%	3.1%	2.2%	1.5%	1.0%	0.7%	0.6%	0.4%	0.2%	0.0%	0.0%
Suburban % of Planning Area Population	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
% of New Growth that is Suburban		90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
% Reduction in Base Water Use		1.00%	2.00%	3.00%	4.00%	5.00%	6.00%	7.00%	8.00%	9.00%	10.00%
% of Growth on Rainwater Systems	15.0%	16.5%	18.0%	19.5%	21.0%	22.5%	24.0%	25.5%	27.0%	28.5%	30.0%
% of Growth on Central Water Systems		25.0%	27.5%	30.0%	32.5%	35.0%	37.5%	40.0%	42.5%	45.0%	50.0%
% of Exist. Demand Converting to Central Wtr Syster	40.0%	5.0%	5.5%	6.0%	6.5%	7.0%	7.5%	8.0%	8.5%	9.0%	10.0%
Rural % of Planning Area Population	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
% of New Growth that is Rural		10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
% Reduction in Base Water Use		1.25%	2.50%	3.75%	5.00%	6.25%	7.50%	8.75%	10.00%	11.25%	12.50%
% of Growth on Rainwater Systems	15.0%	16.5%	18.0%	19.5%	21.0%	22.5%	24.0%	25.5%	27.0%	28.5%	30.0%
SUBURBAN AREA											
Population	2,241	2,605	2,906	3,134	3,301	3,422	3,522	3,588	3,626	3,626	3,620
Base Per Capita Water Use (gpcd)	132	131	129	128	127	127	126	126	126	126	126
Per Capita Water Use w/Addit. Conservation		129	126	124	122	120	118	117	116	115	113
Water Demand											
Annual (ac-ft)	331.4	380.8	419.9	449.4	469.5	484.9	497.1	506.3	511.8	511.7	510.9
Average Day (mgd)	**0.296**	**0.340**	**0.375**	**0.401**	**0.419**	**0.433**	**0.444**	**0.452**	**0.457**	**0.457**	**0.456**
Use of Existing Water Supply (mgd)											
Rainwater Collection Systems	0.044	0.044	0.044	0.044	0.044	0.044	0.044	0.044	0.044	0.044	0.044
Trinity GW - Suburban	0.133	0.133	0.133	0.133	0.133	0.133	0.133	0.133	0.133	0.133	0.133
LCRA RR3238 Pipeline	0.118	0.118	0.118	0.118	0.118	0.118	0.118	0.118	0.118	0.118	0.118
Total	**0.296**	**0.296**	**0.296**	**0.296**	**0.296**	**0.296**	**0.296**	**0.296**	**0.296**	**0.296**	**0.296**
No Action Surplus or Unmet Need	**0.000**	**(0.044)**	**(0.079)**	**(0.105)**	**(0.123)**	**(0.137)**	**(0.148)**	**(0.156)**	**(0.161)**	**(0.161)**	**(0.160)**
Use of Additional Water Management Measures (mgd)											
Additional Water Conservation		0.003	0.007	0.012	0.017	0.022	0.027	0.032	0.037	0.041	0.046
Rainwater Collection Systems		0.007	0.014	0.019	0.022	0.026	0.028	0.030	0.032	0.032	0.031
Trinity GW - Suburban		0.008	0.006	(0.003)	(0.018)	(0.038)	(0.061)	(0.087)	(0.115)	(0.147)	(0.181)
LCRA RR3238 Pipeline		0.026	0.052	0.077	0.102	0.128	0.154	0.181	0.208	0.235	0.264
Total	**0.000**	**0.044**	**0.079**	**0.105**	**0.123**	**0.137**	**0.148**	**0.156**	**0.161**	**0.161**	**0.160**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	249	289	323	348	367	380	391	399	403	403	402
Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
Per Capita Water Use w/Addit. Conservation		118	115	113	110	108	105	103	101	99	96
Water Demand											
Annual (ac-ft)	33.5	38.6	42.7	45.6	47.7	49.0	50.0	50.5	50.6	50.1	49.6
Average Day (mgd)	**0.030**	**0.034**	**0.038**	**0.041**	**0.043**	**0.044**	**0.045**	**0.045**	**0.045**	**0.045**	**0.044**
Existing Water Supply (avg day mgd)											
Rainwater Collection Systems	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004
Trinity GW - Rural	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
Total	**0.030**	**0.030**	**0.030**	**0.030**	**0.030**	**0.030**	**0.030**	**0.030**	**0.030**	**0.030**	**0.030**
No Action Surplus or Unmet Need	**0.000**	**(0.005)**	**(0.008)**	**(0.011)**	**(0.013)**	**(0.014)**	**(0.015)**	**(0.015)**	**(0.015)**	**(0.015)**	**(0.014)**
Use of Additional Water Management Measures (avg day mgd)											
Additional Water Conservation		0.000	0.001	0.002	0.002	0.003	0.003	0.004	0.005	0.005	0.006
Rainwater Collection Systems		0.001	0.001	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.003
Trinity GW - Rural		0.003	0.006	0.007	0.008	0.009	0.009	0.008	0.008	0.007	0.006
Total	**0.000**	**0.005**	**0.008**	**0.011**	**0.013**	**0.014**	**0.015**	**0.015**	**0.015**	**0.015**	**0.014**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Water Service Demand (avg day mgd)	**0.326**	**0.374**	**0.413**	**0.442**	**0.462**	**0.477**	**0.488**	**0.497**	**0.502**	**0.502**	**0.500**
Use of Existing and New Supply (avg day mgd)											
Additional Water Conservation	-	0.004	0.008	0.014	0.019	0.024	0.030	0.036	0.041	0.046	0.051
Rainwater Collection Systems	0.049	0.057	0.064	0.069	0.074	0.077	0.080	0.082	0.083	0.083	0.083
Trinity GW	0.159	0.170	0.171	0.163	0.148	0.129	0.106	0.080	0.051	0.019	(0.016)
LCRA RR3238 Pipeline	0.118	0.144	0.170	0.196	0.221	0.246	0.273	0.300	0.327	0.353	0.383
Total Use of Existing & New Supply	**0.326**	**0.374**	**0.413**	**0.442**	**0.462**	**0.477**	**0.488**	**0.497**	**0.502**	**0.502**	**0.500**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE B-2
WASTEWATER MANAGEMENT PLAN
PLANNING AREA 3238
SCENARIO NA

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	2,490	2,895	3,228	3,482	3,667	3,802	3,914	3,986	4,029	4,029	4,022
Annual Growth Rate	2.8%	3.1%	2.2%	1.5%	1.0%	0.7%	0.6%	0.4%	0.2%	0.0%	0.0%
Suburban % of Planning Area Population	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
% of New Growth that is Suburban		90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
% of Growth served by Central Wastewater Systems		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
Rural % of Planning Area Population	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
% of New Growth that is Rural		10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA											
Population	2,241	2,605	2,906	3,134	3,301	3,422	3,522	3,588	3,626	3,626	3,620
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand											
Average Day (mgd)	**0.160**	**0.186**	**0.206**	**0.221**	**0.231**	**0.238**	**0.243**	**0.246**	**0.247**	**0.245**	**0.243**
Existing Wastewater Treatment (mgd)											
OSSFs	0.152	0.152	0.152	0.152	0.152	0.152	0.152	0.152	0.152	0.152	0.152
No-Discharge WWTP	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016
Total	**0.168**	**0.168**	**0.168**	**0.168**	**0.168**	**0.168**	**0.168**	**0.168**	**0.168**	**0.168**	**0.168**
Suburban - No Action Surplus or Unmet Need	**0.0078**	**(0.018)**	**(0.038)**	**(0.053)**	**(0.063)**	**(0.070)**	**(0.075)**	**(0.078)**	**(0.079)**	**(0.077)**	**(0.075)**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.013	0.029	0.041	0.049	0.055	0.059	0.061	0.062	0.060	0.059
No-Discharge WWTP		0.005	0.009	0.012	0.014	0.016	0.017	0.017	0.017	0.017	0.017
Total	**0.000**	**0.018**	**0.038**	**0.053**	**0.063**	**0.070**	**0.075**	**0.078**	**0.079**	**0.077**	**0.075**
Suburban - Surplus or Unmet Need	**0.008**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	249	289	323	348	367	380	391	399	403	403	402
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Wastewater Service Demand											
Average Day (mgd)	**0.018**	**0.021**	**0.023**	**0.025**	**0.026**	**0.026**	**0.027**	**0.027**	**0.027**	**0.027**	**0.027**
Existing Wastewater Treatment (mgd)											
OSSFs	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018
Total	**0.018**	**0.018**	**0.018**	**0.018**	**0.018**	**0.018**	**0.018**	**0.018**	**0.018**	**0.018**	**0.018**
No Action Surplus or Unmet Need	**0.000**	**(0.003)**	**(0.005)**	**(0.007)**	**(0.008)**	**(0.009)**	**(0.009)**	**(0.010)**	**(0.010)**	**(0.009)**	**(0.009)**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.003	0.005	0.007	0.008	0.009	0.009	0.010	0.010	0.009	0.009
Total	**0.000**	**0.003**	**0.005**	**0.007**	**0.008**	**0.009**	**0.009**	**0.010**	**0.010**	**0.009**	**0.009**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Wastewater Service Demand (avg day mgd)	**0.178**	**0.207**	**0.229**	**0.246**	**0.257**	**0.265**	**0.271**	**0.274**	**0.275**	**0.273**	**0.270**
Use of Existing and Capacity (avg day mgd)											
OSSFs	0.170	0.186	0.204	0.218	0.227	0.233	0.238	0.241	0.241	0.240	0.238
No-Discharge WWTP	0.016	0.021	0.025	0.028	0.030	0.031	0.032	0.033	0.033	0.033	0.032
Total Use of Existing & New Supply	**0.186**	**0.207**	**0.229**	**0.246**	**0.257**	**0.265**	**0.271**	**0.274**	**0.275**	**0.273**	**0.270**
Surplus or Unmet Need	**0.008**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE B-3
WATER MANAGEMENT PLAN
PLANNING AREA 290-NW
SCENARIO NA

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	4,434	5,154	5,749	6,201	6,530	6,770	6,969	7,098	7,175	7,174	7,032
Annual Growth Rate	3.2%	3.1%	2.2%	1.5%	1.0%	0.7%	0.6%	0.4%	0.2%	0.0%	-0.4%
Suburban % of Planning Area Population	31.5%	38.3%	42.6%	45.3%	47.1%	48.2%	49.1%	49.7%	50.0%	50.0%	49.4%
% of New Growth that is Suburban		80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%
% Reduction in Base Water Use		1.00%	2.00%	3.00%	4.00%	5.00%	6.00%	7.00%	8.00%	9.00%	10.00%
% of Growth on Rainwater Systems	15.0%	16.5%	18.0%	19.5%	21.0%	22.5%	24.0%	25.5%	27.0%	28.5%	30.0%
% of Growth on Central Water Systems		50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
% of Exist. Demand Converting to Central Wtr Syster	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rural % of Planning Area Population	68.5%	61.7%	57.4%	54.7%	52.9%	51.8%	50.9%	50.3%	50.0%	50.0%	50.6%
% of New Growth that is Rural		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
% Reduction in Base Water Use		1.25%	2.50%	3.75%	5.00%	6.25%	7.50%	8.75%	10.00%	11.25%	12.50%
% of Growth on Rainwater Systems	15.0%	16.5%	18.0%	19.5%	21.0%	22.5%	24.0%	25.5%	27.0%	28.5%	30.0%
SUBURBAN AREA											
Population	1,397	1,973	2,449	2,811	3,074	3,266	3,425	3,528	3,590	3,589	3,475
Base Per Capita Water Use (gpcd)	132	131	129	128	127	127	126	126	126	126	126
Per Capita Water Use w/Addit. Conservation		129	126	124	122	120	118	117	116	115	113
Water Demand											
Annual (ac-ft)	206.6	288.5	353.9	403.0	437.3	462.8	483.4	498.0	506.7	506.6	490.5
Average Day (mgd)	**0.184**	**0.258**	**0.316**	**0.360**	**0.390**	**0.413**	**0.432**	**0.445**	**0.452**	**0.452**	**0.438**
Use of Existing Water Supply (mgd)											
Rainwater Collection Systems	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028
Trinity GW - Suburban	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157
Total	**0.184**	**0.184**	**0.184**	**0.184**	**0.184**	**0.184**	**0.184**	**0.184**	**0.184**	**0.184**	**0.184**
No Action Surplus or Unmet Need	**0.000**	**(0.073)**	**(0.132)**	**(0.175)**	**(0.206)**	**(0.229)**	**(0.247)**	**(0.260)**	**(0.268)**	**(0.268)**	**(0.254)**
Use of Additional Water Management Measures (mgd)											
Additional Water Conservation		0.003	0.006	0.011	0.016	0.021	0.026	0.031	0.036	0.041	0.044
Rainwater Collection Systems		0.012	0.023	0.031	0.038	0.043	0.047	0.050	0.053	0.052	0.048
Trinity GW - Suburban		0.022	0.037	0.046	0.050	0.051	0.051	0.049	0.045	0.041	0.035
LCRA RR3238 Pipeline		0.037	0.066	0.088	0.103	0.114	0.124	0.130	0.134	0.134	0.127
Total	**0.000**	**0.073**	**0.132**	**0.175**	**0.206**	**0.229**	**0.247**	**0.260**	**0.268**	**0.268**	**0.254**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	3,037	3,181	3,300	3,390	3,456	3,504	3,544	3,570	3,585	3,585	3,557
Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
Per Capita Water Use w/Addit. Conservation		118	115	113	110	108	105	103	101	99	96
Water Demand											
Annual (ac-ft)	408.2	424.0	436.2	444.3	449.1	451.4	452.6	451.9	449.8	445.7	438.2
Average Day (mgd)	**0.364**	**0.379**	**0.389**	**0.397**	**0.401**	**0.403**	**0.404**	**0.403**	**0.402**	**0.398**	**0.391**
Existing Water Supply (avg day mgd)											
Rainwater Collection Systems	0.055	0.055	0.055	0.055	0.055	0.055	0.055	0.055	0.055	0.055	0.055
Trinity GW - Rural	0.310	0.310	0.310	0.310	0.310	0.310	0.310	0.310	0.310	0.310	0.310
Total	**0.364**	**0.364**	**0.364**	**0.364**	**0.364**	**0.364**	**0.364**	**0.364**	**0.364**	**0.364**	**0.364**
No Action Surplus or Unmet Need	**0.000**	**(0.014)**	**(0.025)**	**(0.032)**	**(0.036)**	**(0.039)**	**(0.040)**	**(0.039)**	**(0.037)**	**(0.034)**	**(0.027)**
Use of Additional Water Management Measures (avg day mgd)											
Additional Water Conservation		0.005	0.010	0.015	0.020	0.025	0.030	0.035	0.040	0.045	0.049
Rainwater Collection Systems		0.002	0.004	0.006	0.007	0.007	0.007	0.007	0.007	0.006	0.004
Trinity GW - Rural		0.007	0.011	0.012	0.010	0.006	0.002	(0.003)	(0.010)	(0.017)	(0.026)
Total	**0.000**	**0.014**	**0.025**	**0.032**	**0.036**	**0.039**	**0.040**	**0.039**	**0.037**	**0.034**	**0.027**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Water Service Demand (avg day mgd)	**0.549**	**0.636**	**0.705**	**0.757**	**0.791**	**0.816**	**0.836**	**0.848**	**0.854**	**0.850**	**0.829**
Use of Existing and New Supply (avg day mgd)											
Additional Water Conservation	-	0.007	0.016	0.026	0.036	0.046	0.056	0.066	0.076	0.085	0.093
Rainwater Collection Systems	0.082	0.097	0.109	0.119	0.126	0.132	0.137	0.140	0.142	0.140	0.134
Trinity GW	0.467	0.496	0.514	0.524	0.526	0.524	0.519	0.512	0.502	0.490	0.476
LCRA RR3238 Pipeline	-	0.037	0.066	0.088	0.103	0.114	0.124	0.130	0.134	0.134	0.127
Total Use of Existing & New Supply	**0.549**	**0.636**	**0.705**	**0.757**	**0.791**	**0.816**	**0.836**	**0.848**	**0.854**	**0.850**	**0.829**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE B-4
WASTEWATER MANAGEMENT PLAN
PLANNING AREA 290-NW
SCENARIO NA

Planning Area		Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS												
Planning Area	Est./Projected Population	4,434	5,154	5,749	6,201	6,530	6,770	6,969	7,098	7,175	7,174	7,032
	Annual Growth Rate	3.2%	3.1%	2.2%	1.5%	1.0%	0.7%	0.6%	0.4%	0.2%	0.0%	-0.4%
Suburban	% of Planning Area Population	31.5%	38.3%	42.6%	45.3%	47.1%	48.2%	49.1%	49.7%	50.0%	50.0%	49.4%
	% of New Growth that is Suburban		80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%
	% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rural	% of Planning Area Population	68.5%	61.7%	57.4%	54.7%	52.9%	51.8%	50.9%	50.3%	50.0%	50.0%	50.6%
	% of New Growth that is Rural		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
	% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA												
Population		1,397	1,973	2,449	2,811	3,074	3,266	3,425	3,528	3,590	3,589	3,475
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand												
	Average Day (mgd)	**0.100**	**0.141**	**0.174**	**0.198**	**0.215**	**0.227**	**0.237**	**0.242**	**0.245**	**0.243**	**0.234**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100
	No-Discharge WWTP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Total	**0.100**	**0.100**	**0.100**	**0.100**	**0.100**	**0.100**	**0.100**	**0.100**	**0.100**	**0.100**	**0.100**
Suburban - No Action Surplus or Unmet Need		**0.000**	**(0.041)**	**(0.074)**	**(0.098)**	**(0.116)**	**(0.127)**	**(0.137)**	**(0.142)**	**(0.145)**	**(0.143)**	**(0.134)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.041	0.074	0.098	0.116	0.127	0.137	0.142	0.145	0.143	0.134
	No-Discharge WWTP		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Total	**0.000**	**0.041**	**0.074**	**0.098**	**0.116**	**0.127**	**0.137**	**0.142**	**0.145**	**0.143**	**0.134**
Suburban - Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA												
Population		3,037	3,181	3,300	3,390	3,456	3,504	3,544	3,570	3,585	3,585	3,557
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Wastewater Service Demand												
	Average Day (mgd)	**0.217**	**0.228**	**0.234**	**0.239**	**0.242**	**0.244**	**0.245**	**0.245**	**0.244**	**0.243**	**0.239**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.217	0.217	0.217	0.217	0.217	0.217	0.217	0.217	0.217	0.217	0.217
	Total	**0.217**	**0.217**	**0.217**	**0.217**	**0.217**	**0.217**	**0.217**	**0.217**	**0.217**	**0.217**	**0.217**
No Action Surplus or Unmet Need		**0.000**	**(0.010)**	**(0.017)**	**(0.022)**	**(0.025)**	**(0.027)**	**(0.028)**	**(0.028)**	**(0.027)**	**(0.025)**	**(0.022)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.010	0.017	0.022	0.025	0.027	0.028	0.028	0.027	0.025	0.022
	Total	**0.000**	**0.010**	**0.017**	**0.022**	**0.025**	**0.027**	**0.028**	**0.028**	**0.027**	**0.025**	**0.022**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA												
Wastewater Service Demand (avg day mgd)		**0.317**	**0.369**	**0.408**	**0.438**	**0.458**	**0.471**	**0.482**	**0.487**	**0.489**	**0.486**	**0.473**
Use of Existing and Capacity (avg day mgd)												
	OSSFs	0.317	0.369	0.408	0.438	0.458	0.471	0.482	0.487	0.489	0.486	0.473
	No-Discharge WWTP	-	-	-	-	-	-	-	-	-	-	-
	Total Use of Existing & New Supply	**0.317**	**0.369**	**0.408**	**0.438**	**0.458**	**0.471**	**0.482**	**0.487**	**0.489**	**0.486**	**0.473**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE B-6
WASTEWATER MANAGEMENT PLAN
PLANNING AREA **DRIPPING SPRINGS AREA**
SCENARIO **NA**

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	5,685	6,748	7,705	8,525	9,223	9,835	10,425	10,942	11,407	11,765	12,223
Annual Growth Rate	13.3%	18.7%	14.2%	10.6%	8.2%	6.6%	6.0%	5.0%	4.2%	3.1%	3.9%
Suburban % of Planning Area Population	69.1%	72.1%	75.2%	78.3%	81.4%	84.5%	87.6%	90.7%	93.8%	96.9%	100.0%
Rural % of Planning Area Population	30.9%	27.9%	24.8%	21.7%	18.6%	15.5%	12.4%	9.3%	6.2%	3.1%	0.0%
SUBURBAN AREA											
Population	3,926	4,869	5,797	6,678	7,510	8,313	9,134	9,926	10,701	11,401	12,223
Wastewater Return Flow (gpcd)	71	71	70	69	68	67	66	65	64	63	63
Suburban - Wastewater Service Demand											
Average Day (mgd)	**0.279**	**0.346**	**0.407**	**0.462**	**0.513**	**0.560**	**0.606**	**0.649**	**0.690**	**0.724**	**0.764**
Existing Wastewater Treatment (mgd)											
OSSFs	0.073	0.073	0.073	0.073	0.073	0.073	0.073	0.073	0.073	0.073	0.073
No-Discharge WWTP	0.206	0.206	0.206	0.206	0.206	0.206	0.206	0.206	0.206	0.206	0.206
Total	**0.279**	**0.279**	**0.279**	**0.279**	**0.279**	**0.279**	**0.279**	**0.279**	**0.279**	**0.279**	**0.279**
Suburban - No Action Surplus or Unmet Need	**0.000**	**(0.067)**	**(0.128)**	**(0.183)**	**(0.234)**	**(0.281)**	**(0.327)**	**(0.370)**	**(0.411)**	**(0.445)**	**(0.485)**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.027	0.041	0.052	0.060	0.067	0.072	0.076	0.079	0.079	0.080
No-Discharge WWTP		0.040	0.087	0.131	0.173	0.214	**0.255**	0.294	0.332	0.366	0.405
Total	**0.000**	**0.067**	**0.128**	**0.183**	**0.234**	**0.281**	**0.327**	**0.370**	**0.411**	**0.445**	**0.485**
Suburban - Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	1,760	1,879	1,907	1,847	1,712	1,522	1,290	1,015	706	364	-
Wastewater Return Flow (gpcd)	71	71	70	69	68	67	66	65	64	64	0
Wastewater Service Demand											
Average Day (mgd)	**0.125**	**0.134**	**0.134**	**0.128**	**0.117**	**0.102**	**0.086**	**0.066**	**0.046**	**0.023**	**0.000**
Existing Wastewater Treatment (mgd)											
OSSFs	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125
Total	**0.125**	**0.125**	**0.125**	**0.125**	**0.125**	**0.125**	**0.125**	**0.125**	**0.125**	**0.125**	**0.125**
No Action Surplus or Unmet Need	**0.000**	**(0.009)**	**(0.009)**	**(0.003)**	**0.008**	**0.023**	**0.039**	**0.059**	**0.079**	**0.102**	**0.125**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.009	0.009	0.003	(0.008)	(0.023)	(0.039)	(0.059)	(0.079)	(0.102)	(0.125)
Total	**0.000**	**0.009**	**0.009**	**0.003**	**(0.008)**	**(0.023)**	**(0.039)**	**(0.059)**	**(0.079)**	**(0.102)**	**(0.125)**
Surplus or Unmet Need	**0.000**	**0.000**	**(0.000)**	**(0.000)**	**(0.000)**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Wastewater Service Demand (avg day mgd)	**0.404**	**0.480**	**0.540**	**0.590**	**0.629**	**0.662**	**0.692**	**0.716**	**0.735**	**0.747**	**0.764**
Use of Existing and Capacity (avg day mgd)											
OSSFs	0.198	0.234	0.248	0.253	0.250	0.242	0.231	0.216	0.197	0.175	0.153
No-Discharge WWTP	0.206	0.246	0.293	0.337	0.379	0.420	0.461	0.500	0.538	0.572	0.611
Total Use of Existing & New Supply	**0.404**	**0.480**	**0.540**	**0.590**	**0.629**	**0.662**	**0.692**	**0.716**	**0.735**	**0.747**	**0.764**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE B-6
WASTEWATER MANAGEMENT PLAN
PLANNING AREA DRIPPING SPRINGS AREA
SCENARIO NA

Planning Area		Estimated	Projected									
		2010	2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS												
Planning Area	Est./Projected Population	5,685	6,748	7,705	8,525	9,223	9,835	10,425	10,942	11,407	11,765	12,223
	Annual Growth Rate	13.3%	18.7%	14.2%	10.6%	8.2%	6.6%	6.0%	5.0%	4.2%	3.1%	3.9%
Suburban	% of Planning Area Population	69.1%	72.1%	75.2%	78.3%	81.4%	84.5%	87.6%	90.7%	93.8%	96.9%	100.0%
Rural	% of Planning Area Population	30.9%	27.9%	24.8%	21.7%	18.6%	15.5%	12.4%	9.3%	6.2%	3.1%	0.0%
SUBURBAN AREA												
Population		3,926	4,869	5,797	6,678	7,510	8,313	9,134	9,926	10,701	11,401	12,223
	Wastewater Return Flow (gpcd)	71	71	70	69	68	67	66	65	64	63	63
Suburban - Wastewater Service Demand												
	Average Day (mgd)	**0.279**	**0.346**	**0.407**	**0.462**	**0.513**	**0.560**	**0.606**	**0.649**	**0.690**	**0.724**	**0.764**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.132	0.132	0.132	0.132	0.132	0.132	0.132	0.132	0.132	0.132	0.132
	No-Discharge WWTP	0.147	0.147	0.147	0.147	0.147	0.147	0.147	0.147	0.147	0.147	0.147
	Total	**0.279**	**0.279**	**0.279**	**0.279**	**0.279**	**0.279**	**0.279**	**0.279**	**0.279**	**0.279**	**0.279**
Suburban - No Action Surplus or Unmet Need		**0.000**	**(0.067)**	**(0.128)**	**(0.183)**	**(0.234)**	**(0.281)**	**(0.327)**	**(0.370)**	**(0.411)**	**(0.445)**	**(0.485)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		(0.031)	(0.018)	(0.007)	0.002	0.008	0.014	0.018	0.020	0.020	0.021
	No-Discharge WWTP		0.098	0.145	0.190	0.232	0.272	**0.313**	0.353	0.391	0.424	0.464
	Total	**0.000**	**0.067**	**0.128**	**0.183**	**0.234**	**0.281**	**0.327**	**0.370**	**0.411**	**0.445**	**0.485**
Suburban - Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA												
Population		1,760	1,879	1,907	1,847	1,712	1,522	1,290	1,015	706	364	-
	Wastewater Return Flow (gpcd)	71	71	70	69	68	67	66	65	64	64	0
Wastewater Service Demand												
	Average Day (mgd)	**0.125**	**0.134**	**0.134**	**0.128**	**0.117**	**0.102**	**0.086**	**0.066**	**0.046**	**0.023**	**0.000**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125
	Total	**0.125**	**0.125**	**0.125**	**0.125**	**0.125**	**0.125**	**0.125**	**0.125**	**0.125**	**0.125**	**0.125**
No Action Surplus or Unmet Need		**0.000**	**(0.009)**	**(0.009)**	**(0.003)**	**0.008**	**0.023**	**0.039**	**0.059**	**0.079**	**0.102**	**0.125**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.009	0.009	0.003	(0.008)	(0.023)	(0.039)	(0.059)	(0.079)	(0.102)	(0.125)
	Total	**0.000**	**0.009**	**0.009**	**0.003**	**(0.008)**	**(0.023)**	**(0.039)**	**(0.059)**	**(0.079)**	**(0.102)**	**(0.125)**
Surplus or Unmet Need		**0.000**	**0.000**	**(0.000)**	**(0.000)**	**(0.000)**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA												
Wastewater Service Demand (avg day mgd)		**0.404**	**0.480**	**0.540**	**0.590**	**0.629**	**0.662**	**0.692**	**0.716**	**0.735**	**0.747**	**0.764**
Use of Existing and Capacity (avg day mgd)												
	OSSFs	0.257	0.234	0.248	0.253	0.250	0.242	0.231	0.216	0.197	0.175	0.153
	No-Discharge WWTP	0.147	0.246	0.293	0.337	0.379	0.420	0.461	0.500	0.538	0.572	0.611
	Total Use of Existing & New Supply	**0.404**	**0.480**	**0.540**	**0.590**	**0.629**	**0.662**	**0.692**	**0.716**	**0.735**	**0.747**	**0.764**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE B-7
WATER MANAGEMENT PLAN
PLANNING AREA **CITY OF DRIPPING SPRINGS**
SCENARIO **NA**

Planning Area	Estimated	Projected									
	2010	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**	**2055**	**2060**
PLANNING FACTORS											
Planning Area Est./Projected Population	3,690	4,380	5,001	5,533	5,986	6,384	6,766	7,102	7,404	7,636	7,934
Annual Growth Rate	1.7%	3.5%	2.7%	2.0%	1.6%	1.3%	1.2%	1.0%	0.8%	0.6%	0.8%
Suburban % of Planning Area Population	66.0%	69.4%	72.8%	76.2%	79.6%	83.0%	86.4%	89.8%	93.2%	96.6%	100.0%
% of New Growth that is Suburban		95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%
% Reduction in Base Water Use		0.50%	1.00%	1.50%	2.00%	2.50%	3.00%	3.50%	4.00%	4.50%	5.00%
% of Growth on Rainwater Systems	5.0%	5.5%	6.0%	6.5%	7.0%	7.5%	8.0%	8.5%	9.0%	9.5%	10.0%
% of Growth on LCRA 290 Line		35.0%	55.0%	60.0%	65.0%	70.0%	75.0%	80.0%	85.0%	90.0%	95.0%
% of Growth on LCRA RR12 Line											
% of Exist. Demand Converting to Central Wtr Syster	0.0%	5.0%	5.5%	6.0%	6.5%	7.0%	7.5%	8.0%	8.5%	9.0%	10.0%
Rural % of Planning Area Population	34.0%	30.6%	27.2%	23.8%	20.4%	17.0%	13.6%	10.2%	6.8%	3.4%	0.0%
% of New Growth that is Rural		5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
% Reduction in Base Water Use		0.75%	1.50%	2.25%	3.00%	3.75%	4.50%	5.25%	6.00%	6.75%	7.50%
% of Growth on Rainwater Systems	15.0%	16.5%	18.0%	19.5%	21.0%	22.5%	24.0%	25.5%	27.0%	28.5%	30.0%
SUBURBAN AREA											
Population - Inside City	2,435	3,040	3,641	4,216	4,765	5,299	5,846	6,378	6,900	7,377	7,934
Base Per Capita Water Use (gpcd)	181	180	178	177	176	176	175	175	175	175	175
Per Capita Water Use w/Addit. Conservation	181	208	250	287	265	254	245	237	231	226	220
Population - Outside City	-	503	1,514	2,729	2,567	2,575	2,583	2,583	2,583	2,583	2,583
Base Per Capita Water Use (gpcd)	181	180	178	177	176	176	175	175	175	175	175
Per Capita Water Use w/Addit. Conservation		208	250	287	265	254	245	237	231	226	220
Water Demand											
Annual (ac-ft)	493.8	712.4	1,027.8	1,377.1	1,445.5	1,547.8	1,652.3	1,756.6	1,859.0	1,952.4	2,061.5
Average Day (mgd)	**0.441**	**0.636**	**0.918**	**1.230**	**1.291**	**1.382**	**1.475**	**1.568**	**1.660**	**1.743**	**1.841**
Use of Existing Water Supply (mgd)											
Rainwater Collection Systems	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022
Trinity GW - Suburban	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034
DS WSC	0.385	0.385	0.385	0.385	0.385	0.385	0.385	0.385	0.385	0.385	0.385
LCRA US290 Pipeline	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	**0.441**	**0.441**	**0.441**	**0.441**	**0.441**	**0.441**	**0.441**	**0.441**	**0.441**	**0.441**	**0.441**
No Action Surplus or Unmet Need	**0.000**	**(0.195)**	**(0.477)**	**(0.789)**	**(0.850)**	**(0.941)**	**(1.034)**	**(1.128)**	**(1.219)**	**(1.302)**	**(1.400)**
Use of Additional Water Management Measures (mgd)											
Additional Water Conservation		0.003	0.009	0.018	0.026	0.035	0.044	0.055	0.066	0.078	0.092
Rainwater Collection Systems		0.011	0.028	0.048	0.052	0.059	0.066	0.074	0.083	0.091	0.100
Trinity GW - Suburban		0.024	0.046	0.067	0.038	0.017	(0.006)	(0.031)	(0.057)	(0.082)	(0.119)
DS WSC		0.067	0.125	0.173	0.211	0.244	0.273	0.298	0.318	0.331	0.350
LCRA US290 Pipeline		0.090	0.269	0.483	0.523	0.587	0.657	0.731	0.809	0.884	0.977
Total	**0.000**	**0.195**	**0.477**	**0.789**	**0.850**	**0.941**	**1.034**	**1.128**	**1.219**	**1.302**	**1.400**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	1,255	1,340	1,360	1,317	1,221	1,085	920	724	503	260	-
Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
Per Capita Water Use w/Addit. Conservation		118	116	114	113	111	109	107	105	104	-
Water Demand											
Annual (ac-ft)	168.6	178.7	179.8	172.6	158.7	139.8	117.5	91.7	63.2	32.3	-
Average Day (mgd)	**0.151**	**0.160**	**0.161**	**0.154**	**0.142**	**0.125**	**0.105**	**0.082**	**0.056**	**0.029**	**-**
Existing Water Supply (avg day mgd)											
Rainwater Collection Systems	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023
Trinity GW - Rural	0.128	0.128	0.128	0.128	0.128	0.128	0.128	0.128	0.128	0.128	0.128
Total	**0.151**	**0.151**	**0.151**	**0.151**	**0.151**	**0.151**	**0.151**	**0.151**	**0.151**	**0.151**	**0.151**
No Action Surplus or Unmet Need	**0.000**	**(0.009)**	**(0.010)**	**(0.004)**	**0.009**	**0.026**	**0.046**	**0.069**	**0.094**	**0.122**	**0.151**
Use of Additional Water Management Measures (avg day mgd)											
Additional Water Conservation		0.001	0.002	0.003	0.004	0.005	0.005	0.004	0.003	0.002	0.000
Rainwater Collection Systems		0.001	0.002	0.000	(0.002)	(0.006)	(0.011)	(0.017)	(0.024)	(0.023)	(0.023)
Trinity GW - Rural		0.006	0.006	(0.000)	(0.011)	(0.024)	(0.040)	(0.056)	(0.074)	(0.101)	(0.128)
Total	**0.000**	**0.009**	**0.010**	**0.004**	**(0.009)**	**(0.026)**	**(0.046)**	**(0.069)**	**(0.094)**	**(0.122)**	**(0.151)**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Water Service Demand (avg day mgd)	**0.591**	**0.796**	**1.078**	**1.384**	**1.432**	**1.507**	**1.580**	**1.650**	**1.716**	**1.772**	**1.841**
Use of Existing and New Supply (avg day mgd)											
Additional Water Conservation	-	0.004	0.012	0.022	0.030	0.039	0.049	0.059	0.070	0.080	0.092
Rainwater Collection Systems	0.045	0.057	0.074	0.093	0.095	0.098	0.100	0.102	0.104	0.113	0.122
Trinity GW	0.162	0.193	0.214	0.228	0.189	0.155	0.116	0.075	0.031	(0.021)	(0.085)
DS WSC	0.385	0.451	0.509	0.557	0.596	0.628	0.658	0.682	0.702	0.716	0.734
LCRA US290 Pipeline	-	0.090	0.269	0.483	0.523	0.587	0.657	0.731	0.809	0.884	0.977
Total Use of Existing & New Supply	**0.591**	**0.796**	**1.078**	**1.384**	**1.432**	**1.507**	**1.580**	**1.650**	**1.716**	**1.772**	**1.841**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE B-8
WASTEWATER MANAGEMENT PLAN
PLANNING AREA CITY OF DRIPPING SPRINGS
SCENARIO NA

	Estimated	Projected									
Planning Area	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**	**2055**	**2060**
PLANNING FACTORS											
Planning Area Est./Projected Population	3,690	4,380	5,001	5,533	5,986	6,384	6,766	7,102	7,404	7,636	7,934
Annual Growth Rate	1.7%	3.5%	2.7%	2.0%	1.6%	1.3%	1.2%	1.0%	0.8%	0.6%	0.8%
Suburban % of Planning Area Population	66.0%	69.4%	72.8%	76.2%	79.6%	83.0%	86.4%	89.8%	93.2%	96.6%	100.0%
% of New Growth that is Suburban		95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%
% of Demand served by Central Wastewater Systems	70.0%	71.0%	72.0%	73.0%	74.0%	75.0%	76.0%	77.0%	78.0%	79.0%	80.0%
Rural % of Planning Area Population	34.0%	30.6%	27.2%	23.8%	20.4%	17.0%	13.6%	10.2%	6.8%	3.4%	0.0%
% of New Growth that is Rural		5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA											
Population	2,435	3,040	3,641	4,216	4,765	5,299	5,846	6,378	6,900	7,377	7,934
Wastewater Return Flow (gpcd)	71	71	70	68	67	66	65	64	62	61	60
Suburban - Wastewater Service Demand											
Average Day (mgd)	**0.172**	**0.215**	**0.253**	**0.288**	**0.320**	**0.350**	**0.379**	**0.406**	**0.431**	**0.451**	**0.476**
Existing Wastewater Treatment (mgd)											
OSSFs	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052
No-Discharge WWTP	0.121	0.121	0.121	0.121	0.121	0.121	0.121	0.121	0.121	0.121	0.121
Total	**0.172**	**0.172**	**0.172**	**0.172**	**0.172**	**0.172**	**0.172**	**0.172**	**0.172**	**0.172**	**0.172**
Suburban - No Action Surplus or Unmet Need	**0.000**	**(0.043)**	**(0.081)**	**(0.116)**	**(0.148)**	**(0.177)**	**(0.206)**	**(0.233)**	**(0.258)**	**(0.279)**	**(0.304)**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.011	0.019	0.026	0.032	0.036	0.039	0.042	0.043	0.043	0.043
No-Discharge WWTP		0.032	0.062	0.090	0.116	0.142	0.167	0.192	0.215	0.236	0.260
Total	**0.000**	**0.043**	**0.081**	**0.116**	**0.148**	**0.177**	**0.206**	**0.233**	**0.258**	**0.279**	**0.304**
Suburban - Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	1,255	1,340	1,360	1,317	1,221	1,085	920	724	503	260	-
Wastewater Return Flow (gpcd)	71	71	70	69	69	68	67	66	65	64	64
Wastewater Service Demand											
Average Day (mgd)	**0.089**	**0.095**	**0.096**	**0.092**	**0.084**	**0.074**	**0.062**	**0.048**	**0.033**	**0.017**	**0.000**
Existing Wastewater Treatment (mgd)											
OSSFs	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089
Total	**0.089**	**0.089**	**0.089**	**0.089**	**0.089**	**0.089**	**0.089**	**0.089**	**0.089**	**0.089**	**0.089**
No Action Surplus or Unmet Need	**0.000**	**(0.006)**	**(0.006)**	**(0.002)**	**0.005**	**0.016**	**0.028**	**0.041**	**0.056**	**0.073**	**0.089**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.006	0.006	0.002	(0.005)	(0.016)	(0.028)	(0.041)	(0.056)	(0.073)	(0.089)
Total	**0.000**	**0.006**	**0.006**	**0.002**	**(0.005)**	**(0.016)**	**(0.028)**	**(0.041)**	**(0.056)**	**(0.073)**	**(0.089)**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Wastewater Service Demand (avg day mgd)	**0.262**	**0.311**	**0.349**	**0.380**	**0.404**	**0.423**	**0.440**	**0.454**	**0.463**	**0.468**	**0.476**
Use of Existing and Capacity (avg day mgd)											
OSSFs	0.141	0.158	0.167	0.169	0.167	0.161	0.153	0.141	0.128	0.112	0.095
No-Discharge WWTP	0.121	0.153	0.182	0.211	0.237	0.262	0.288	0.312	0.336	0.357	0.381
Total Use of Existing & New Supply	**0.262**	**0.311**	**0.349**	**0.380**	**0.404**	**0.423**	**0.440**	**0.454**	**0.463**	**0.468**	**0.476**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE B-9
WATER MANAGEMENT PLAN
PLANNING AREA DRIPPING SPRINGS WSC
SCENARIO NA

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population (inside Planning Area)	1,995	2,368	2,704	2,992	3,236	3,451	3,658	3,840	4,003	4,129	4,289
Annual Growth Rate	4.1%	3.5%	2.7%	2.0%	1.6%	1.3%	1.2%	1.0%	0.8%	0.6%	0.8%
Est. Wholesale (Outside P.A.) Population	2,530	3,003	3,429	3,793	4,104	4,377	4,639	4,869	5,076	5,235	5,439
Annual Growth Rate		3.5%	2.7%	2.0%	1.6%	1.3%	1.2%	1.0%	0.8%	0.6%	0.8%
Suburban % of Planning Area Population	74.7%	77.2%	79.8%	82.3%	84.8%	87.4%	89.9%	92.4%	94.9%	97.5%	100.0%
% of New Growth that is Suburban		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
% Reduction in Base Water Use		0.50%	1.00%	1.50%	2.00%	2.50%	3.00%	3.50%	4.00%	4.50%	5.00%
% of Growth on Rainwater Systems	2.5%	2.8%	3.0%	3.3%	3.5%	3.8%	4.0%	4.3%	4.5%	4.8%	5.0%
% of Growth on LCRA 290 Line	42.6%	175.0%	60.0%	49.0%	40.0%	35.0%	36.0%	33.0%	27.0%	23.0%	38.0%
% of Growth on LCRA RR12 Line											
% of Exist. Demand Converting to Central Wtr Systems		5.0%	5.5%	6.0%	6.0%	5.5%	5.0%	4.5%	4.3%	3.0%	3.0%
Rural % of Planning Area Population	25.3%	22.8%	20.2%	17.7%	15.2%	12.7%	10.1%	7.6%	5.1%	2.5%	0.0%
% of New Growth that is Rural		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
% Reduction in Base Water Use		0.75%	1.50%	2.25%	3.00%	3.75%	4.50%	5.25%	6.00%	6.75%	7.50%
% of Growth on Rainwater Systems	15.0%	16.5%	18.0%	19.5%	21.0%	22.5%	24.0%	25.5%	27.0%	28.5%	30.00%
SUBURBAN AREA											
Population - Outside City	1,490	1,829	2,157	2,462	2,745	3,015	3,288	3,548	3,800	4,024	4,289
Base Per Capita Water Use (gpcd)	153	150	149	147	145	144	142	140	138	137	135
Per Capita Water Use w/Addit. Conservation		150	147	145	142	140	138	135	133	131	128
Population - Inside City	2,530	3,003	3,429	3,793	4,104	4,377	4,639	4,869	5,076	5,235	5,439
Base Per Capita Water Use (gpcd)	152	150	149	147	145	144	142	140	138	137	135
Per Capita Water Use w/Addit. Conservation		150	147	145	142	140	138	135	133	131	128
Water Demand											
Annual (ac-ft)	686.1	813.4	929.7	1,029.3	1,114.0	1,188.1	1,259.1	1,321.0	1,376.0	1,417.8	1,471.1
Average Day (mgd)	**0.613**	**0.726**	**0.830**	**0.919**	**0.995**	**1.061**	**1.124**	**1.179**	**1.229**	**1.266**	**1.314**
	0.597										
Use of Existing Water Supply (mgd)											
Rainwater Collection Systems	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015
Trinity GW - Suburban	0.336	0.336	0.336	0.336	0.336	0.336	0.336	0.336	0.336	0.336	0.336
LCRA US290 Pipeline	0.261	0.261	0.261	0.261	0.261	0.261	0.261	0.261	0.261	0.261	0.261
Total	**0.613**	**0.613**	**0.613**	**0.613**	**0.613**	**0.613**	**0.613**	**0.613**	**0.613**	**0.613**	**0.613**
No Action Surplus or Unmet Need	**0.000**	**(0.114)**	**(0.217)**	**(0.306)**	**(0.382)**	**(0.448)**	**(0.512)**	**(0.567)**	**(0.616)**	**(0.653)**	**(0.701)**
Use of Additional Water Management Measures (mgd)											
Additional Water Conservation		0.004	0.008	0.014	0.020	0.027	0.034	0.041	0.049	0.057	0.066
Rainwater Collection Systems		0.003	0.006	0.009	0.012	0.014	0.017	0.019	0.021	0.023	0.026
Trinity GW - Suburban		(0.123)	(0.123)	(0.122)	(0.123)	(0.122)	(0.122)	(0.123)	(0.123)	(0.122)	(0.122)
LCRA US290 Pipeline		0.230	0.326	0.406	0.473	0.530	0.583	0.629	0.668	0.695	0.732
Total	**0.000**	**0.114**	**0.217**	**0.306**	**0.382**	**0.448**	**0.512**	**0.567**	**0.616**	**0.653**	**0.701**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
gw supply	0.336	0.214	0.214	0.214	0.214	0.214	0.214	0.214	0.214	0.214	0.214
	0.261	0.491	0.586	0.667	0.734	0.791	0.844	0.890	0.929	0.956	0.993
RURAL AREA											
Population	505	539	547	530	491	437	370	291	203	104	-
Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
Per Capita Water Use w/Addit. Conservation		118	116	114	113	111	109	107	105	104	-
Water Demand											
Annual (ac-ft)	67.9	71.8	72.3	69.5	63.8	56.3	47.2	36.8	25.5	12.9	-
Average Day (mgd)	**0.061**	**0.064**	**0.065**	**0.062**	**0.057**	**0.050**	**0.042**	**0.033**	**0.023**	**0.012**	**-**
Existing Water Supply (avg day mgd)											
Rainwater Collection Systems	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009
Trinity GW - Rural	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052
Total	**0.061**	**0.061**	**0.061**	**0.061**	**0.061**	**0.061**	**0.061**	**0.061**	**0.061**	**0.061**	**0.061**
No Action Surplus or Unmet Need	**0.000**	**(0.004)**	**(0.004)**	**(0.001)**	**0.004**	**0.010**	**0.018**	**0.028**	**0.038**	**0.049**	**0.061**
Use of Additional Water Management Measures (avg day mgd)											
Additional Water Conservation		0.000	0.001	0.001	0.002	0.002	0.002	0.002	0.001	0.001	0.000
Rainwater Collection Systems		0.001	0.001	0.000	(0.001)	(0.002)	(0.004)	(0.007)	(0.009)	(0.013)	(0.016)
Trinity GW - Rural		0.002	0.002	(0.000)	(0.004)	(0.010)	(0.016)	(0.023)	(0.030)	(0.037)	(0.044)
Total	**0.000**	**0.004**	**0.004**	**0.001**	**(0.004)**	**(0.010)**	**(0.018)**	**(0.028)**	**(0.038)**	**(0.049)**	**(0.061)**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Water Service Demand (avg day mgd)	**0.673**	**0.790**	**0.895**	**0.981**	**1.052**	**1.111**	**1.166**	**1.212**	**1.251**	**1.277**	**1.314**
Use of Existing and New Supply (avg day mgd)											
Additional Water Conservation	-	0.004	0.009	0.015	0.022	0.028	0.036	0.043	0.051	0.058	0.066
Rainwater Collection Systems	0.024	0.028	0.031	0.034	0.035	0.036	0.037	0.037	0.036	0.035	0.034
Trinity GW	0.388	0.268	0.268	0.265	0.261	0.256	0.250	0.243	0.235	0.229	0.221
LCRA US290 Pipeline	0.261	0.491	0.586	0.667	0.734	0.791	0.844	0.890	0.929	0.956	0.993
Total Use of Existing & New Supply	**0.673**	**0.790**	**0.895**	**0.981**	**1.052**	**1.111**	**1.166**	**1.212**	**1.251**	**1.277**	**1.314**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE B-10
WASTEWATER MANAGEMENT PLAN
PLANNING AREA DRIPPING SPRINGS WSC
SCENARIO NA

Planning Area		Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS												
Planning Area	Est./Projected Population	1,995	2,368	2,704	2,992	3,236	3,451	3,658	3,840	4,003	4,129	4,289
	Annual Growth Rate	4.1%	3.5%	2.7%	2.0%	1.6%	1.3%	1.2%	1.0%	0.8%	0.6%	0.8%
Suburban	% of Planning Area Population	74.7%	77.2%	79.8%	82.3%	84.8%	87.4%	89.9%	92.4%	94.9%	97.5%	100.0%
	% of New Growth that is Suburban		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Demand served by Central Wastewater Systems	80.0%	71.0%	72.0%	73.0%	74.0%	75.0%	76.0%	77.0%	78.0%	79.0%	80.0%
Rural	% of Planning Area Population	25.3%	22.8%	20.2%	17.7%	15.2%	12.7%	10.1%	7.6%	5.1%	2.5%	0.0%
	% of New Growth that is Rural		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	% of Demand served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA												
Population		1,490	1,829	2,157	2,462	2,745	3,015	3,288	3,548	3,800	4,024	4,289
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand												
	Average Day (mgd)	**0.107**	**0.131**	**0.153**	**0.174**	**0.192**	**0.210**	**0.227**	**0.244**	**0.259**	**0.272**	**0.288**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021
	No-Discharge WWTP	0.085	0.085	0.085	0.085	0.085	0.085	0.085	0.085	0.085	0.085	0.085
	Total	**0.107**	**0.107**	**0.107**	**0.107**	**0.107**	**0.107**	**0.107**	**0.107**	**0.107**	**0.107**	**0.107**
Suburban - No Action Surplus or Unmet Need		**0.000**	**(0.024)**	**(0.047)**	**(0.067)**	**(0.086)**	**(0.103)**	**(0.121)**	**(0.137)**	**(0.152)**	**(0.166)**	**(0.182)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.017	0.022	0.026	0.029	0.031	0.033	0.035	0.036	0.036	0.036
	No-Discharge WWTP		0.008	0.025	0.042	0.057	0.072	0.087	0.102	0.117	0.130	0.145
	Total	**0.000**	**0.024**	**0.047**	**0.067**	**0.086**	**0.103**	**0.121**	**0.137**	**0.152**	**0.166**	**0.182**
Suburban - Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA												
Population		505	539	547	530	491	437	370	291	203	104	-
	Wastewater Return Flow (gpcd)	71	71	70	68	67	66	65	64	62	61	60
Wastewater Service Demand												
	Average Day (mgd)	**0.036**	**0.038**	**0.038**	**0.036**	**0.033**	**0.029**	**0.024**	**0.019**	**0.013**	**0.006**	**0.000**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036
	Total	**0.036**	**0.036**	**0.036**	**0.036**	**0.036**	**0.036**	**0.036**	**0.036**	**0.036**	**0.036**	**0.036**
No Action Surplus or Unmet Need		**0.000**	**(0.002)**	**(0.002)**	**(0.000)**	**0.003**	**0.007**	**0.012**	**0.017**	**0.023**	**0.029**	**0.036**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.002	0.002	0.000	(0.003)	(0.007)	(0.012)	(0.017)	(0.023)	(0.029)	(0.036)
	Total	**0.000**	**0.002**	**0.002**	**0.000**	**(0.003)**	**(0.007)**	**(0.012)**	**(0.017)**	**(0.023)**	**(0.029)**	**(0.036)**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA												
Wastewater Service Demand (avg day mgd)		**0.142**	**0.169**	**0.191**	**0.210**	**0.225**	**0.239**	**0.251**	**0.262**	**0.272**	**0.279**	**0.288**
Use of Existing and Capacity (avg day mgd)												
	OSSFs	0.057	0.076	0.081	0.083	0.083	0.081	0.079	0.075	0.070	0.064	0.058
	No-Discharge WWTP	0.085	0.093	0.110	0.127	0.142	0.157	0.173	0.188	0.202	0.215	0.231
	Total Use of Existing & New Supply	**0.142**	**0.169**	**0.191**	**0.210**	**0.225**	**0.239**	**0.251**	**0.262**	**0.272**	**0.279**	**0.288**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE B-11
WATER MANAGEMENT PLAN
PLANNING AREA 290-NE
SCENARIO NA

Planning Area		Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS												
Planning Area	Est./Projected Population	15,234	18,198	20,923	23,319	25,418	27,311	29,167	30,846	32,393	33,652	35,486
	Annual Growth Rate	5.0%	3.6%	2.8%	2.2%	1.7%	1.4%	1.3%	1.1%	1.0%	0.8%	1.1%
Suburban	% of Planning Area Population	68.3%	71.8%	74.2%	75.8%	77.0%	77.9%	78.7%	79.3%	79.8%	80.2%	80.7%
	% of New Growth that is Suburban		90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
	% Reduction in Base Water Use		0.50%	1.00%	1.50%	2.00%	2.50%	3.00%	3.50%	4.00%	4.50%	5.00%
	% of Growth on Rainwater Systems	5.0%	5.5%	6.0%	6.5%	7.0%	7.5%	8.0%	8.5%	9.0%	9.5%	10.0%
	% of Growth on Central Water Systems		50.0%	50.0%	50.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
	% of Exist. Demand Converting to Central Wtr Syster	68.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rural	% of Planning Area Population	31.7%	28.2%	25.8%	24.2%	23.0%	22.1%	21.3%	20.7%	20.2%	19.8%	19.3%
	% of New Growth that is Rural		10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
	% Reduction in Base Water Use		0.75%	1.50%	2.25%	3.00%	3.75%	4.50%	5.25%	6.00%	6.75%	7.50%
	% of Growth on Rainwater Systems	15.0%	16.5%	18.0%	19.5%	21.0%	22.5%	24.0%	25.5%	27.0%	28.5%	30.0%
SUBURBAN AREA												
Population		10,405	13,073	15,525	17,682	19,570	21,274	22,945	24,456	25,848	26,981	28,632
	Base Per Capita Water Use (gpcd)	132	131	129	128	127	127	126	126	126	126	126
	Per Capita Water Use w/Addit. Conservation		130	128	126	124	123	122	122	121	120	120
Water Demand												
	Annual (ac-ft)	1,538.5	1,910.9	2,243.3	2,535.2	2,784.0	3,014.5	3,238.4	3,451.7	3,648.2	3,808.0	4,041.1
	Average Day (mgd)	**1.374**	**1.706**	**2.003**	**2.264**	**2.486**	**2.692**	**2.891**	**3.082**	**3.257**	**3.400**	**3.608**
Use of Existing Water Supply (mgd)												
	Rainwater Collection Systems	0.069	0.069	0.069	0.069	0.069	0.069	0.069	0.069	0.069	0.069	0.069
	Trinity GW - Suburban	0.342	0.342	0.342	0.342	0.342	0.342	0.342	0.342	0.342	0.342	0.342
	Barton-Edwards GW	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
	LCRA US290 Pipeline	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938
	Total	**1.374**	**1.374**	**1.374**	**1.374**	**1.374**	**1.374**	**1.374**	**1.374**	**1.374**	**1.374**	**1.374**
No Action Surplus or Unmet Need		**0.000**	**(0.333)**	**(0.629)**	**(0.890)**	**(1.112)**	**(1.318)**	**(1.518)**	**(1.708)**	**(1.884)**	**(2.026)**	**(2.234)**
Use of Additional Water Management Measures (mgd)												
	Additional Water Conservation		0.009	0.020	0.034	0.050	0.067	0.087	0.108	0.130	0.153	0.180
	Rainwater Collection Systems		0.018	0.036	0.053	0.069	0.084	0.100	0.116	0.132	0.146	0.166
	Trinity GW - Suburban		0.054	(0.010)	(0.142)	(0.147)	(0.192)	(0.104)	(0.031)	0.025	0.054	0.117
	Barton-Edwards GW		0.004	(0.001)	(0.010)	(0.011)	(0.014)	(0.008)	(0.002)	0.002	0.004	0.008
	City of Dripping Springs	0.000	0.090	0.269	0.483	0.523	0.587	0.657	0.731	0.809	0.884	0.977
	City of Austin (80% of Spillar Ranch)		0.157	0.314	0.472	0.629	0.786	0.786	0.786	0.786	0.786	0.786
	Total	**0.000**	**0.333**	**0.629**	**0.890**	**1.112**	**1.318**	**1.518**	**1.708**	**1.884**	**2.026**	**2.234**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA												
Population		4,829	5,125	5,398	5,638	5,847	6,037	6,222	6,390	6,545	6,671	6,854
	Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
	Per Capita Water Use w/Addit. Conservation		118	116	114	113	111	109	107	105	104	102
Water Demand												
	Annual (ac-ft)	649.1	683.2	713.5	738.8	759.8	777.6	794.6	808.9	821.1	829.4	844.5
	Average Day (mgd)	**0.580**	**0.610**	**0.637**	**0.660**	**0.678**	**0.694**	**0.709**	**0.722**	**0.733**	**0.741**	**0.754**
Existing Water Supply (avg day mgd)												
	Rainwater Collection Systems	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087
	Trinity GW - Rural	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
	Barton-Edwards GW	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033
	Total	**0.580**	**0.580**	**0.580**	**0.580**	**0.580**	**0.580**	**0.580**	**0.580**	**0.580**	**0.580**	**0.580**
No Action Surplus or Unmet Need		**0.000**	**(0.030)**	**(0.057)**	**(0.080)**	**(0.099)**	**(0.115)**	**(0.130)**	**(0.143)**	**(0.154)**	**(0.161)**	**(0.175)**
Use of Additional Water Management Measures (avg day mgd)												
	Additional Water Conservation		0.005	0.010	0.015	0.020	0.026	0.032	0.038	0.044	0.050	0.057
	Rainwater Collection Systems		0.005	0.010	0.014	0.018	0.022	0.025	0.029	0.032	0.034	0.038
	Trinity GW - Rural		0.019	0.035	0.048	0.056	0.062	0.068	0.071	0.073	0.072	0.075
	Barton-Edwards GW		0.001	0.003	0.003	0.004	0.004	0.005	0.005	0.005	0.005	0.005
	Total	**0.000**	**0.030**	**0.057**	**0.080**	**0.099**	**0.115**	**0.130**	**0.143**	**0.154**	**0.161**	**0.175**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA												
Water Service Demand (avg day mgd)		**1.953**	**2.316**	**2.640**	**2.923**	**3.164**	**3.386**	**3.601**	**3.804**	**3.990**	**4.141**	**4.362**
Use of Existing and New Supply (avg day mgd)												
	Additional Water Conservation	-	0.013	0.030	0.049	0.070	0.093	0.119	0.146	0.174	0.203	0.237
	Rainwater Collection Systems	0.156	0.179	0.202	0.223	0.242	0.261	0.281	0.301	0.319	0.335	0.360
	Trinity GW	0.802	0.875	0.827	0.708	0.711	0.672	0.765	0.842	0.899	0.928	0.993
	Barton-Edwards GW	0.058	0.063	0.060	0.051	0.051	0.048	0.055	0.061	0.065	0.067	0.072
	LCRA US290 Pipeline	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938	0.938
	City of Dripping Springs	-	0.090	0.269	0.483	0.523	0.587	0.657	0.731	0.809	0.884	0.977
	City of Austin (80% of Spillar Ranch)	-	0.157	0.314	0.472	0.629	0.786	0.786	0.786	0.786	0.786	0.786
	Total Use of Existing & New Supply	**1.953**	**2.316**	**2.640**	**2.923**	**3.164**	**3.386**	**3.601**	**3.804**	**3.990**	**4.141**	**4.362**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE B-12
WASTEWATER MANAGEMENT PLAN
PLANNING AREA 290-NE
SCENARIO NA

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	15,234	18,198	20,923	23,319	25,418	27,311	29,167	30,846	32,393	33,652	35,486
Annual Growth Rate	5.0%	3.6%	2.8%	2.2%	1.7%	1.4%	1.3%	1.1%	1.0%	0.8%	1.1%
Suburban % of Planning Area Population	68.3%	71.8%	74.2%	75.8%	77.0%	77.9%	78.7%	79.3%	79.8%	80.2%	80.7%
% of New Growth that is Suburban		90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
% of Growth served by Central Wastewater Systems		75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%
Rural % of Planning Area Population	31.7%	28.2%	25.8%	24.2%	23.0%	22.1%	21.3%	20.7%	20.2%	19.8%	19.3%
% of New Growth that is Rural		10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA											
Population	10,405	13,073	15,525	17,682	19,570	21,274	22,945	24,456	25,848	26,981	28,632
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand											
Average Day (mgd)	**0.744**	**0.935**	**1.103**	**1.248**	**1.371**	**1.481**	**1.586**	**1.679**	**1.762**	**1.826**	**1.924**
Existing Wastewater Treatment (mgd)											
OSSFs	0.521	0.521	0.521	0.521	0.521	0.521	0.521	0.521	0.521	0.521	0.521
No-Discharge WWTP	0.223	0.223	0.223	0.223	0.223	0.223	0.223	0.223	0.223	0.223	0.223
Total	**0.744**	**0.744**	**0.744**	**0.744**	**0.744**	**0.744**	**0.744**	**0.744**	**0.744**	**0.744**	**0.744**
Suburban - No Action Surplus or Unmet Need	**0.000**	**(0.191)**	**(0.359)**	**(0.503)**	**(0.627)**	**(0.737)**	**(0.842)**	**(0.934)**	**(1.018)**	**(1.082)**	**(1.180)**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.048	0.090	0.126	0.157	0.184	0.210	0.234	0.254	0.270	0.295
No-Discharge WWTP		0.143	0.269	0.378	0.470	0.552	0.631	0.701	0.763	**0.811**	0.885
Total	**0.000**	**0.191**	**0.359**	**0.503**	**0.627**	**0.737**	**0.842**	**0.934**	**1.018**	**1.082**	**1.180**
Suburban - Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	4,829	5,125	5,398	5,638	5,847	6,037	6,222	6,390	6,545	6,671	6,854
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Wastewater Service Demand											
Average Day (mgd)	**0.345**	**0.367**	**0.383**	**0.398**	**0.410**	**0.420**	**0.430**	**0.439**	**0.446**	**0.451**	**0.461**
Existing Wastewater Treatment (mgd)											
OSSFs	0.345	0.345	0.345	0.345	0.345	0.345	0.345	0.345	0.345	0.345	0.345
Total	**0.345**	**0.345**	**0.345**	**0.345**	**0.345**	**0.345**	**0.345**	**0.345**	**0.345**	**0.345**	**0.345**
No Action Surplus or Unmet Need	**0.000**	**(0.021)**	**(0.038)**	**(0.052)**	**(0.064)**	**(0.075)**	**(0.085)**	**(0.093)**	**(0.101)**	**(0.106)**	**(0.115)**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.021	0.038	0.052	0.064	0.075	0.085	0.093	0.101	0.106	0.115
Total	**0.000**	**0.021**	**0.038**	**0.052**	**0.064**	**0.075**	**0.085**	**0.093**	**0.101**	**0.106**	**0.115**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Wastewater Service Demand (avg day mgd)	**1.090**	**1.302**	**1.486**	**1.645**	**1.781**	**1.901**	**2.016**	**2.117**	**2.208**	**2.278**	**2.385**
Use of Existing and Capacity (avg day mgd)											
OSSFs	0.866	0.935	0.994	1.045	1.088	1.125	1.161	1.193	1.221	1.243	1.276
No-Discharge WWTP	0.223	0.366	0.492	0.601	0.694	0.776	0.855	0.924	0.986	1.035	1.108
Total Use of Existing & New Supply	**1.090**	**1.302**	**1.486**	**1.645**	**1.781**	**1.901**	**2.016**	**2.117**	**2.208**	**2.278**	**2.385**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE B-13
WATER MANAGEMENT PLAN
PLANNING AREA **HAYS AREA**
SCENARIO **NA**

	Estimated	Projected									
Planning Area	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**	**2055**	**2060**
PLANNING FACTORS											
Planning Area Est./Projected Population	4,443	5,165	5,761	6,214	6,544	6,784	6,983	7,113	7,190	7,189	6,939
Annual Growth Rate	2.0%	3.1%	2.2%	1.5%	1.0%	0.7%	0.6%	0.4%	0.2%	0.0%	-0.7%
Suburban % of Planning Area Population	95.7%	94.9%	94.4%	94.1%	93.9%	93.7%	93.6%	93.6%	93.5%	93.5%	93.7%
% of New Growth that is Suburban		90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
% Reduction in Base Water Use		0.75%	1.50%	2.25%	3.00%	3.75%	4.50%	5.25%	6.00%	6.75%	7.50%
% of Growth on Rainwater Systems	5.0%	5.5%	6.0%	6.5%	7.0%	7.5%	8.0%	8.5%	9.0%	9.5%	10.0%
% of Growth on Central Water Systems			0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
% of Exist. Demand Converting to Central Wtr Systems			0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rural % of Planning Area Population	4.3%	5.1%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
% of New Growth that is Rural		10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
% Reduction in Base Water Use		0.75%	1.50%	2.25%	3.00%	3.75%	4.50%	5.25%	6.00%	6.75%	7.50%
% of Growth on Rainwater Systems	10.0%	11.0%	12.0%	13.0%	14.0%	15.0%	16.0%	17.0%	18.0%	19.0%	20.0%
SUBURBAN AREA											
Population	4,252	4,902	5,438	5,846	6,143	6,359	6,538	6,655	6,724	6,723	6,499
Base Per Capita Water Use (gpcd)	132	131	129	128	127	127	126	126	126	126	126
Per Capita Water Use w/Addit. Conservation		130	127	125	123	122	120	119	118	118	117
Water Demand											
Annual (ac-ft)	628.7	716.5	785.8	838.2	873.8	901.1	922.8	939.2	949.0	948.9	917.2
Average Day (mgd)	**0.561**	**0.640**	**0.702**	**0.748**	**0.780**	**0.805**	**0.824**	**0.839**	**0.847**	**0.847**	**0.819**
Use of Existing Water Supply (mgd)											
Rainwater Collection Systems	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028
Barton-Edwards GW	0.533	0.533	0.533	0.533	0.533	0.533	0.533	0.533	0.533	0.533	0.533
Total	**0.561**	**0.561**	**0.561**	**0.561**	**0.561**	**0.561**	**0.561**	**0.561**	**0.561**	**0.561**	**0.561**
No Action Surplus or Unmet Need	**0.000**	**(0.078)**	**(0.140)**	**(0.187)**	**(0.219)**	**(0.243)**	**(0.263)**	**(0.277)**	**(0.286)**	**(0.286)**	**(0.258)**
Use of Additional Water Management Measures (mgd)											
Additional Water Conservation		0.005	0.011	0.017	0.023	0.030	0.037	0.044	0.051	0.057	0.061
Rainwater Collection Systems		0.004	0.008	0.011	0.013	0.015	0.017	0.018	0.019	0.019	0.016
Barton-Edwards GW		0.069	0.122	0.159	0.182	0.198	0.209	0.215	0.216	0.210	0.180
Total	**0.000**	**0.078**	**0.140**	**0.187**	**0.219**	**0.243**	**0.263**	**0.277**	**0.286**	**0.286**	**0.258**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	191	263	323	368	401	425	445	458	466	466	441
Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
Per Capita Water Use w/Addit. Conservation		118	116	114	113	111	109	107	105	104	102
Water Demand											
Annual (ac-ft)	25.7	35.1	42.7	48.2	52.1	54.8	56.8	58.0	58.4	57.9	54.3
Average Day (mgd)	**0.023**	**0.031**	**0.038**	**0.043**	**0.047**	**0.049**	**0.051**	**0.052**	**0.052**	**0.052**	**0.048**
Existing Water Supply (avg day mgd)											
Rainwater Collection Systems	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Barton-Edwards GW	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021
Total	**0.023**	**0.023**	**0.023**	**0.023**	**0.023**	**0.023**	**0.023**	**0.023**	**0.023**	**0.023**	**0.023**
No Action Surplus or Unmet Need	**0.000**	**(0.008)**	**(0.015)**	**(0.020)**	**(0.024)**	**(0.026)**	**(0.028)**	**(0.029)**	**(0.029)**	**(0.029)**	**(0.026)**
Use of Additional Water Management Measures (avg day mgd)											
Additional Water Conservation		0.000	0.001	0.001	0.001	0.002	0.002	0.003	0.003	0.003	0.004
Rainwater Collection Systems		0.001	0.002	0.002	0.003	0.003	0.004	0.004	0.004	0.004	0.003
Barton-Edwards GW		0.007	0.013	0.017	0.019	0.021	0.022	0.022	0.022	0.022	0.019
Total	**0.000**	**0.008**	**0.015**	**0.020**	**0.024**	**0.026**	**0.028**	**0.029**	**0.029**	**0.029**	**0.026**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Water Service Demand (avg day mgd)	**0.584**	**0.671**	**0.740**	**0.791**	**0.827**	**0.853**	**0.875**	**0.890**	**0.900**	**0.899**	**0.867**
Use of Existing and New Supply (avg day mgd)											
Additional Water Conservation	-	0.005	0.011	0.018	0.025	0.032	0.039	0.047	0.054	0.061	0.065
Rainwater Collection Systems	0.030	0.036	0.040	0.044	0.047	0.049	0.051	0.052	0.053	0.053	0.049
Barton-Edwards GW	0.554	0.630	0.688	0.730	0.755	0.773	0.785	0.792	0.793	0.786	0.753
Total Use of Existing & New Supply	**0.584**	**0.671**	**0.740**	**0.791**	**0.827**	**0.853**	**0.875**	**0.890**	**0.900**	**0.899**	**0.867**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE B-14
WASTEWATER MANAGEMENT PLAN
PLANNING AREA **HAYS AREA**
SCENARIO **NA**

	Estimated	Projected									
Planning Area	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**	**2055**	**2060**
PLANNING FACTORS											
Planning Area Est./Projected Population	4,443	5,165	5,761	6,214	6,544	6,784	6,983	7,113	7,190	7,189	6,939
Annual Growth Rate	2.0%	3.1%	2.2%	1.5%	1.0%	0.7%	0.6%	0.4%	0.2%	0.0%	-0.7%
Suburban % of Planning Area Population	95.7%	94.9%	94.4%	94.1%	93.9%	93.7%	93.6%	93.6%	93.5%	93.5%	93.7%
% of New Growth that is Suburban		90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rural % of Planning Area Population	4.3%	5.1%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
% of New Growth that is Rural		10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA											
Population	4,252	4,902	5,438	5,846	6,143	6,359	6,538	6,655	6,724	6,723	6,499
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand											
Average Day (mgd)	**0.304**	**0.351**	**0.386**	**0.412**	**0.430**	**0.443**	**0.452**	**0.457**	**0.458**	**0.455**	**0.437**
Existing Wastewater Treatment (mgd)											
OSSFs	0.304	0.304	0.304	0.304	0.304	0.304	0.304	0.304	0.304	0.304	0.304
No-Discharge WWTP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	**0.304**	**0.304**	**0.304**	**0.304**	**0.304**	**0.304**	**0.304**	**0.304**	**0.304**	**0.304**	**0.304**
Suburban - No Action Surplus or Unmet Need	**0.000**	**(0.046)**	**(0.082)**	**(0.108)**	**(0.126)**	**(0.138)**	**(0.148)**	**(0.153)**	**(0.154)**	**(0.151)**	**(0.133)**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.046	0.082	0.108	0.126	0.138	0.148	0.153	0.154	0.151	0.133
No-Discharge WWTP		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	**0.000**	**0.046**	**0.082**	**0.108**	**0.126**	**0.138**	**0.148**	**0.153**	**0.154**	**0.151**	**0.133**
Suburban - Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	191	263	323	368	401	425	445	458	466	466	441
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Wastewater Service Demand											
Average Day (mgd)	**0.014**	**0.019**	**0.023**	**0.026**	**0.028**	**0.030**	**0.031**	**0.031**	**0.032**	**0.032**	**0.030**
Existing Wastewater Treatment (mgd)											
OSSFs	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014
Total	**0.014**	**0.014**	**0.014**	**0.014**	**0.014**	**0.014**	**0.014**	**0.014**	**0.014**	**0.014**	**0.014**
No Action Surplus or Unmet Need	**0.000**	**(0.005)**	**(0.009)**	**(0.012)**	**(0.014)**	**(0.016)**	**(0.017)**	**(0.018)**	**(0.018)**	**(0.018)**	**(0.016)**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.005	0.009	0.012	0.014	0.016	0.017	0.018	0.018	0.018	0.016
Total	**0.000**	**0.005**	**0.009**	**0.012**	**0.014**	**0.016**	**0.017**	**0.018**	**0.018**	**0.018**	**0.016**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Wastewater Service Demand (avg day mgd)	**0.318**	**0.369**	**0.409**	**0.438**	**0.459**	**0.472**	**0.483**	**0.488**	**0.490**	**0.487**	**0.466**
Use of Existing and Capacity (avg day mgd)											
OSSFs	0.318	0.369	0.409	0.438	0.459	0.472	0.483	0.488	0.490	0.487	0.466
No-Discharge WWTP	-	-	-	-	-	-	-	-	-	-	-
Total Use of Existing & New Supply	**0.318**	**0.369**	**0.409**	**0.438**	**0.459**	**0.472**	**0.483**	**0.488**	**0.490**	**0.487**	**0.466**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE B-15
WATER MANAGEMENT PLAN
PLANNING AREA 967
SCENARIO NA

	Planning Area	Estimated	Projected									
		2010	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**	**2055**	**2060**
PLANNING FACTORS												
Planning Area	Est./Projected Population	3,138	3,719	4,239	4,682	5,055	5,380	5,692	5,963	6,204	6,387	6,609
	Annual Growth Rate	6.5%	3.5%	2.7%	2.0%	1.5%	1.3%	1.1%	0.9%	0.8%	0.6%	0.7%
Suburban	% of Planning Area Population	70.0%	73.1%	75.2%	76.6%	77.6%	78.3%	79.0%	79.5%	79.9%	80.2%	80.5%
	% of New Growth that is Suburban		90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
	% Reduction in Base Water Use		0.75%	1.50%	2.25%	3.00%	3.75%	4.50%	5.25%	6.00%	6.75%	7.50%
	% of Growth on Rainwater Systems	5.0%	5.5%	6.0%	6.5%	7.0%	7.5%	8.0%	8.5%	9.0%	9.5%	10.0%
	% of Growth on Central Water Systems			90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
	% of Exist. Demand Converting to Central Wtr Systems			0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rural	% of Planning Area Population	30.0%	26.9%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of New Growth that is Rural		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
	% Reduction in Base Water Use		0.75%	1.50%	2.25%	3.00%	3.75%	4.50%	5.25%	6.00%	6.75%	7.50%
	% of Growth on Rainwater Systems	10.0%	11.0%	12.0%	13.0%	14.0%	15.0%	16.0%	17.0%	18.0%	19.0%	20.0%
SUBURBAN AREA												
Population		2,197	2,720	3,188	3,586	3,922	4,215	4,495	4,739	4,956	5,121	5,321
	Base Per Capita Water Use (gpcd)	132	131	129	128	127	127	126	126	126	126	126
	Per Capita Water Use w/Addit. Conservation		130	127	125	123	122	120	119	118	118	117
Water Demand												
	Annual (ac-ft)	324.8	397.6	460.6	514.2	558.0	597.3	634.5	668.9	699.5	722.7	750.9
	Average Day (mgd)	**0.290**	**0.355**	**0.411**	**0.459**	**0.498**	**0.533**	**0.566**	**0.597**	**0.625**	**0.645**	**0.670**
Use of Existing Water Supply (mgd)												
	Rainwater Collection Systems	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015
	Barton-Edwards GW	0.224	0.224	0.224	0.224	0.224	0.224	0.224	0.224	0.224	0.224	0.224
	Trinity GW - Suburban	0.051	0.051	0.051	0.051	0.051	0.051	0.051	0.051	0.051	0.051	0.051
	Total	**0.290**	**0.290**	**0.290**	**0.290**	**0.290**	**0.290**	**0.290**	**0.290**	**0.290**	**0.290**	**0.290**
No Action Surplus or Unmet Need		**0.000**	**(0.065)**	**(0.121)**	**(0.169)**	**(0.208)**	**(0.243)**	**(0.276)**	**(0.307)**	**(0.335)**	**(0.355)**	**(0.380)**
Use of Additional Water Management Measures (mgd)												
	Additional Water Conservation		0.003	0.006	0.010	0.015	0.020	0.025	0.031	0.037	0.044	0.050
	Rainwater Collection Systems		0.004	0.007	0.010	0.013	0.015	0.018	0.021	0.023	0.025	0.028
	Barton-Edwards GW		0.048	0.047	0.045	0.042	0.039	0.035	0.030	0.025	0.021	0.015
	Trinity GW - Suburban		0.011	0.011	0.010	0.010	0.009	0.008	0.007	0.006	0.005	0.003
	LCRA US290 Pipeline		0.000	0.051	0.094	0.129	0.160	0.190	0.218	0.243	0.261	0.284
	Total	**0.000**	**0.065**	**0.121**	**0.169**	**0.208**	**0.243**	**0.276**	**0.307**	**0.335**	**0.355**	**0.380**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA												
Population		941	1,057	1,161	1,250	1,324	1,389	1,452	1,506	1,554	1,591	1,635
	Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
	Per Capita Water Use w/Addit. Conservation		118	116	114	113	111	109	107	105	104	102
Water Demand												
	Annual (ac-ft)	126.5	140.9	153.5	163.8	172.1	179.0	185.4	190.6	195.0	197.8	201.5
	Average Day (mgd)	**0.113**	**0.126**	**0.137**	**0.146**	**0.154**	**0.160**	**0.166**	**0.170**	**0.174**	**0.177**	**0.180**
Existing Water Supply (avg day mgd)												
	Rainwater Collection Systems	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011
	Barton-Edwards GW	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083
	Trinity GW - Rural	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019
	Total	**0.113**	**0.113**	**0.113**	**0.113**	**0.113**	**0.113**	**0.113**	**0.113**	**0.113**	**0.113**	**0.113**
No Action Surplus or Unmet Need		**0.000**	**(0.013)**	**(0.024)**	**(0.033)**	**(0.041)**	**(0.047)**	**(0.053)**	**(0.057)**	**(0.061)**	**(0.064)**	**(0.067)**
Use of Additional Water Management Measures (avg day mgd)												
	Additional Water Conservation		0.001	0.002	0.003	0.005	0.006	0.007	0.009	0.010	0.012	0.013
	Rainwater Collection Systems		0.001	0.003	0.004	0.005	0.006	0.007	0.008	0.008	0.009	0.009
	Barton-Edwards GW		0.009	0.016	0.021	0.025	0.028	0.031	0.033	0.034	0.035	0.036
	Trinity GW - Rural		0.002	0.004	0.005	0.006	0.007	0.007	0.008	0.008	0.008	0.008
	Total	**0.000**	**0.013**	**0.024**	**0.033**	**0.041**	**0.047**	**0.053**	**0.057**	**0.061**	**0.064**	**0.067**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA												
Water Service Demand (avg day mgd)		**0.403**	**0.481**	**0.548**	**0.605**	**0.652**	**0.693**	**0.732**	**0.767**	**0.799**	**0.822**	**0.850**
Use of Existing and New Supply (avg day mgd)												
	Additional Water Conservation	-	0.004	0.008	0.014	0.020	0.026	0.033	0.040	0.048	0.055	0.064
	Rainwater Collection Systems	0.026	0.031	0.036	0.040	0.044	0.047	0.051	0.054	0.057	0.060	0.063
	Barton-Edwards GW	0.307	0.363	0.369	0.373	0.374	0.374	0.373	0.370	0.367	0.363	0.358
	Trinity GW	0.070	0.083	0.084	0.085	0.086	0.085	0.085	0.085	0.084	0.083	0.082
	LCRA US290 Pipeline	-	-	0.051	0.094	0.129	0.160	0.190	0.218	0.243	0.261	0.284
	Total Use of Existing & New Supply	**0.403**	**0.481**	**0.548**	**0.605**	**0.652**	**0.693**	**0.732**	**0.767**	**0.799**	**0.822**	**0.850**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE B-16
WASTEWATER MANAGEMENT PLAN
PLANNING AREA 967
SCENARIO NA

Planning Area		Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS												
Planning Area	Est./Projected Population	3,138	3,719	4,239	4,682	5,055	5,380	5,692	5,963	6,204	6,387	6,609
	Annual Growth Rate	6.5%	3.5%	2.7%	2.0%	1.5%	1.3%	1.1%	0.9%	0.8%	0.6%	0.7%
Suburban	% of Planning Area Population	70.0%	73.1%	75.2%	76.6%	77.6%	78.3%	79.0%	79.5%	79.9%	80.2%	80.5%
	% of New Growth that is Suburban		90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
	% of Growth served by Central Wastewater Systems		75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%
Rural	% of Planning Area Population	30.0%	26.9%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of New Growth that is Rural		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
	% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA												
Population		2,197	2,720	3,188	3,586	3,922	4,215	4,495	4,739	4,956	5,121	5,321
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand												
	Average Day (mgd)	**0.157**	**0.195**	**0.226**	**0.253**	**0.275**	**0.293**	**0.311**	**0.325**	**0.338**	**0.347**	**0.358**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141	0.141
	No-Discharge WWTP	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016
	Total	**0.157**	**0.157**	**0.157**	**0.157**	**0.157**	**0.157**	**0.157**	**0.157**	**0.157**	**0.157**	**0.157**
Suburban - No Action Surplus or Unmet Need		**0.000**	**(0.037)**	**(0.069)**	**(0.096)**	**(0.118)**	**(0.136)**	**(0.154)**	**(0.168)**	**(0.181)**	**(0.189)**	**(0.200)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.009	0.017	0.024	0.029	0.034	0.038	0.042	0.045	0.047	0.050
	No-Discharge WWTP		0.028	0.052	**0.072**	0.088	0.102	0.115	0.126	0.136	0.142	0.150
	Total	**0.000**	**0.037**	**0.069**	**0.096**	**0.118**	**0.136**	**0.154**	**0.168**	**0.181**	**0.189**	**0.200**
Suburban - Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA												
Population		941	1,057	1,161	1,250	1,324	1,389	1,452	1,506	1,554	1,591	1,635
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Wastewater Service Demand												
	Average Day (mgd)	**0.067**	**0.076**	**0.082**	**0.088**	**0.093**	**0.097**	**0.100**	**0.103**	**0.106**	**0.108**	**0.110**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.067	0.067	0.067	0.067	0.067	0.067	0.067	0.067	0.067	0.067	0.067
	Total	**0.067**	**0.067**	**0.067**	**0.067**	**0.067**	**0.067**	**0.067**	**0.067**	**0.067**	**0.067**	**0.067**
No Action Surplus or Unmet Need		**0.000**	**(0.008)**	**(0.015)**	**(0.021)**	**(0.026)**	**(0.029)**	**(0.033)**	**(0.036)**	**(0.039)**	**(0.040)**	**(0.043)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.008	0.015	0.021	0.026	0.029	0.033	0.036	0.039	0.040	0.043
	Total	**0.000**	**0.008**	**0.015**	**0.021**	**0.026**	**0.029**	**0.033**	**0.036**	**0.039**	**0.040**	**0.043**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA												
Wastewater Service Demand (avg day mgd)		**0.224**	**0.270**	**0.309**	**0.341**	**0.368**	**0.390**	**0.411**	**0.429**	**0.444**	**0.454**	**0.467**
Use of Existing and Capacity (avg day mgd)												
	OSSFs	0.209	0.226	0.241	0.254	0.264	0.272	0.280	0.287	0.293	0.296	0.301
	No-Discharge WWTP	0.016	0.044	0.068	0.088	0.104	0.118	0.131	0.142	0.151	0.158	0.166
	Total Use of Existing & New Supply	**0.224**	**0.270**	**0.309**	**0.341**	**0.368**	**0.390**	**0.411**	**0.429**	**0.444**	**0.454**	**0.467**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE B-17
WATER MANAGEMENT PLAN
PLANNING AREA 150
SCENARIO NA

	Estimated					Projected					
Planning Area	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**	**2055**	**2060**
PLANNING FACTORS											
Planning Area Est./Projected Population	6,117	7,111	7,931	8,555	9,009	9,340	9,614	9,793	9,899	9,897	9,676
Annual Growth Rate	3.0%	3.1%	2.2%	1.5%	1.0%	0.7%	0.6%	0.4%	0.2%	0.0%	-0.5%
Suburban % of Planning Area Population	54.9%	58.4%	60.6%	62.1%	63.0%	63.6%	64.0%	64.3%	64.5%	64.5%	64.1%
% of New Growth that is Suburban		80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%
% Reduction in Base Water Use		1.00%	2.00%	3.00%	4.00%	5.00%	6.00%	7.00%	8.00%	9.00%	10.00%
% of Growth on Rainwater Systems	5.0%	5.5%	6.0%	6.5%	7.0%	7.5%	8.0%	8.5%	9.0%	9.5%	10.0%
% of Growth on Central Water Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
% of Exist. Demand Converting to Central Wtr Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rural % of Planning Area Population	45.1%	41.6%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
% of New Growth that is Rural		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
% Reduction in Base Water Use		1.00%	2.00%	3.00%	4.00%	5.00%	6.00%	7.00%	8.00%	9.00%	10.00%
% of Growth on Rainwater Systems	10.0%	11.0%	12.0%	13.0%	14.0%	15.0%	16.0%	17.0%	18.0%	19.0%	20.0%
SUBURBAN AREA											
Population	3,358	4,153	4,809	5,308	5,672	5,937	6,156	6,299	6,383	6,382	6,205
Base Per Capita Water Use (gpcd)	132	131	129	128	127	127	126	126	126	126	126
Per Capita Water Use w/Addit. Conservation		129	126	124	122	120	118	117	116	115	113
Water Demand											
Annual (ac-ft)	496.5	607.1	694.9	761.1	806.8	841.2	868.8	889.0	901.0	900.8	875.8
Average Day (mgd)	**0.443**	**0.542**	**0.620**	**0.680**	**0.720**	**0.751**	**0.776**	**0.794**	**0.804**	**0.804**	**0.782**
Use of Existing Water Supply (mgd)											
Rainwater Collection Systems	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022
Barton-Edwards GW	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082
Edwards GW	0.217	0.217	0.217	0.217	0.217	0.217	0.217	0.217	0.217	0.217	0.217
Trinity GW - Suburban	0.121	0.121	0.121	0.121	0.121	0.121	0.121	0.121	0.121	0.121	0.121
Total	**0.443**	**0.443**	**0.443**	**0.443**	**0.443**	**0.443**	**0.443**	**0.443**	**0.443**	**0.443**	**0.443**
No Action Surplus or Unmet Need	**0.000**	**(0.099)**	**(0.177)**	**(0.236)**	**(0.277)**	**(0.308)**	**(0.332)**	**(0.350)**	**(0.361)**	**(0.361)**	**(0.339)**
Use of Additional Water Management Measures (mgd)											
Additional Water Conservation		0.005	0.012	0.020	0.029	0.038	0.047	0.056	0.064	0.072	0.078
Rainwater Collection Systems		0.005	0.010	0.014	0.017	0.019	0.021	0.023	0.024	0.024	0.021
Barton-Edwards GW		0.017	0.030	0.039	0.045	0.049	0.052	0.053	0.053	0.052	0.047
Edwards GW		0.045	0.080	0.104	0.119	0.130	0.137	0.141	0.141	0.137	0.123
Trinity GW - Suburban		0.025	0.045	0.058	0.067	0.072	0.076	0.078	0.079	0.076	0.069
Total	**0.000**	**0.099**	**0.177**	**0.236**	**0.277**	**0.308**	**0.332**	**0.350**	**0.361**	**0.361**	**0.339**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	2,759	2,958	3,122	3,247	3,337	3,404	3,458	3,494	3,515	3,515	3,471
Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
Per Capita Water Use w/Addit. Conservation		118	116	114	111	109	107	105	103	101	99
Water Demand											
Annual (ac-ft)	370.9	394.3	412.6	425.5	433.7	438.4	441.6	442.3	441.0	437.0	427.7
Average Day (mgd)	**0.331**	**0.352**	**0.368**	**0.380**	**0.387**	**0.391**	**0.394**	**0.395**	**0.394**	**0.390**	**0.382**
Existing Water Supply (avg day mgd)											
Rainwater Collection Systems	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033
Barton-Edwards GW	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058
Edwards GW	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154
Trinity GW - Rural	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086
Total	**0.331**	**0.331**	**0.331**	**0.331**	**0.331**	**0.331**	**0.331**	**0.331**	**0.331**	**0.331**	**0.331**
No Action Surplus or Unmet Need	**0.000**	**(0.021)**	**(0.037)**	**(0.049)**	**(0.056)**	**(0.060)**	**(0.063)**	**(0.064)**	**(0.063)**	**(0.059)**	**(0.051)**
Use of Additional Water Management Measures (avg day mgd)											
Additional Water Conservation		0.004	0.007	0.011	0.015	0.020	0.024	0.028	0.032	0.035	0.038
Rainwater Collection Systems		0.002	0.004	0.006	0.007	0.007	0.008	0.008	0.008	0.007	0.005
Barton-Edwards GW		0.003	0.005	0.006	0.007	0.007	0.006	0.006	0.005	0.003	0.001
Edwards GW		0.008	0.013	0.016	0.017	0.017	0.016	0.015	0.012	0.009	0.004
Trinity GW - Rural		0.004	0.007	0.009	0.010	0.010	0.009	0.008	0.007	0.005	0.002
Total	**0.000**	**0.021**	**0.037**	**0.049**	**0.056**	**0.060**	**0.063**	**0.064**	**0.063**	**0.059**	**0.051**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Water Service Demand (avg day mgd)	**0.774**	**0.894**	**0.989**	**1.059**	**1.108**	**1.143**	**1.170**	**1.189**	**1.198**	**1.194**	**1.164**
Use of Existing and New Supply (avg day mgd)											
Additional Water Conservation	-	0.009	0.020	0.032	0.044	0.057	0.070	0.083	0.096	0.108	0.116
Rainwater Collection Systems	0.055	0.063	0.070	0.075	0.079	0.082	0.084	0.086	0.087	0.086	0.082
Barton-Edwards GW	0.141	0.161	0.176	0.186	0.193	0.196	0.199	0.199	0.199	0.196	0.189
Edwards GW	0.371	0.424	0.464	0.492	0.508	0.518	0.524	0.526	0.524	0.517	0.498
Trinity GW	0.207	0.237	0.259	0.274	0.284	0.289	0.293	0.294	0.293	0.288	0.278
Total Use of Existing & New Supply	**0.774**	**0.894**	**0.989**	**1.059**	**1.108**	**1.143**	**1.170**	**1.189**	**1.198**	**1.194**	**1.164**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE B-18
WASTEWATER MANAGEMENT PLAN
PLANNING AREA 150
SCENARIO NA

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	6,117	7,111	7,931	8,555	9,009	9,340	9,614	9,793	9,899	9,897	9,676
Annual Growth Rate	3.0%	3.1%	2.2%	1.5%	1.0%	0.7%	0.6%	0.4%	0.2%	0.0%	-0.5%
Suburban % of Planning Area Population	54.9%	58.4%	60.6%	62.1%	63.0%	63.6%	64.0%	64.3%	64.5%	64.5%	64.1%
% of New Growth that is Suburban		80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%
% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rural % of Planning Area Population	45.1%	41.6%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
% of New Growth that is Rural		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA											
Population	3,358	4,153	4,809	5,308	5,672	5,937	6,156	6,299	6,383	6,382	6,205
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand											
Average Day (mgd)	**0.240**	**0.297**	**0.342**	**0.375**	**0.397**	**0.413**	**0.425**	**0.432**	**0.435**	**0.432**	**0.417**
Existing Wastewater Treatment (mgd)											
OSSFs	0.239	0.239	0.239	0.239	0.239	0.239	0.239	0.239	0.239	0.239	0.239
No-Discharge WWTP	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Total	**0.240**	**0.240**	**0.240**	**0.240**	**0.240**	**0.240**	**0.240**	**0.240**	**0.240**	**0.240**	**0.240**
Suburban - No Action Surplus or Unmet Need	**0.000**	**(0.057)**	**(0.101)**	**(0.134)**	**(0.157)**	**(0.173)**	**(0.185)**	**(0.192)**	**(0.195)**	**(0.192)**	**(0.177)**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.057	0.101	0.134	0.157	0.173	0.185	0.192	0.195	0.192	0.177
No-Discharge WWTP		0.000	**0.000**	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	**0.000**	**0.057**	**0.101**	**0.134**	**0.157**	**0.173**	**0.185**	**0.192**	**0.195**	**0.192**	**0.177**
Suburban - Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	2,759	2,958	3,122	3,247	3,337	3,404	3,458	3,494	3,515	3,515	3,471
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Wastewater Service Demand											
Average Day (mgd)	**0.197**	**0.212**	**0.222**	**0.229**	**0.234**	**0.237**	**0.239**	**0.240**	**0.240**	**0.238**	**0.233**
Existing Wastewater Treatment (mgd)											
OSSFs	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197
Total	**0.197**	**0.197**	**0.197**	**0.197**	**0.197**	**0.197**	**0.197**	**0.197**	**0.197**	**0.197**	**0.197**
No Action Surplus or Unmet Need	**0.000**	**(0.014)**	**(0.024)**	**(0.032)**	**(0.037)**	**(0.040)**	**(0.042)**	**(0.043)**	**(0.042)**	**(0.041)**	**(0.036)**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.014	0.024	0.032	0.037	0.040	0.042	0.043	0.042	0.041	0.036
Total	**0.000**	**0.014**	**0.024**	**0.032**	**0.037**	**0.040**	**0.042**	**0.043**	**0.042**	**0.041**	**0.036**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Wastewater Service Demand (avg day mgd)	**0.437**	**0.509**	**0.563**	**0.604**	**0.631**	**0.650**	**0.665**	**0.672**	**0.675**	**0.670**	**0.650**
Use of Existing and Capacity (avg day mgd)											
OSSFs	0.436	0.507	0.562	0.602	0.630	0.649	0.663	0.671	0.674	0.669	0.649
No-Discharge WWTP	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Total Use of Existing & New Supply	**0.437**	**0.509**	**0.563**	**0.604**	**0.631**	**0.650**	**0.665**	**0.672**	**0.675**	**0.670**	**0.650**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE B-19
WATER MANAGEMENT PLAN
PLANNING AREA 12-A
SCENARIO NA

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	3,186	3,704	4,131	4,456	4,692	4,865	5,008	5,100	5,156	5,155	4,947
Annual Growth Rate	3.3%	3.1%	2.2%	1.5%	1.0%	0.7%	0.6%	0.4%	0.2%	0.0%	-0.8%
Suburban % of Planning Area Population	18.4%	21.4%	23.3%	24.6%	25.3%	25.8%	26.3%	26.5%	26.6%	26.6%	26.1%
% of New Growth that is Suburban		40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
% Reduction in Base Water Use		1.25%	2.50%	3.75%	5.00%	6.25%	7.50%	8.75%	10.00%	11.25%	12.50%
% of Growth on Rainwater Systems	15.0%	16.5%	18.0%	19.5%	21.0%	22.5%	24.0%	25.5%	27.0%	28.5%	30.0%
% of Growth on Central Water Systems	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
% of Exist. Demand Converting to Central Wtr Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rural % of Planning Area Population	81.6%	78.6%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
% of New Growth that is Rural		60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
% Reduction in Base Water Use		1.25%	2.50%	3.75%	5.00%	6.25%	7.50%	8.75%	10.00%	11.25%	12.50%
% of Growth on Rainwater Systems	15.0%	16.5%	18.0%	19.5%	21.0%	22.5%	24.0%	25.5%	27.0%	28.5%	30.0%
SUBURBAN AREA											
Population	586	793	964	1,094	1,189	1,258	1,315	1,352	1,374	1,374	1,290
Base Per Capita Water Use (gpcd)	132	131	129	128	127	127	126	126	126	126	126
Per Capita Water Use w/Addit. Conservation		129	126	123	121	119	117	115	113	112	110
Water Demand											
Annual (ac-ft)	86.6	115.9	139.3	156.8	169.1	178.2	185.5	190.8	193.9	193.9	182.1
Average Day (mgd)	**0.077**	**0.104**	**0.124**	**0.140**	**0.151**	**0.159**	**0.166**	**0.170**	**0.173**	**0.173**	**0.163**
Use of Existing Water Supply (mgd)											
Rainwater Collection Systems	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012
Trinity GW - Suburban	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066
Total	**0.077**	**0.077**	**0.077**	**0.077**	**0.077**	**0.077**	**0.077**	**0.077**	**0.077**	**0.077**	**0.077**
No Action Surplus or Unmet Need	**0.000**	**(0.026)**	**(0.047)**	**(0.063)**	**(0.074)**	**(0.082)**	**(0.088)**	**(0.093)**	**(0.096)**	**(0.096)**	**(0.085)**
Use of Additional Water Management Measures (mgd)											
Additional Water Conservation		0.001	0.003	0.005	0.008	0.010	0.012	0.015	0.017	0.019	0.020
Rainwater Collection Systems		0.004	0.008	0.011	0.013	0.015	0.017	0.018	0.019	0.019	0.016
Trinity GW - Suburban		0.021	0.036	0.046	0.053	0.057	0.059	0.060	0.060	0.057	0.049
Total	**0.000**	**0.026**	**0.047**	**0.063**	**0.074**	**0.082**	**0.088**	**0.093**	**0.096**	**0.096**	**0.085**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	2,600	2,911	3,167	3,362	3,504	3,607	3,693	3,749	3,782	3,781	3,656
Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
Per Capita Water Use w/Addit. Conservation		118	115	113	110	108	105	103	101	99	96
Water Demand											
Annual (ac-ft)	349.5	388.0	418.6	440.6	455.3	464.7	471.6	474.5	474.5	470.2	450.5
Average Day (mgd)	**0.312**	**0.346**	**0.374**	**0.393**	**0.406**	**0.415**	**0.421**	**0.424**	**0.424**	**0.420**	**0.402**
Existing Water Supply (avg day mgd)											
Rainwater Collection Systems	0.047	0.047	0.047	0.047	0.047	0.047	0.047	0.047	0.047	0.047	0.047
Trinity GW - Rural	0.265	0.265	0.265	0.265	0.265	0.265	0.265	0.265	0.265	0.265	0.265
Total	**0.312**	**0.312**	**0.312**	**0.312**	**0.312**	**0.312**	**0.312**	**0.312**	**0.312**	**0.312**	**0.312**
No Action Surplus or Unmet Need	**0.000**	**(0.034)**	**(0.062)**	**(0.081)**	**(0.094)**	**(0.103)**	**(0.109)**	**(0.112)**	**(0.112)**	**(0.108)**	**(0.090)**
Use of Additional Water Management Measures (avg day mgd)											
Additional Water Conservation		0.004	0.009	0.015	0.020	0.026	0.032	0.037	0.042	0.047	0.050
Rainwater Collection Systems		0.006	0.011	0.014	0.017	0.019	0.021	0.021	0.021	0.020	0.015
Trinity GW - Rural		0.024	0.042	0.052	0.057	0.058	0.057	0.053	0.048	0.040	0.025
Total	**0.000**	**0.034**	**0.062**	**0.081**	**0.094**	**0.103**	**0.109**	**0.112**	**0.112**	**0.108**	**0.090**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Water Service Demand (avg day mgd)	**0.389**	**0.450**	**0.498**	**0.533**	**0.557**	**0.574**	**0.587**	**0.594**	**0.597**	**0.593**	**0.565**
Use of Existing and New Supply (avg day mgd)											
Additional Water Conservation	-	0.006	0.012	0.020	0.028	0.036	0.044	0.052	0.060	0.067	0.071
Rainwater Collection Systems	0.058	0.068	0.077	0.084	0.089	0.093	0.096	0.098	0.098	0.097	0.089
Trinity GW	0.331	0.376	0.409	0.429	0.441	0.445	0.447	0.444	0.439	0.429	0.405
Total Use of Existing & New Supply	**0.389**	**0.450**	**0.498**	**0.533**	**0.557**	**0.574**	**0.587**	**0.594**	**0.597**	**0.593**	**0.565**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE B-20
WASTEWATER MANAGEMENT PLAN
PLANNING AREA 12-A
SCENARIO NA

Planning Area		Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS												
Planning Area	Est./Projected Population	3,186	3,704	4,131	4,456	4,692	4,865	5,008	5,100	5,156	5,155	4,947
	Annual Growth Rate	3.3%	3.1%	2.2%	1.5%	1.0%	0.7%	0.6%	0.4%	0.2%	0.0%	-0.8%
Suburban	% of Planning Area Population	18.4%	21.4%	23.3%	24.6%	25.3%	25.8%	26.3%	26.5%	26.6%	26.6%	26.1%
	% of New Growth that is Suburban		40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
	% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rural	% of Planning Area Population	81.6%	78.6%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of New Growth that is Rural		60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
	% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA												
Population		586	793	964	1,094	1,189	1,258	1,315	1,352	1,374	1,374	1,290
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand												
	Average Day (mgd)	**0.042**	**0.057**	**0.068**	**0.077**	**0.083**	**0.088**	**0.091**	**0.093**	**0.094**	**0.093**	**0.087**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042
	No-Discharge WWTP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Total	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**
Suburban - No Action Surplus or Unmet Need		**0.000**	**(0.015)**	**(0.027)**	**(0.035)**	**(0.041)**	**(0.046)**	**(0.049)**	**(0.051)**	**(0.052)**	**(0.051)**	**(0.045)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.015	0.027	0.035	0.041	0.046	0.049	0.051	0.052	0.051	0.045
	No-Discharge WWTP		0.000	0.000	0.000	0.000	**0.000**	0.000	0.000	0.000	0.000	0.000
	Total	**0.000**	**0.015**	**0.027**	**0.035**	**0.041**	**0.046**	**0.049**	**0.051**	**0.052**	**0.051**	**0.045**
Suburban - Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA												
Population		2,600	2,911	3,167	3,362	3,504	3,607	3,693	3,749	3,782	3,781	3,656
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Wastewater Service Demand												
	Average Day (mgd)	**0.186**	**0.208**	**0.225**	**0.237**	**0.246**	**0.251**	**0.255**	**0.257**	**0.258**	**0.256**	**0.246**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.186	0.186	0.186	0.186	0.186	0.186	0.186	0.186	0.186	0.186	0.186
	Total	**0.186**	**0.186**	**0.186**	**0.186**	**0.186**	**0.186**	**0.186**	**0.186**	**0.186**	**0.186**	**0.186**
No Action Surplus or Unmet Need		**0.000**	**(0.022)**	**(0.039)**	**(0.051)**	**(0.060)**	**(0.065)**	**(0.069)**	**(0.071)**	**(0.072)**	**(0.070)**	**(0.060)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.022	0.039	0.051	0.060	0.065	0.069	0.071	0.072	0.070	0.060
	Total	**0.000**	**0.022**	**0.039**	**0.051**	**0.060**	**0.065**	**0.069**	**0.071**	**0.072**	**0.070**	**0.060**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA												
Wastewater Service Demand (avg day mgd)		**0.228**	**0.265**	**0.293**	**0.314**	**0.329**	**0.339**	**0.346**	**0.350**	**0.351**	**0.349**	**0.332**
Use of Existing and Capacity (avg day mgd)												
	OSSFs	0.228	0.265	0.293	0.314	0.329	0.339	0.346	0.350	0.351	0.349	0.332
	No-Discharge WWTP	-	-	-	-	-	-	-	-	-	-	-
	Total Use of Existing & New Supply	**0.228**	**0.265**	**0.293**	**0.314**	**0.329**	**0.339**	**0.346**	**0.350**	**0.351**	**0.349**	**0.332**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE B-21
WATER MANAGEMENT PLAN
PLANNING AREA 290-SW
SCENARIO NA

	Estimated	Projected									
Planning Area	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**	**2055**	**2060**
PLANNING FACTORS											
Planning Area Est./Projected Population	1,300	1,511	1,686	1,818	1,915	1,985	2,043	2,081	2,104	2,103	2,041
Annual Growth Rate	2.3%	3.1%	2.2%	1.5%	1.0%	0.7%	0.6%	0.4%	0.2%	0.0%	-0.6%
Suburban % of Planning Area Population	13.1%	16.8%	19.2%	20.7%	21.7%	22.4%	22.9%	23.2%	23.4%	23.4%	22.9%
% of New Growth that is Suburban		40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
% Reduction in Base Water Use		1.25%	2.50%	3.75%	5.00%	6.25%	7.50%	8.75%	10.00%	11.25%	12.50%
% of Growth on Rainwater Systems	15.0%	16.5%	18.0%	19.5%	21.0%	22.5%	24.0%	25.5%	27.0%	28.5%	30.0%
% of Growth on Central Water Systems	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
% of Exist. Demand Converting to Central Wtr Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rural % of Planning Area Population	86.9%	83.2%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
% of New Growth that is Rural		60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
% Reduction in Base Water Use		1.25%	2.50%	3.75%	5.00%	6.25%	7.50%	8.75%	10.00%	11.25%	12.50%
% of Growth on Rainwater Systems	15.0%	16.5%	18.0%	19.5%	21.0%	22.5%	24.0%	25.5%	27.0%	28.5%	30.0%
SUBURBAN AREA											
Population	170	254	324	377	416	444	467	482	491	491	467
Base Per Capita Water Use (gpcd)	132	131	129	128	127	127	126	126	126	126	126
Per Capita Water Use w/Addit. Conservation		129	126	123	121	119	117	115	113	112	110
Water Demand											
Annual (ac-ft)	25.1	37.2	46.8	54.1	59.2	62.9	66.0	68.1	69.4	69.3	65.8
Average Day (mgd)	**0.022**	**0.033**	**0.042**	**0.048**	**0.053**	**0.056**	**0.059**	**0.061**	**0.062**	**0.062**	**0.059**
Use of Existing Water Supply (mgd)											
Rainwater Collection Systems	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
Trinity GW - Suburban	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019
Total	**0.022**	**0.022**	**0.022**	**0.022**	**0.022**	**0.022**	**0.022**	**0.022**	**0.022**	**0.022**	**0.022**
No Action Surplus or Unmet Need	**0.000**	**(0.011)**	**(0.019)**	**(0.026)**	**(0.030)**	**(0.034)**	**(0.036)**	**(0.038)**	**(0.039)**	**(0.039)**	**(0.036)**
Use of Additional Water Management Measures (mgd)											
Additional Water Conservation		0.000	0.001	0.002	0.003	0.004	0.004	0.005	0.006	0.007	0.007
Rainwater Collection Systems		0.002	0.003	0.005	0.006	0.006	0.007	0.007	0.008	0.008	0.007
Trinity GW - Suburban		0.009	0.015	0.019	0.022	0.024	0.025	0.026	0.026	0.025	0.022
Total	**0.000**	**0.011**	**0.019**	**0.026**	**0.030**	**0.034**	**0.036**	**0.038**	**0.039**	**0.039**	**0.036**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	1,130	1,257	1,361	1,441	1,499	1,541	1,576	1,599	1,612	1,612	1,575
Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
Per Capita Water Use w/Addit. Conservation		118	115	113	110	108	105	103	101	99	96
Water Demand											
Annual (ac-ft)	151.9	167.5	179.9	188.8	194.7	198.5	201.2	202.4	202.3	200.4	194.0
Average Day (mgd)	**0.136**	**0.150**	**0.161**	**0.169**	**0.174**	**0.177**	**0.180**	**0.181**	**0.181**	**0.179**	**0.173**
Existing Water Supply (avg day mgd)											
Rainwater Collection Systems	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020
Trinity GW - Rural	0.115	0.115	0.115	0.115	0.115	0.115	0.115	0.115	0.115	0.115	0.115
Total	**0.136**	**0.136**	**0.136**	**0.136**	**0.136**	**0.136**	**0.136**	**0.136**	**0.136**	**0.136**	**0.136**
No Action Surplus or Unmet Need	**0.000**	**(0.014)**	**(0.025)**	**(0.033)**	**(0.038)**	**(0.042)**	**(0.044)**	**(0.045)**	**(0.045)**	**(0.043)**	**(0.038)**
Use of Additional Water Management Measures (avg day mgd)											
Additional Water Conservation		0.002	0.004	0.006	0.009	0.011	0.013	0.016	0.018	0.020	0.022
Rainwater Collection Systems		0.002	0.004	0.006	0.007	0.008	0.008	0.009	0.009	0.008	0.006
Trinity GW - Rural		0.010	0.017	0.021	0.023	0.023	0.022	0.021	0.018	0.015	0.010
Total	**0.000**	**0.014**	**0.025**	**0.033**	**0.038**	**0.042**	**0.044**	**0.045**	**0.045**	**0.043**	**0.038**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Water Service Demand (avg day mgd)	**0.158**	**0.183**	**0.202**	**0.217**	**0.227**	**0.233**	**0.239**	**0.241**	**0.243**	**0.241**	**0.232**
Use of Existing and New Supply (avg day mgd)											
Additional Water Conservation	-	0.002	0.005	0.008	0.011	0.015	0.018	0.021	0.024	0.027	0.029
Rainwater Collection Systems	0.024	0.028	0.031	0.034	0.036	0.038	0.039	0.040	0.040	0.040	0.037
Trinity GW	0.134	0.153	0.166	0.175	0.179	0.181	0.182	0.181	0.178	0.174	0.166
Total Use of Existing & New Supply	**0.158**	**0.183**	**0.202**	**0.217**	**0.227**	**0.233**	**0.239**	**0.241**	**0.243**	**0.241**	**0.232**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE B-22
WASTEWATER MANAGEMENT PLAN
PLANNING AREA 290-SW
SCENARIO NA

Planning Area		Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS												
Planning Area	Est./Projected Population	1,300	1,511	1,686	1,818	1,915	1,985	2,043	2,081	2,104	2,103	2,041
	Annual Growth Rate	2.3%	3.1%	2.2%	1.5%	1.0%	0.7%	0.6%	0.4%	0.2%	0.0%	-0.6%
Suburban	% of Planning Area Population	13.1%	16.8%	19.2%	20.7%	21.7%	22.4%	22.9%	23.2%	23.4%	23.4%	22.9%
	% of New Growth that is Suburban		40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
	% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rural	% of Planning Area Population	86.9%	83.2%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of New Growth that is Rural		60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
	% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA												
Population		170	254	324	377	416	444	467	482	491	491	467
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand												
	Average Day (mgd)	**0.012**	**0.018**	**0.023**	**0.027**	**0.029**	**0.031**	**0.032**	**0.033**	**0.033**	**0.033**	**0.031**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012
	No-Discharge WWTP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Total	**0.012**	**0.012**	**0.012**	**0.012**	**0.012**	**0.012**	**0.012**	**0.012**	**0.012**	**0.012**	**0.012**
Suburban - No Action Surplus or Unmet Need		**0.000**	**(0.006)**	**(0.011)**	**(0.014)**	**(0.017)**	**(0.019)**	**(0.020)**	**(0.021)**	**(0.021)**	**(0.021)**	**(0.019)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.006	0.011	0.014	0.017	0.019	0.020	0.021	0.021	0.021	0.019
	No-Discharge WWTP		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Total	**0.000**	**0.006**	**0.011**	**0.014**	**0.017**	**0.019**	**0.020**	**0.021**	**0.021**	**0.021**	**0.019**
Suburban - Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA												
Population		1,130	1,257	1,361	1,441	1,499	1,541	1,576	1,599	1,612	1,612	1,575
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Wastewater Service Demand												
	Average Day (mgd)	**0.081**	**0.090**	**0.097**	**0.102**	**0.105**	**0.107**	**0.109**	**0.110**	**0.110**	**0.109**	**0.106**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081
	Total	**0.081**	**0.081**	**0.081**	**0.081**	**0.081**	**0.081**	**0.081**	**0.081**	**0.081**	**0.081**	**0.081**
No Action Surplus or Unmet Need		**0.000**	**(0.009)**	**(0.016)**	**(0.021)**	**(0.024)**	**(0.026)**	**(0.028)**	**(0.029)**	**(0.029)**	**(0.028)**	**(0.025)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.009	0.016	0.021	0.024	0.026	0.028	0.029	0.029	0.028	0.025
	Total	**0.000**	**0.009**	**0.016**	**0.021**	**0.024**	**0.026**	**0.028**	**0.029**	**0.029**	**0.028**	**0.025**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA												
Wastewater Service Demand (avg day mgd)		**0.093**	**0.108**	**0.120**	**0.128**	**0.134**	**0.138**	**0.141**	**0.143**	**0.143**	**0.142**	**0.137**
Use of Existing and Capacity (avg day mgd)												
	OSSFs	0.093	0.108	0.120	0.128	0.134	0.138	0.141	0.143	0.143	0.142	0.137
	No-Discharge WWTP	-	-	-	-	-	-	-	-	-	-	-
	Total Use of Existing & New Supply	**0.093**	**0.108**	**0.120**	**0.128**	**0.134**	**0.138**	**0.141**	**0.143**	**0.143**	**0.142**	**0.137**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE B-23
WATER MANAGEMENT PLAN
PLANNING AREA 2325
SCENARIO NA

Planning Area		Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS												
Planning Area	Est./Projected Population	4,278	4,972	5,546	5,982	6,300	6,532	6,723	6,848	6,922	6,921	6,673
	Annual Growth Rate	2.8%	3.1%	2.2%	1.5%	1.0%	0.7%	0.6%	0.4%	0.2%	0.0%	-0.7%
Suburban	% of Planning Area Population	21.7%	29.8%	35.0%	38.3%	40.4%	41.8%	42.9%	43.6%	44.0%	44.0%	42.6%
	% of New Growth that is Suburban		80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%
	% Reduction in Base Water Use		1.00%	2.00%	3.00%	4.00%	5.00%	6.00%	7.00%	8.00%	9.00%	10.00%
	% of Growth on Rainwater Systems	15.0%	16.5%	18.0%	19.5%	21.0%	22.5%	24.0%	25.5%	27.0%	28.5%	30.0%
	% of Growth on Central Water Systems	0.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%
	% of Exist. Demand Converting to Central Wtr Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rural	% of Planning Area Population	78.3%	70.2%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of New Growth that is Rural		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
	% Reduction in Base Water Use		1.00%	2.00%	3.00%	4.00%	5.00%	6.00%	7.00%	8.00%	9.00%	10.00%
	% of Growth on Rainwater Systems	10.0%	11.0%	12.0%	13.0%	14.0%	15.0%	16.0%	17.0%	18.0%	19.0%	20.0%
SUBURBAN AREA												
Population		928	1,484	1,943	2,292	2,546	2,731	2,885	2,984	3,044	3,043	2,844
	Base Per Capita Water Use (gpcd)	132	131	129	128	127	127	126	126	126	126	126
	Per Capita Water Use w/Addit. Conservation		129	126	124	122	120	118	117	116	115	113
Water Demand												
	Annual (ac-ft)	137.2	216.9	280.7	328.6	362.2	387.0	407.1	421.2	429.6	429.4	401.4
	Average Day (mgd)	**0.123**	**0.194**	**0.251**	**0.293**	**0.323**	**0.346**	**0.363**	**0.376**	**0.384**	**0.383**	**0.358**
Use of Existing Water Supply (mgd)												
	Rainwater Collection Systems	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018
	Trinity GW - Suburban	0.104	0.104	0.104	0.104	0.104	0.104	0.104	0.104	0.104	0.104	0.104
	Total	**0.123**	**0.123**	**0.123**	**0.123**	**0.123**	**0.123**	**0.123**	**0.123**	**0.123**	**0.123**	**0.123**
No Action Surplus or Unmet Need		**0.000**	**(0.071)**	**(0.128)**	**(0.171)**	**(0.201)**	**(0.223)**	**(0.241)**	**(0.254)**	**(0.261)**	**(0.261)**	**(0.236)**
Use of Additional Water Management Measures (mgd)												
	Additional Water Conservation		0.002	0.005	0.009	0.013	0.017	0.022	0.026	0.031	0.035	0.036
	Rainwater Collection Systems		0.012	0.022	0.030	0.037	0.042	0.046	0.049	0.051	0.051	0.044
	Trinity GW - Suburban		0.057	0.101	0.132	0.151	0.164	0.173	0.178	0.179	0.175	0.156
	Total	**0.000**	**0.071**	**0.128**	**0.171**	**0.201**	**0.223**	**0.241**	**0.254**	**0.261**	**0.261**	**0.236**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA												
Population		3,349	3,488	3,603	3,690	3,753	3,800	3,838	3,863	3,878	3,878	3,828
	Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
	Per Capita Water Use w/Addit. Conservation		118	116	114	111	109	107	105	103	101	99
Water Demand												
	Annual (ac-ft)	450.2	464.9	476.2	483.6	487.7	489.5	490.1	489.0	486.5	482.1	471.7
	Average Day (mgd)	**0.402**	**0.415**	**0.425**	**0.432**	**0.435**	**0.437**	**0.438**	**0.437**	**0.434**	**0.430**	**0.421**
Existing Water Supply (avg day mgd)												
	Rainwater Collection Systems	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040
	Trinity GW - Rural	0.362	0.362	0.362	0.362	0.362	0.362	0.362	0.362	0.362	0.362	0.362
	Total	**0.402**	**0.402**	**0.402**	**0.402**	**0.402**	**0.402**	**0.402**	**0.402**	**0.402**	**0.402**	**0.402**
No Action Surplus or Unmet Need		**0.000**	**(0.013)**	**(0.023)**	**(0.030)**	**(0.034)**	**(0.035)**	**(0.036)**	**(0.035)**	**(0.032)**	**(0.029)**	**(0.019)**
Use of Additional Water Management Measures (avg day mgd)												
	Additional Water Conservation		0.004	0.009	0.013	0.017	0.022	0.026	0.031	0.035	0.039	0.042
	Rainwater Collection Systems		0.001	0.003	0.004	0.004	0.004	0.004	0.004	0.004	0.003	0.001
	Trinity GW - Rural		0.008	0.012	0.013	0.012	0.009	0.005	(0.000)	(0.006)	(0.013)	(0.024)
	Total	**0.000**	**0.013**	**0.023**	**0.030**	**0.034**	**0.035**	**0.036**	**0.035**	**0.032**	**0.029**	**0.019**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA												
Water Service Demand (avg day mgd)		**0.524**	**0.609**	**0.676**	**0.725**	**0.759**	**0.783**	**0.801**	**0.813**	**0.818**	**0.814**	**0.780**
Use of Existing and New Supply (avg day mgd)												
	Additional Water Conservation	-	0.006	0.014	0.022	0.030	0.039	0.048	0.057	0.065	0.073	0.078
	Rainwater Collection Systems	0.059	0.072	0.083	0.092	0.099	0.104	0.109	0.112	0.114	0.113	0.103
	Trinity GW	0.466	0.531	0.579	0.611	0.629	0.639	0.644	0.644	0.639	0.628	0.598
	Total Use of Existing & New Supply	**0.524**	**0.609**	**0.676**	**0.725**	**0.759**	**0.783**	**0.801**	**0.813**	**0.818**	**0.814**	**0.780**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE B-24
WASTEWATER MANAGEMENT PLAN
PLANNING AREA 2325
SCENARIO NA

	Estimated	Projected									
Planning Area	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**	**2055**	**2060**
PLANNING FACTORS											
Planning Area Est./Projected Population	4,278	4,972	5,546	5,982	6,300	6,532	6,723	6,848	6,922	6,921	6,673
Annual Growth Rate	2.8%	3.1%	2.2%	1.5%	1.0%	0.7%	0.6%	0.4%	0.2%	0.0%	-0.7%
Suburban % of Planning Area Population	21.7%	29.8%	35.0%	38.3%	40.4%	41.8%	42.9%	43.6%	44.0%	44.0%	42.6%
% of New Growth that is Suburban		80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%
% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rural % of Planning Area Population	78.3%	70.2%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
% of New Growth that is Rural		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA											
Population	928	1,484	1,943	2,292	2,546	2,731	2,885	2,984	3,044	3,043	2,844
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand											
Average Day (mgd)	**0.066**	**0.106**	**0.138**	**0.162**	**0.178**	**0.190**	**0.199**	**0.205**	**0.207**	**0.206**	**0.191**
Existing Wastewater Treatment (mgd)											
OSSFs	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066
No-Discharge WWTP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	**0.066**	**0.066**	**0.066**	**0.066**	**0.066**	**0.066**	**0.066**	**0.066**	**0.066**	**0.066**	**0.066**
Suburban - No Action Surplus or Unmet Need	**0.000**	**(0.040)**	**(0.072)**	**(0.095)**	**(0.112)**	**(0.124)**	**(0.133)**	**(0.138)**	**(0.141)**	**(0.140)**	**(0.125)**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.040	0.072	0.095	0.112	0.124	0.133	0.138	0.141	0.140	0.125
No-Discharge WWTP		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	**0.000**	**0.040**	**0.072**	**0.095**	**0.112**	**0.124**	**0.133**	**0.138**	**0.141**	**0.140**	**0.125**
Suburban - Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	3,349	3,488	3,603	3,690	3,753	3,800	3,838	3,863	3,878	3,878	3,828
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Wastewater Service Demand											
Average Day (mgd)	**0.240**	**0.249**	**0.256**	**0.260**	**0.263**	**0.264**	**0.265**	**0.265**	**0.264**	**0.262**	**0.257**
Existing Wastewater Treatment (mgd)											
OSSFs	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240
Total	**0.240**	**0.240**	**0.240**	**0.240**	**0.240**	**0.240**	**0.240**	**0.240**	**0.240**	**0.240**	**0.240**
No Action Surplus or Unmet Need	**0.000**	**(0.010)**	**(0.016)**	**(0.021)**	**(0.024)**	**(0.025)**	**(0.026)**	**(0.026)**	**(0.025)**	**(0.023)**	**(0.018)**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.010	0.016	0.021	0.024	0.025	0.026	0.026	0.025	0.023	0.018
Total	**0.000**	**0.010**	**0.016**	**0.021**	**0.024**	**0.025**	**0.026**	**0.026**	**0.025**	**0.023**	**0.018**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Wastewater Service Demand (avg day mgd)	**0.306**	**0.356**	**0.394**	**0.422**	**0.441**	**0.455**	**0.465**	**0.470**	**0.472**	**0.468**	**0.448**
Use of Existing and Capacity (avg day mgd)											
OSSFs	0.306	0.356	0.394	0.422	0.441	0.455	0.465	0.470	0.472	0.468	0.448
No-Discharge WWTP	-	-	-	-	-	-	-	-	-	-	-
Total Use of Existing & New Supply	**0.306**	**0.356**	**0.394**	**0.422**	**0.441**	**0.455**	**0.465**	**0.470**	**0.472**	**0.468**	**0.448**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE B-25
WATER MANAGEMENT PLAN
PLANNING AREA WIMBERLEY AREA
SCENARIO NA

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	10,313	11,989	13,372	14,424	15,189	15,748	16,210	16,510	16,689	16,686	16,104
Annual Growth Rate	2.2%	3.1%	2.2%	1.5%	1.0%	0.7%	0.6%	0.4%	0.2%	0.0%	-0.7%
Suburban % of Planning Area Population	77.9%	80.1%	82.3%	84.6%	86.8%	89.0%	91.2%	93.4%	95.6%	97.8%	100.0%
Rural % of Planning Area Population	22.1%	19.9%	17.7%	15.4%	13.2%	11.0%	8.8%	6.6%	4.4%	2.2%	0.0%
SUBURBAN AREA											
Population	8,038	9,607	11,011	12,196	13,178	14,010	14,779	15,417	15,953	16,318	16,104
Base Per Capita Water Use (gpcd)	132	131	129	128	127	127	126	126	126	126	126
Per Capita Water Use w/Addit. Conservation		185	175	168	162	156	152	148	145	141	139
Water Demand											
Annual (ac-ft)	1,790.7	2,017.2	2,215.1	2,378.8	2,510.0	2,619.1	2,717.3	2,801.0	2,869.0	2,911.9	2,871.5
Average Day (mgd)	**1.599**	**1.801**	**1.978**	**2.124**	**2.241**	**2.338**	**2.426**	**2.501**	**2.562**	**2.600**	**2.564**
Use of Existing Water Supply (mgd)											
Rainwater Collection Systems	0.166	0.194	0.223	0.252	0.280	0.307	0.335	0.363	0.389	0.412	0.424
Trinity GW - Suburban	1.432	1.432	1.432	1.432	1.432	1.432	1.432	1.432	1.432	1.432	1.432
Total	**1.599**	**1.627**	**1.656**	**1.684**	**1.712**	**1.740**	**1.768**	**1.795**	**1.821**	**1.845**	**1.857**
No Action Surplus or Unmet Need	**0.000**	**(0.174)**	**(0.322)**	**(0.440)**	**(0.529)**	**(0.599)**	**(0.658)**	**(0.706)**	**(0.740)**	**(0.755)**	**(0.707)**
Use of Additional Water Management Measures (mgd)											
Additional Water Conservation		0.023	0.049	0.080	0.112	0.146	0.182	0.219	0.256	0.292	0.320
Rainwater Collection Systems		0.029	0.056	0.080	0.101	0.120	0.138	0.154	0.167	0.176	0.166
Trinity GW - Suburban		0.123	0.217	0.280	0.316	0.333	0.338	0.333	0.317	0.287	0.221
Total	**0.000**	**0.174**	**0.322**	**0.440**	**0.529**	**0.599**	**0.658**	**0.706**	**0.740**	**0.755**	**0.707**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	2,277	2,381	2,361	2,228	2,011	1,737	1,431	1,093	737	369	-
Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
Per Capita Water Use w/Addit. Conservation		118	116	114	113	111	109	107	105	104	-
Water Demand											
Annual (ac-ft)	306.0	317.4	312.0	292.0	261.3	223.8	182.7	138.4	92.5	45.8	-
Average Day (mgd)	**0.273**	**0.283**	**0.279**	**0.261**	**0.233**	**0.200**	**0.163**	**0.124**	**0.083**	**0.041**	**-**
Existing Water Supply (avg day mgd)											
Rainwater Collection Systems	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027
Trinity GW - Rural	0.246	0.246	0.246	0.246	0.246	0.246	0.246	0.246	0.246	0.246	0.246
Total	**0.273**	**0.273**	**0.273**	**0.273**	**0.273**	**0.273**	**0.273**	**0.273**	**0.273**	**0.273**	**0.273**
No Action Surplus or Unmet Need	**0.000**	**(0.010)**	**(0.005)**	**0.013**	**0.040**	**0.073**	**0.110**	**0.150**	**0.191**	**0.232**	**0.273**
Use of Additional Water Management Measures (avg day mgd)											
Additional Water Conservation		0.002	0.004	0.006	0.007	0.007	0.007	0.006	0.005	0.003	0.000
Rainwater Collection Systems		0.001	0.001	(0.002)	(0.006)	(0.011)	(0.017)	(0.023)	(0.031)	(0.039)	(0.047)
Trinity GW - Rural		0.007	0.001	(0.017)	(0.041)	(0.070)	(0.101)	(0.133)	(0.165)	(0.197)	(0.227)
Total	**0.000**	**0.010**	**0.005**	**(0.013)**	**(0.040)**	**(0.073)**	**(0.110)**	**(0.150)**	**(0.191)**	**(0.232)**	**(0.273)**
Surplus or Unmet Need	**0.000**	**(0.000)**	**(0.000)**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Water Service Demand (avg day mgd)	**1.872**	**2.084**	**2.256**	**2.385**	**2.474**	**2.538**	**2.589**	**2.624**	**2.644**	**2.641**	**2.564**
Use of Existing and New Supply (avg day mgd)											
Additional Water Conservation	-	0.025	0.054	0.086	0.119	0.154	0.189	0.225	0.261	0.295	0.320
Rainwater Collection Systems	0.194	0.251	0.307	0.358	0.403	0.444	0.484	0.520	0.553	0.577	0.571
Trinity GW	1.678	1.809	1.896	1.942	1.953	1.941	1.916	1.879	1.830	1.769	1.673
Total Use of Existing & New Supply	**1.872**	**2.084**	**2.256**	**2.385**	**2.474**	**2.538**	**2.589**	**2.624**	**2.644**	**2.641**	**2.564**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE B-26
WASTEWATER MANAGEMENT PLAN
PLANNING AREA **WIMBERLEY AREA**
SCENARIO **NA**

Planning Area		Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS												
Planning Area	Est./Projected Population	10,313	11,989	13,372	14,424	15,189	15,748	16,210	16,510	16,689	16,686	16,104
	Annual Growth Rate	2.2%	3.1%	2.2%	1.5%	1.0%	0.7%	0.6%	0.4%	0.2%	0.0%	-0.7%
Suburban	% of Planning Area Population	77.9%	80.1%	82.3%	84.6%	86.8%	89.0%	91.2%	93.4%	95.6%	97.8%	100.0%
Rural	% of Planning Area Population	22.1%	19.9%	17.7%	15.4%	13.2%	11.0%	8.8%	6.6%	4.4%	2.2%	0.0%
SUBURBAN AREA												
Population		8,038	9,607	11,011	12,196	13,178	14,010	14,779	15,417	15,953	16,318	16,104
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand												
	Average Day (mgd)	**0.575**	**0.687**	**0.782**	**0.861**	**0.923**	**0.975**	**1.022**	**1.058**	**1.087**	**1.104**	**1.082**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.522	0.522	0.522	0.522	0.522	0.522	0.522	0.522	0.522	0.522	0.522
	No-Discharge WWTP	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052
	Total	**0.575**	**0.575**	**0.575**	**0.575**	**0.575**	**0.575**	**0.575**	**0.575**	**0.575**	**0.575**	**0.575**
Suburban - No Action Surplus or Unmet Need		**0.000**	**(0.112)**	**(0.207)**	**(0.286)**	**(0.349)**	**(0.400)**	**(0.447)**	**(0.483)**	**(0.512)**	**(0.530)**	**(0.507)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.057	0.087	0.092	0.076	0.046	0.006	(0.045)	(0.103)	(0.170)	(0.248)
	No-Discharge WWTP		0.055	0.121	0.194	0.273	0.355	0.441	0.528	0.616	0.699	0.756
	Total	**0.000**	**0.112**	**0.207**	**0.286**	**0.349**	**0.400**	**0.447**	**0.483**	**0.512**	**0.530**	**0.507**
Suburban - Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA												
Population		2,277	2,381	2,361	2,228	2,011	1,737	1,431	1,093	737	369	-
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	0
Wastewater Service Demand												
	Average Day (mgd)	**0.163**	**0.170**	**0.168**	**0.157**	**0.141**	**0.121**	**0.099**	**0.075**	**0.050**	**0.025**	**0.000**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.163	0.163	0.163	0.163	0.163	0.163	0.163	0.163	0.163	0.163	0.163
	Total	**0.163**	**0.163**	**0.163**	**0.163**	**0.163**	**0.163**	**0.163**	**0.163**	**0.163**	**0.163**	**0.163**
No Action Surplus or Unmet Need		**0.000**	**(0.007)**	**(0.005)**	**0.006**	**0.022**	**0.042**	**0.064**	**0.088**	**0.113**	**0.138**	**0.163**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.007	0.005	(0.006)	(0.022)	(0.042)	(0.064)	(0.088)	(0.113)	(0.138)	(0.163)
	Total	**0.000**	**0.007**	**0.005**	**(0.006)**	**(0.022)**	**(0.042)**	**(0.064)**	**(0.088)**	**(0.113)**	**(0.138)**	**(0.163)**
Surplus or Unmet Need		**0.000**	**0.000**	**(0.000)**	**(0.000)**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA												
Wastewater Service Demand (avg day mgd)		**0.738**	**0.857**	**0.950**	**1.018**	**1.064**	**1.096**	**1.120**	**1.133**	**1.138**	**1.129**	**1.082**
Use of Existing and Capacity (avg day mgd)												
	OSSFs	0.685	0.750	0.777	0.771	0.739	0.689	0.627	0.552	0.469	0.378	0.274
	No-Discharge WWTP	0.052	0.107	0.173	0.247	0.325	0.407	0.493	0.581	0.668	0.752	0.808
	Total Use of Existing & New Supply	**0.738**	**0.857**	**0.950**	**1.018**	**1.064**	**1.096**	**1.120**	**1.133**	**1.138**	**1.129**	**1.082**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE B-27
WATER MANAGEMENT PLAN
PLANNING AREA WIMBERLEY WSC
SCENARIO NA

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	5,642	6,558	7,315	7,890	8,309	8,615	8,867	9,032	9,130	9,128	8,810
Annual Growth Rate	1.0%	3.1%	2.2%	1.5%	1.0%	0.7%	0.6%	0.4%	0.2%	0.0%	-0.7%
Suburban % of Planning Area Population	74.2%	76.8%	79.4%	81.9%	84.5%	87.1%	89.7%	92.3%	94.8%	97.4%	100.0%
% of New Growth that is Suburban		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
% Reduction in Base Water Use		1.25%	2.50%	3.75%	5.00%	6.25%	7.50%	8.75%	10.00%	11.25%	12.50%
% of Growth on Rainwater Systems	15.0%	16.5%	18.0%	19.5%	21.0%	22.5%	24.0%	25.5%	27.0%	28.5%	30.0%
% of Growth on Central Water Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
% of Exist. Demand Converting to Central Wtr Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rural % of Planning Area Population	25.8%	23.2%	20.6%	18.1%	15.5%	12.9%	10.3%	7.7%	5.2%	2.6%	0.0%
% of New Growth that is Rural		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
% Reduction in Base Water Use		0.75%	1.50%	2.25%	3.00%	3.75%	4.50%	5.25%	6.00%	6.75%	7.50%
% of Growth on Rainwater Systems	10.0%	11.0%	12.0%	13.0%	14.0%	15.0%	16.0%	17.0%	18.0%	19.0%	20.0%
SUBURBAN AREA											
Population	4,186	5,035	5,805	6,465	7,023	7,503	7,952	8,333	8,659	8,893	8,810
Base Per Capita Water Use (gpcd)	141	140	139	138	137	136	135	134	133	132	131
Per Capita Water Use w/Addit. Conservation		138	136	133	130	128	125	122	120	117	115
Water Demand											
Annual (ac-ft)	661.2	789.7	903.9	999.4	1,077.7	1,143.1	1,202.5	1,250.7	1,290.0	1,314.9	1,292.7
Average Day (mgd)	**0.590**	**0.705**	**0.807**	**0.892**	**0.962**	**1.021**	**1.074**	**1.117**	**1.152**	**1.174**	**1.154**
	0.590										
Use of Existing Water Supply (mgd)											
Rainwater Collection Systems	0.089	0.116	0.145	0.174	0.202	0.230	0.258	0.285	0.311	0.335	0.346
Trinity GW - Suburban	0.502	0.502	0.502	0.502	0.502	0.502	0.502	0.502	0.502	0.502	0.502
Total	**0.590**	**0.618**	**0.647**	**0.676**	**0.704**	**0.731**	**0.759**	**0.787**	**0.813**	**0.836**	**0.848**
No Action Surplus or Unmet Need	**0.000**	**(0.087)**	**(0.160)**	**(0.217)**	**(0.258)**	**(0.289)**	**(0.314)**	**(0.330)**	**(0.339)**	**(0.338)**	**(0.306)**
Use of Additional Water Management Measures (mgd)											
Additional Water Conservation		0.009	0.020	0.033	0.048	0.064	0.081	0.098	0.115	0.132	0.144
Rainwater Collection Systems		0.019	0.037	0.054	0.069	0.082	0.094	0.105	0.115	0.121	0.115
Trinity GW - Suburban		0.059	0.103	0.129	0.142	0.144	0.139	0.127	0.109	0.084	0.047
Total	**0.000**	**0.087**	**0.160**	**0.217**	**0.258**	**0.289**	**0.314**	**0.330**	**0.339**	**0.338**	**0.306**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
		0.561	0.604	0.631	0.643	0.645	0.641	0.629	0.611	0.586	0.548
RURAL AREA											
Population	1,456	1,523	1,510	1,425	1,286	1,111	915	699	471	236	-
Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
Per Capita Water Use w/Addit. Conservation		118	116	114	113	111	109	107	105	104	-
Water Demand											
Annual (ac-ft)	195.7	203.0	199.6	186.8	167.1	143.2	116.9	88.5	59.1	29.3	-
Average Day (mgd)	**0.175**	**0.181**	**0.178**	**0.167**	**0.149**	**0.128**	**0.104**	**0.079**	**0.053**	**0.026**	**-**
Existing Water Supply (avg day mgd)											
Rainwater Collection Systems	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017
Trinity GW - Rural	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157
Total	**0.175**	**0.175**	**0.175**	**0.175**	**0.175**	**0.175**	**0.175**	**0.175**	**0.175**	**0.175**	**0.175**
No Action Surplus or Unmet Need	**0.000**	**(0.007)**	**(0.003)**	**0.008**	**0.025**	**0.047**	**0.070**	**0.096**	**0.122**	**0.149**	**0.175**
Use of Additional Water Management Measures (avg day mgd)											
Additional Water Conservation		0.001	0.003	0.004	0.004	0.005	0.005	0.004	0.003	0.002	0.000
Rainwater Collection Systems		0.001	0.000	(0.001)	(0.004)	(0.007)	(0.011)	(0.015)	(0.020)	(0.025)	(0.030)
Trinity GW - Rural		0.004	0.000	(0.011)	(0.026)	(0.045)	(0.064)	(0.085)	(0.106)	(0.126)	(0.145)
Total	**0.000**	**0.007**	**0.003**	**(0.008)**	**(0.025)**	**(0.047)**	**(0.070)**	**(0.096)**	**(0.122)**	**(0.149)**	**(0.175)**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Water Service Demand (avg day mgd)	**0.765**	**0.886**	**0.985**	**1.059**	**1.111**	**1.148**	**1.178**	**1.196**	**1.205**	**1.200**	**1.154**
Use of Existing and New Supply (avg day mgd)											
Additional Water Conservation	-	0.010	0.023	0.037	0.053	0.069	0.085	0.102	0.118	0.134	0.144
Rainwater Collection Systems	0.106	0.153	0.200	0.244	0.285	0.322	0.359	0.393	0.424	0.449	0.449
Trinity GW	0.659	0.723	0.762	0.778	0.774	0.758	0.734	0.701	0.662	0.618	0.561
Total Use of Existing & New Supply	**0.765**	**0.886**	**0.985**	**1.059**	**1.111**	**1.148**	**1.178**	**1.196**	**1.205**	**1.200**	**1.154**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE B-28
WASTEWATER MANAGEMENT PLAN
PLANNING AREA WIMBERLEY WSC
SCENARIO NA

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	5,642	6,558	7,315	7,890	8,309	8,615	8,867	9,032	9,130	9,128	8,810
Annual Growth Rate	1.0%	3.1%	2.2%	1.5%	1.0%	0.7%	0.6%	0.4%	0.2%	0.0%	-0.7%
Suburban % of Planning Area Population	74.2%	76.8%	79.4%	81.9%	84.5%	87.1%	89.7%	92.3%	94.8%	97.4%	100.0%
% of New Growth that is Suburban		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
% of Demand served by Central Wastewater Systems	8.3%	14.5%	20.6%	26.8%	33.0%	39.2%	45.3%	51.5%	57.7%	63.8%	70.0%
Rural % of Planning Area Population	25.8%	23.2%	20.6%	18.1%	15.5%	12.9%	10.3%	7.7%	5.2%	2.6%	0.0%
% of New Growth that is Rural		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
% of Demand served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA											
Population	4,186	5,035	5,805	6,465	7,023	7,503	7,952	8,333	8,659	8,893	8,810
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand											
Average Day (mgd)	**0.299**	**0.360**	**0.412**	**0.456**	**0.492**	**0.522**	**0.550**	**0.572**	**0.590**	**0.602**	**0.592**
Existing Wastewater Treatment (mgd)											
OSSFs	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275
No-Discharge WWTP	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
Total	**0.299**	**0.299**	**0.299**	**0.299**	**0.299**	**0.299**	**0.299**	**0.299**	**0.299**	**0.299**	**0.299**
Suburban - No Action Surplus or Unmet Need	**0.000**	**(0.061)**	**(0.113)**	**(0.157)**	**(0.193)**	**(0.223)**	**(0.250)**	**(0.273)**	**(0.291)**	**(0.302)**	**(0.293)**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.033	0.053	0.059	0.055	0.043	0.026	0.003	(0.025)	(0.057)	(0.097)
No-Discharge WWTP		0.027	0.060	0.097	0.137	0.180	0.224	0.270	0.315	0.359	0.390
Total	**0.000**	**0.061**	**0.113**	**0.157**	**0.193**	**0.223**	**0.250**	**0.273**	**0.291**	**0.302**	**0.293**
Suburban - Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	1,456	1,523	1,510	1,425	1,286	1,111	915	699	471	236	-
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Wastewater Service Demand											
Average Day (mgd)	**0.104**	**0.109**	**0.107**	**0.101**	**0.090**	**0.077**	**0.063**	**0.048**	**0.032**	**0.016**	**0.000**
Existing Wastewater Treatment (mgd)											
OSSFs	0.104	0.104	0.104	0.104	0.104	0.104	0.104	0.104	0.104	0.104	0.104
Total	**0.104**	**0.104**	**0.104**	**0.104**	**0.104**	**0.104**	**0.104**	**0.104**	**0.104**	**0.104**	**0.104**
No Action Surplus or Unmet Need	**0.000**	**(0.005)**	**(0.003)**	**0.004**	**0.014**	**0.027**	**0.041**	**0.056**	**0.072**	**0.088**	**0.104**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.005	0.003	(0.004)	(0.014)	(0.027)	(0.041)	(0.056)	(0.072)	(0.088)	(0.104)
Total	**0.000**	**0.005**	**0.003**	**(0.004)**	**(0.014)**	**(0.027)**	**(0.041)**	**(0.056)**	**(0.072)**	**(0.088)**	**(0.104)**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Wastewater Service Demand (avg day mgd)	**0.403**	**0.469**	**0.520**	**0.557**	**0.582**	**0.600**	**0.613**	**0.620**	**0.622**	**0.618**	**0.592**
Use of Existing and Capacity (avg day mgd)											
OSSFs	0.379	0.417	0.435	0.434	0.420	0.395	0.364	0.325	0.282	0.234	0.178
No-Discharge WWTP	0.025	0.052	0.085	0.122	0.162	0.204	0.249	0.295	0.340	0.384	0.414
Total Use of Existing & New Supply	**0.403**	**0.469**	**0.520**	**0.557**	**0.582**	**0.600**	**0.613**	**0.620**	**0.622**	**0.618**	**0.592**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE B-29
WATER MANAGEMENT PLAN
PLANNING AREA **CITY OF WOODCREEK & GOLF COURSE**
SCENARIO **NA**

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	2,370	2,755	3,073	3,315	3,491	3,619	3,725	3,795	3,836	3,835	3,701
Annual Growth Rate	1.8%	3.1%	2.2%	1.5%	1.0%	0.7%	0.6%	0.4%	0.2%	0.0%	-0.7%
Suburban % of Planning Area Population	75.0%	77.5%	80.0%	82.5%	85.0%	87.5%	90.0%	92.5%	95.0%	97.5%	100.0%
% of New Growth that is Suburban		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
% Reduction in Base Water Use		1.25%	2.50%	3.75%	5.00%	6.25%	7.50%	8.75%	10.00%	11.25%	12.50%
% of Growth on Rainwater Systems	5.0%	5.5%	6.0%	6.5%	7.0%	7.5%	8.0%	8.5%	9.0%	9.5%	10.0%
% of Growth on Central Water Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
% of Exist. Demand Converting to Central Wtr Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rural % of Planning Area Population	25.0%	22.5%	20.0%	17.5%	15.0%	12.5%	10.0%	7.5%	5.0%	2.5%	0.0%
% of New Growth that is Rural		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
% Reduction in Base Water Use		0.75%	1.50%	2.25%	3.00%	3.75%	4.50%	5.25%	6.00%	6.75%	7.50%
% of Growth on Rainwater Systems	10.0%	11.0%	12.0%	13.0%	14.0%	15.0%	16.0%	17.0%	18.0%	19.0%	20.0%
SUBURBAN AREA											
Population	1,778	2,135	2,459	2,735	2,967	3,167	3,353	3,510	3,644	3,739	3,701
Base Per Capita Water Use (gpcd)	127	126	125	124	123	122	121	121	121	121	121
Per Capita Water Use w/Addit. Conservation		360	324	298	280	265	252	243	235	228	226
Water Demand											
Annual (ac-ft) also includes golf course demand	822.9	871.3	914.3	949.9	978.8	1,002.8	1,024.5	1,045.7	1,063.9	1,076.8	1,071.6
Average Day (mgd)	**0.735**	**0.778**	**0.816**	**0.848**	**0.874**	**0.895**	**0.915**	**0.934**	**0.950**	**0.961**	**0.957**
Use of Existing Water Supply (mgd)											
Rainwater Collection Systems	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037
Trinity GW - Suburban	0.698	0.698	0.698	0.698	0.698	0.698	0.698	0.698	0.698	0.698	0.698
Total	**0.735**	**0.735**	**0.735**	**0.735**	**0.735**	**0.735**	**0.735**	**0.735**	**0.735**	**0.735**	**0.735**
No Action Surplus or Unmet Need	**0.000**	**(0.043)**	**(0.082)**	**(0.113)**	**(0.139)**	**(0.161)**	**(0.180)**	**(0.199)**	**(0.215)**	**(0.227)**	**(0.222)**
Use of Additional Water Management Measures (mgd)											
Additional Water Conservation		0.010	0.020	0.032	0.044	0.056	0.069	0.082	0.095	0.108	0.120
Rainwater Collection Systems		0.002	0.005	0.007	0.009	0.010	0.012	0.013	0.015	0.016	0.015
Trinity GW - Suburban		0.031	0.056	0.075	0.087	0.094	0.100	0.104	0.105	0.103	0.087
Total	**0.000**	**0.043**	**0.082**	**0.113**	**0.139**	**0.161**	**0.180**	**0.199**	**0.215**	**0.227**	**0.222**
		0.229	0.255	0.273	0.285	0.292	0.298	0.302	0.303	0.301	0.285
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	593	620	615	580	524	452	373	285	192	96	-
Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
Per Capita Water Use w/Addit. Conservation		118	116	114	113	111	109	107	105	104	-
Water Demand											
Annual (ac-ft)	79.7	82.6	81.3	76.0	68.1	58.2	47.6	36.1	24.1	11.9	-
Average Day (mgd)	**0.071**	**0.074**	**0.073**	**0.068**	**0.061**	**0.052**	**0.043**	**0.032**	**0.022**	**0.011**	**-**
Existing Water Supply (avg day mgd)											
Rainwater Collection Systems	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007
Trinity GW - Rural	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064
Total	**0.071**	**0.071**	**0.071**	**0.071**	**0.071**	**0.071**	**0.071**	**0.071**	**0.071**	**0.071**	**0.071**
No Action Surplus or Unmet Need	**0.000**	**(0.003)**	**(0.001)**	**0.003**	**0.010**	**0.019**	**0.029**	**0.039**	**0.050**	**0.061**	**0.071**
Use of Additional Water Management Measures (avg day mgd)											
Additional Water Conservation		0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.001	0.001	0.000
Rainwater Collection Systems		0.000	0.000	(0.000)	(0.001)	(0.003)	(0.004)	(0.006)	(0.008)	(0.010)	(0.012)
Trinity GW - Rural		0.002	0.000	(0.004)	(0.011)	(0.018)	(0.026)	(0.035)	(0.043)	(0.051)	(0.059)
Total	**0.000**	**0.003**	**0.001**	**(0.003)**	**(0.010)**	**(0.019)**	**(0.029)**	**(0.039)**	**(0.050)**	**(0.061)**	**(0.071)**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Water Service Demand (avg day mgd)	**0.806**	**0.852**	**0.889**	**0.916**	**0.935**	**0.947**	**0.957**	**0.966**	**0.971**	**0.972**	**0.957**
Use of Existing and New Supply (avg day mgd)											
Additional Water Conservation	-	0.010	0.021	0.033	0.046	0.058	0.071	0.083	0.096	0.109	0.120
Rainwater Collection Systems	0.044	0.047	0.049	0.050	0.051	0.051	0.051	0.051	0.051	0.050	0.047
Trinity GW	0.762	0.795	0.819	0.833	0.838	0.838	0.835	0.831	0.824	0.813	0.790
Total Use of Existing & New Supply	**0.806**	**0.852**	**0.889**	**0.916**	**0.935**	**0.947**	**0.957**	**0.966**	**0.971**	**0.972**	**0.957**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE B-30
WASTEWATER MANAGEMENT PLAN
PLANNING AREA CITY OF WOODCREEK
SCENARIO NA

Planning Area		Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS												
Planning Area	Est./Projected Population	2,370	2,755	3,073	3,315	3,491	3,619	3,725	3,795	3,836	3,835	3,701
	Annual Growth Rate	1.8%	3.1%	2.2%	1.5%	1.0%	0.7%	0.6%	0.4%	0.2%	0.0%	-0.7%
Suburban	% of Planning Area Population	75.0%	77.5%	80.0%	82.5%	85.0%	87.5%	90.0%	92.5%	95.0%	97.5%	100.0%
	% of New Growth that is Suburban		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Demand served by Central Wastewater Systems	10.0%	19.0%	28.0%	37.0%	46.0%	55.0%	64.0%	73.0%	82.0%	91.0%	100.0%
Rural	% of Planning Area Population	25.0%	22.5%	20.0%	17.5%	15.0%	12.5%	10.0%	7.5%	5.0%	2.5%	0.0%
	% of New Growth that is Rural		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	% of Demand served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA												
Population		1,778	2,135	2,459	2,735	2,967	3,167	3,353	3,510	3,644	3,739	3,701
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand												
	Average Day (mgd)	**0.127**	**0.153**	**0.175**	**0.193**	**0.208**	**0.220**	**0.232**	**0.241**	**0.248**	**0.253**	**0.249**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.114	0.114	0.114	0.114	0.114	0.114	0.114	0.114	0.114	0.114	0.114
	No-Discharge WWTP	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013
	Total	**0.127**	**0.127**	**0.127**	**0.127**	**0.127**	**0.127**	**0.127**	**0.127**	**0.127**	**0.127**	**0.127**
Suburban - No Action Surplus or Unmet Need		**0.000**	**(0.026)**	**(0.048)**	**(0.066)**	**(0.081)**	**(0.093)**	**(0.105)**	**(0.114)**	**(0.121)**	**(0.126)**	**(0.122)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.009	0.011	0.007	(0.002)	(0.015)	(0.031)	(0.049)	(0.070)	(0.092)	(0.114)
	No-Discharge WWTP		0.016	0.036	0.059	0.083	0.109	0.136	0.163	0.191	0.218	0.236
	Total	**0.000**	**0.026**	**0.048**	**0.066**	**0.081**	**0.093**	**0.105**	**0.114**	**0.121**	**0.126**	**0.122**
Suburban - Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA												
Population		593	620	615	580	524	452	373	285	192	96	-
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Wastewater Service Demand												
	Average Day (mgd)	**0.042**	**0.044**	**0.044**	**0.041**	**0.037**	**0.031**	**0.026**	**0.020**	**0.013**	**0.006**	**0.000**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042
	Total	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**
No Action Surplus or Unmet Need		**0.000**	**(0.002)**	**(0.001)**	**0.001**	**0.006**	**0.011**	**0.017**	**0.023**	**0.029**	**0.036**	**0.042**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.002	0.001	(0.001)	(0.006)	(0.011)	(0.017)	(0.023)	(0.029)	(0.036)	(0.042)
	Total	**0.000**	**0.002**	**0.001**	**(0.001)**	**(0.006)**	**(0.011)**	**(0.017)**	**(0.023)**	**(0.029)**	**(0.036)**	**(0.042)**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA												
Wastewater Service Demand (avg day mgd)		**0.170**	**0.197**	**0.218**	**0.234**	**0.245**	**0.252**	**0.258**	**0.260**	**0.261**	**0.260**	**0.249**
Use of Existing and Capacity (avg day mgd)												
	OSSFs	0.157	0.168	0.169	0.163	0.149	0.131	0.109	0.085	0.058	0.029	-
	No-Discharge WWTP	0.013	0.029	0.049	0.071	0.096	0.121	0.148	0.176	0.204	0.230	0.249
	Total Use of Existing & New Supply	**0.170**	**0.197**	**0.218**	**0.234**	**0.245**	**0.252**	**0.258**	**0.260**	**0.261**	**0.260**	**0.249**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE B-31
WATER MANAGEMENT PLAN
PLANNING AREA WOODCREEK UTILITIES
SCENARIO NA

Planning Area		Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS												
Planning Area	Est./Projected Population	2,301	2,675	2,984	3,218	3,389	3,514	3,617	3,684	3,724	3,723	3,593
	Annual Growth Rate	6.3%	3.1%	2.2%	1.5%	1.0%	0.7%	0.6%	0.4%	0.2%	0.0%	-0.7%
Suburban	% of Planning Area Population	90.1%	91.1%	92.1%	93.1%	94.1%	95.1%	96.0%	97.0%	98.0%	99.0%	100.0%
	% of New Growth that is Suburban		95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%
	% Reduction in Base Water Use		1.25%	2.50%	3.75%	5.00%	6.25%	7.50%	8.75%	10.00%	11.25%	12.50%
	% of Growth on Rainwater Systems	15.0%	16.5%	18.0%	19.5%	21.0%	22.5%	24.0%	25.5%	27.0%	28.5%	30.0%
	% of Growth on Central Water Systems			0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	% of Exist. Demand Converting to Central Wtr Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rural	% of Planning Area Population	9.9%	8.9%	7.9%	6.9%	5.9%	5.0%	4.0%	3.0%	2.0%	1.0%	0.0%
	% of New Growth that is Rural		5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
	% Reduction in Base Water Use		0.75%	1.50%	2.25%	3.00%	3.75%	4.50%	5.25%	6.00%	6.75%	7.50%
	% of Growth on Rainwater Systems	10.0%	11.0%	12.0%	13.0%	14.0%	15.0%	16.0%	17.0%	18.0%	19.0%	20.0%
SUBURBAN AREA												
Population		2,073	2,437	2,747	2,995	3,188	3,340	3,474	3,575	3,650	3,686	3,593
	Base Per Capita Water Use (gpcd)	132	131	129	128	127	127	126	126	126	126	126
	Per Capita Water Use w/Addit. Conservation		129	126	123	121	119	117	115	113	112	110
Water Demand												
	Annual (ac-ft)	306.6	356.2	397.0	429.5	453.5	473.2	490.3	504.5	515.2	520.3	507.2
	Average Day (mgd)	**0.274**	**0.318**	**0.354**	**0.383**	**0.405**	**0.423**	**0.438**	**0.450**	**0.460**	**0.465**	**0.453**
						-						
Use of Existing Water Supply (mgd)												
	Rainwater Collection Systems	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041
	Trinity GW - Suburban	0.233	0.233	0.233	0.233	0.233	0.233	0.233	0.233	0.233	0.233	0.233
	Total	**0.274**	**0.274**	**0.274**	**0.274**	**0.274**	**0.274**	**0.274**	**0.274**	**0.274**	**0.274**	**0.274**
No Action Surplus or Unmet Need		**0.000**	**(0.044)**	**(0.081)**	**(0.110)**	**(0.131)**	**(0.149)**	**(0.164)**	**(0.177)**	**(0.186)**	**(0.191)**	**(0.179)**
Use of Additional Water Management Measures (mgd)												
	Additional Water Conservation		0.004	0.009	0.014	0.020	0.026	0.033	0.039	0.046	0.052	0.057
	Rainwater Collection Systems		0.007	0.014	0.020	0.024	0.028	0.032	0.035	0.037	0.039	0.035
	Trinity GW - Suburban		0.033	0.058	0.076	0.087	0.094	0.100	0.102	0.103	0.100	0.087
	Total	**0.000**	**0.044**	**0.081**	**0.110**	**0.131**	**0.149**	**0.164**	**0.177**	**0.186**	**0.191**	**0.179**
			0.266	0.291	0.308	0.320	0.327	0.332	0.335	0.335	0.332	0.320
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA												
Population		228	238	236	223	201	174	143	109	74	37	-
	Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
	Per Capita Water Use w/Addit. Conservation		118	116	114	113	111	109	107	105	104	-
Water Demand												
	Annual (ac-ft)	30.6	31.7	31.2	29.2	26.1	22.4	18.3	13.8	9.3	4.6	-
	Average Day (mgd)	**0.027**	**0.028**	**0.028**	**0.026**	**0.023**	**0.020**	**0.016**	**0.012**	**0.008**	**0.004**	**-**
Existing Water Supply (avg day mgd)												
	Rainwater Collection Systems	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
	Trinity GW - Rural	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
	Total	**0.027**	**0.027**	**0.027**	**0.027**	**0.027**	**0.027**	**0.027**	**0.027**	**0.027**	**0.027**	**0.027**
No Action Surplus or Unmet Need		**0.000**	**(0.001)**	**(0.000)**	**0.001**	**0.004**	**0.007**	**0.011**	**0.015**	**0.019**	**0.023**	**0.027**
Use of Additional Water Management Measures (avg day mgd)												
	Additional Water Conservation		0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.000
	Rainwater Collection Systems		0.000	0.000	(0.000)	(0.001)	(0.001)	(0.002)	(0.002)	(0.003)	(0.004)	(0.005)
	Trinity GW - Rural		0.001	0.000	(0.002)	(0.004)	(0.007)	(0.010)	(0.013)	(0.017)	(0.020)	(0.023)
	Total	**0.000**	**0.001**	**0.000**	**(0.001)**	**(0.004)**	**(0.007)**	**(0.011)**	**(0.015)**	**(0.019)**	**(0.023)**	**(0.027)**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA												
Water Service Demand (avg day mgd)		**0.301**	**0.346**	**0.382**	**0.410**	**0.428**	**0.443**	**0.454**	**0.463**	**0.468**	**0.469**	**0.453**
Use of Existing and New Supply (avg day mgd)												
	Additional Water Conservation	-	0.004	0.009	0.015	0.021	0.027	0.034	0.040	0.046	0.053	0.057
	Rainwater Collection Systems	0.044	0.051	0.058	0.063	0.067	0.071	0.074	0.076	0.078	0.079	0.074
	Trinity GW	0.257	0.291	0.315	0.331	0.340	0.345	0.347	0.346	0.344	0.337	0.322
	Total Use of Existing & New Supply	**0.301**	**0.346**	**0.382**	**0.410**	**0.428**	**0.443**	**0.454**	**0.463**	**0.468**	**0.469**	**0.453**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE B-32
WASTEWATER MANAGEMENT PLAN
PLANNING AREA WOODCREEK UTILITIES
SCENARIO NA

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	2,301	2,675	2,984	3,218	3,389	3,514	3,617	3,684	3,724	3,723	3,593
Annual Growth Rate	6.3%	3.1%	2.2%	1.5%	1.0%	0.7%	0.6%	0.4%	0.2%	0.0%	-0.7%
Suburban % of Planning Area Population	90.1%	91.1%	92.1%	93.1%	94.1%	95.1%	96.0%	97.0%	98.0%	99.0%	100.0%
% of New Growth that is Suburban		95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%
% of Demand served by Central Wastewater Systems	10.0%	15.0%	20.0%	25.0%	30.0%	35.0%	40.0%	45.0%	50.0%	55.0%	60.0%
Rural % of Planning Area Population	9.9%	8.9%	7.9%	6.9%	5.9%	5.0%	4.0%	3.0%	2.0%	1.0%	0.0%
% of New Growth that is Rural		5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
% of Demand served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA											
Population	2,073	2,437	2,747	2,995	3,188	3,340	3,474	3,575	3,650	3,686	3,593
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand											
Average Day (mgd)	**0.148**	**0.174**	**0.195**	**0.211**	**0.223**	**0.232**	**0.240**	**0.245**	**0.249**	**0.249**	**0.241**
Existing Wastewater Treatment (mgd)											
OSSFs	0.133	0.133	0.133	0.133	0.133	0.133	0.133	0.133	0.133	0.133	0.133
No-Discharge WWTP	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015
Total	**0.148**	**0.148**	**0.148**	**0.148**	**0.148**	**0.148**	**0.148**	**0.148**	**0.148**	**0.148**	**0.148**
Suburban - No Action Surplus or Unmet Need	**0.000**	**(0.026)**	**(0.047)**	**(0.063)**	**(0.075)**	**(0.084)**	**(0.092)**	**(0.097)**	**(0.101)**	**(0.101)**	**(0.093)**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.015	0.023	0.025	0.023	0.018	0.011	0.001	(0.009)	(0.021)	(0.037)
No-Discharge WWTP		0.011	0.024	0.038	0.052	0.067	0.081	0.096	0.110	0.122	0.130
Total	**0.000**	**0.026**	**0.047**	**0.063**	**0.075**	**0.084**	**0.092**	**0.097**	**0.101**	**0.101**	**0.093**
Suburban - Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	228	238	236	223	201	174	143	109	74	37	-
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Wastewater Service Demand											
Average Day (mgd)	**0.016**	**0.017**	**0.017**	**0.016**	**0.014**	**0.012**	**0.010**	**0.007**	**0.005**	**0.003**	**0.000**
Existing Wastewater Treatment (mgd)											
OSSFs	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016
Total	**0.016**	**0.016**	**0.016**	**0.016**	**0.016**	**0.016**	**0.016**	**0.016**	**0.016**	**0.016**	**0.016**
No Action Surplus or Unmet Need	**0.000**	**(0.001)**	**(0.000)**	**0.001**	**0.002**	**0.004**	**0.006**	**0.009**	**0.011**	**0.014**	**0.016**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.001	0.000	(0.001)	(0.002)	(0.004)	(0.006)	(0.009)	(0.011)	(0.014)	(0.016)
Total	**0.000**	**0.001**	**0.000**	**(0.001)**	**(0.002)**	**(0.004)**	**(0.006)**	**(0.009)**	**(0.011)**	**(0.014)**	**(0.016)**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Wastewater Service Demand (avg day mgd)	**0.165**	**0.191**	**0.212**	**0.227**	**0.237**	**0.245**	**0.250**	**0.253**	**0.254**	**0.252**	**0.241**
Use of Existing and Capacity (avg day mgd)											
OSSFs	0.150	0.165	0.173	0.174	0.170	0.163	0.154	0.142	0.129	0.115	0.097
No-Discharge WWTP	0.015	0.026	0.039	0.053	0.067	0.081	0.096	0.110	0.124	0.137	0.145
Total Use of Existing & New Supply	**0.165**	**0.191**	**0.212**	**0.227**	**0.237**	**0.245**	**0.250**	**0.253**	**0.254**	**0.252**	**0.241**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE B-33
WATER MANAGEMENT PLAN
PLANNING AREA HILLIARD
SCENARIO NA

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	2,493	2,897	3,232	3,486	3,671	3,806	3,918	3,990	4,033	4,033	3,941
Annual Growth Rate	2.3%	3.1%	2.2%	1.5%	1.0%	0.7%	0.6%	0.4%	0.2%	0.0%	-0.5%
Suburban % of Planning Area Population	46.1%	45.2%	44.7%	44.4%	44.1%	44.0%	43.9%	43.8%	43.8%	43.8%	43.9%
% of New Growth that is Suburban		40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
% Reduction in Base Water Use		0.75%	1.50%	2.25%	3.00%	3.75%	4.50%	5.25%	6.00%	6.75%	7.50%
% of Growth on Rainwater Systems	15.0%	16.5%	18.0%	19.5%	21.0%	22.5%	24.0%	25.5%	27.0%	28.5%	30.0%
% of Growth on Central Water Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
% of Exist. Demand Converting to Central Wtr Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rural % of Planning Area Population	53.9%	54.8%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
% of New Growth that is Rural		60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
% Reduction in Base Water Use		1.25%	2.50%	3.75%	5.00%	6.25%	7.50%	8.75%	10.00%	11.25%	12.50%
% of Growth on Rainwater Systems	10.0%	11.0%	12.0%	13.0%	14.0%	15.0%	16.0%	17.0%	18.0%	19.0%	20.0%
SUBURBAN AREA											
Population	1,149	1,311	1,445	1,546	1,620	1,674	1,719	1,748	1,765	1,765	1,729
Base Per Capita Water Use (gpcd)	132	131	129	128	127	127	126	126	126	126	126
Per Capita Water Use w/Addit. Conservation		130	127	125	123	122	120	119	118	118	117
Water Demand											
Annual (ac-ft)	169.9	191.6	208.8	221.7	230.5	237.3	242.6	246.7	249.2	249.1	244.0
Average Day (mgd)	**0.152**	**0.171**	**0.186**	**0.198**	**0.206**	**0.212**	**0.217**	**0.220**	**0.222**	**0.222**	**0.218**
Use of Existing Water Supply (mgd)											
Rainwater Collection Systems	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023
Edwards GW	0.116	0.116	0.116	0.116	0.116	0.116	0.116	0.116	0.116	0.116	0.116
Trinity GW - Suburban	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013
Total	**0.152**	**0.152**	**0.152**	**0.152**	**0.152**	**0.152**	**0.152**	**0.152**	**0.152**	**0.152**	**0.152**
No Action Surplus or Unmet Need	**0.000**	**(0.019)**	**(0.035)**	**(0.046)**	**(0.054)**	**(0.060)**	**(0.065)**	**(0.069)**	**(0.071)**	**(0.071)**	**(0.066)**
Use of Additional Water Management Measures (mgd)											
Additional Water Conservation		0.001	0.003	0.004	0.006	0.008	0.010	0.012	0.013	0.015	0.016
Rainwater Collection Systems		0.003	0.006	0.008	0.010	0.011	0.012	0.013	0.014	0.014	0.012
Edwards GW		0.013	0.023	0.030	0.034	0.037	0.039	0.039	0.039	0.038	0.034
Trinity GW - Suburban		0.001	0.003	0.003	0.004	0.004	0.004	0.004	0.004	0.004	0.004
Total	**0.000**	**0.019**	**0.035**	**0.046**	**0.054**	**0.060**	**0.065**	**0.069**	**0.071**	**0.071**	**0.066**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	1,343	1,586	1,787	1,939	2,050	2,131	2,198	2,242	2,268	2,267	2,212
Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
Per Capita Water Use w/Addit. Conservation		118	115	113	110	108	105	103	101	99	96
Water Demand											
Annual (ac-ft)	180.5	211.4	236.1	254.1	266.4	274.5	280.7	283.7	284.5	281.9	272.6
Average Day (mgd)	**0.161**	**0.189**	**0.211**	**0.227**	**0.238**	**0.245**	**0.251**	**0.253**	**0.254**	**0.252**	**0.243**
Existing Water Supply (avg day mgd)											
Rainwater Collection Systems	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016
Edwards GW	0.131	0.131	0.131	0.131	0.131	0.131	0.131	0.131	0.131	0.131	0.131
Trinity GW - Rural	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015
Total	**0.161**	**0.161**	**0.161**	**0.161**	**0.161**	**0.161**	**0.161**	**0.161**	**0.161**	**0.161**	**0.161**
No Action Surplus or Unmet Need	**0.000**	**(0.028)**	**(0.050)**	**(0.066)**	**(0.077)**	**(0.084)**	**(0.089)**	**(0.092)**	**(0.093)**	**(0.091)**	**(0.082)**
Use of Additional Water Management Measures (avg day mgd)											
Additional Water Conservation		0.002	0.005	0.009	0.012	0.015	0.019	0.022	0.025	0.028	0.030
Rainwater Collection Systems		0.003	0.006	0.008	0.009	0.010	0.011	0.012	0.012	0.011	0.010
Edwards GW		0.020	0.035	0.044	0.050	0.052	0.053	0.052	0.050	0.046	0.038
Trinity GW - Rural		0.002	0.004	0.005	0.006	0.006	0.006	0.006	0.006	0.005	0.004
Total	**0.000**	**0.028**	**0.050**	**0.066**	**0.077**	**0.084**	**0.089**	**0.092**	**0.093**	**0.091**	**0.082**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Water Service Demand (avg day mgd)	**0.313**	**0.360**	**0.397**	**0.425**	**0.444**	**0.457**	**0.467**	**0.474**	**0.476**	**0.474**	**0.461**
Use of Existing and New Supply (avg day mgd)											
Additional Water Conservation	-	0.004	0.008	0.013	0.018	0.023	0.029	0.034	0.039	0.043	0.047
Rainwater Collection Systems	0.039	0.045	0.051	0.055	0.058	0.060	0.063	0.064	0.065	0.064	0.061
Edwards GW	0.247	0.280	0.305	0.321	0.331	0.336	0.338	0.338	0.336	0.330	0.318
Trinity GW	0.027	0.031	0.034	0.036	0.037	0.037	0.038	0.038	0.037	0.037	0.035
Total Use of Existing & New Supply	**0.313**	**0.360**	**0.397**	**0.425**	**0.444**	**0.457**	**0.467**	**0.474**	**0.476**	**0.474**	**0.461**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE B-34
WASTEWATER MANAGEMENT PLAN
PLANNING AREA HILLIARD
SCENARIO NA

Planning Area		Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS												
Planning Area	Est./Projected Population	2,493	2,897	3,232	3,486	3,671	3,806	3,918	3,990	4,033	4,033	3,941
	Annual Growth Rate	2.3%	3.1%	2.2%	1.5%	1.0%	0.7%	0.6%	0.4%	0.2%	0.0%	-0.5%
Suburban	% of Planning Area Population	46.1%	45.2%	44.7%	44.4%	44.1%	44.0%	43.9%	43.8%	43.8%	43.8%	43.9%
	% of New Growth that is Suburban		40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
	% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rural	% of Planning Area Population	53.9%	54.8%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of New Growth that is Rural		60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
	% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA												
Population		1,149	1,311	1,445	1,546	1,620	1,674	1,719	1,748	1,765	1,765	1,729
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand												
	Average Day (mgd)	**0.082**	**0.094**	**0.103**	**0.109**	**0.114**	**0.117**	**0.119**	**0.120**	**0.120**	**0.119**	**0.116**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.082
	No-Discharge WWTP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Total	**0.082**	**0.082**	**0.082**	**0.082**	**0.082**	**0.082**	**0.082**	**0.082**	**0.082**	**0.082**	**0.082**
Suburban - No Action Surplus or Unmet Need		**0.000**	**(0.012)**	**(0.020)**	**(0.027)**	**(0.031)**	**(0.034)**	**(0.037)**	**(0.038)**	**(0.038)**	**(0.037)**	**(0.034)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.012	0.020	0.027	0.031	0.034	0.037	0.038	0.038	0.037	0.034
	No-Discharge WWTP		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Total	**0.000**	**0.012**	**0.020**	**0.027**	**0.031**	**0.034**	**0.037**	**0.038**	**0.038**	**0.037**	**0.034**
Suburban - Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA												
Population		1,343	1,586	1,787	1,939	2,050	2,131	2,198	2,242	2,268	2,267	2,212
	Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Wastewater Service Demand												
	Average Day (mgd)	**0.096**	**0.113**	**0.127**	**0.137**	**0.144**	**0.148**	**0.152**	**0.154**	**0.155**	**0.153**	**0.149**
Existing Wastewater Treatment (mgd)												
	OSSFs	0.096	0.096	0.096	0.096	0.096	0.096	0.096	0.096	0.096	0.096	0.096
	Total	**0.096**	**0.096**	**0.096**	**0.096**	**0.096**	**0.096**	**0.096**	**0.096**	**0.096**	**0.096**	**0.096**
No Action Surplus or Unmet Need		**0.000**	**(0.017)**	**(0.031)**	**(0.041)**	**(0.048)**	**(0.052)**	**(0.056)**	**(0.058)**	**(0.059)**	**(0.057)**	**(0.053)**
Use of Additional Wastewater Management Measures (avg day mgd)												
	OSSFs		0.017	0.031	0.041	0.048	0.052	0.056	0.058	0.059	0.057	0.053
	Total	**0.000**	**0.017**	**0.031**	**0.041**	**0.048**	**0.052**	**0.056**	**0.058**	**0.059**	**0.057**	**0.053**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA												
Wastewater Service Demand (avg day mgd)		**0.178**	**0.207**	**0.230**	**0.246**	**0.257**	**0.265**	**0.271**	**0.274**	**0.275**	**0.273**	**0.265**
Use of Existing and Capacity (avg day mgd)												
	OSSFs	0.178	0.207	0.230	0.246	0.257	0.265	0.271	0.274	0.275	0.273	0.265
	No-Discharge WWTP	-	-	-	-	-	-	-	-	-	-	-
	Total Use of Existing & New Supply	**0.178**	**0.207**	**0.230**	**0.246**	**0.257**	**0.265**	**0.271**	**0.274**	**0.275**	**0.273**	**0.265**
Surplus or Unmet Need		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE B-35
WATER MANAGEMENT PLAN
PLANNING AREA 12-B
SCENARIO NA

Planning Area	Estimated 2010	Projected 2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
PLANNING FACTORS											
Planning Area Est./Projected Population	2,410	2,802	3,125	3,371	3,549	3,680	3,788	3,858	3,900	3,899	3,740
Annual Growth Rate	3.0%	3.1%	2.2%	1.5%	1.0%	0.7%	0.6%	0.4%	0.2%	0.0%	-0.8%
Suburban % of Planning Area Population	54.0%	57.6%	59.9%	61.4%	62.3%	63.0%	63.4%	63.7%	63.9%	63.9%	63.2%
% of New Growth that is Suburban		80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%
% Reduction in Base Water Use		1.00%	2.00%	3.00%	4.00%	5.00%	6.00%	7.00%	8.00%	9.00%	10.00%
% of Growth on Rainwater Systems	5.0%	5.5%	6.0%	6.5%	7.0%	7.5%	8.0%	8.5%	9.0%	9.5%	10.0%
% of Growth on Central Water Systems		0.0%	0.0%	0.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
% of Exist. Demand Converting to Central Wtr Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rural % of Planning Area Population	46.0%	42.4%	40.1%	38.6%	37.7%	37.0%	36.6%	36.3%	36.1%	36.1%	36.8%
% of New Growth that is Rural		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
% Reduction in Base Water Use		1.25%	2.50%	3.75%	5.00%	6.25%	7.50%	8.75%	10.00%	11.25%	12.50%
% of Growth on Rainwater Systems	10.0%	11.0%	12.0%	13.0%	14.0%	15.0%	16.0%	17.0%	18.0%	19.0%	20.0%
SUBURBAN AREA											
Population	1,301	1,614	1,873	2,069	2,213	2,317	2,403	2,460	2,493	2,492	2,365
Base Per Capita Water Use (gpcd)	132	131	129	128	127	127	126	126	126	126	126
Per Capita Water Use w/Addit. Conservation		129	126	124	122	120	118	117	116	115	113
Water Demand											
Annual (ac-ft)	192.4	236.0	270.6	296.7	314.8	328.3	339.2	347.1	351.9	351.8	333.8
Average Day (mgd)	**0.172**	**0.211**	**0.242**	**0.265**	**0.281**	**0.293**	**0.303**	**0.310**	**0.314**	**0.314**	**0.298**
Use of Existing Water Supply (mgd)											
Rainwater Collection Systems	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009
Edwards GW	0.104	0.104	0.104	0.104	0.104	0.104	0.104	0.104	0.104	0.104	0.104
Trinity GW - Suburban	0.059	0.059	0.059	0.059	0.059	0.059	0.059	0.059	0.059	0.059	0.059
Total	**0.172**	**0.172**	**0.172**	**0.172**	**0.172**	**0.172**	**0.172**	**0.172**	**0.172**	**0.172**	**0.172**
No Action Surplus or Unmet Need	**0.000**	**(0.039)**	**(0.070)**	**(0.093)**	**(0.109)**	**(0.121)**	**(0.131)**	**(0.138)**	**(0.142)**	**(0.142)**	**(0.126)**
Use of Additional Water Management Measures (mgd)											
Additional Water Conservation		0.002	0.005	0.008	0.011	0.015	0.018	0.022	0.025	0.028	0.030
Rainwater Collection Systems		0.002	0.004	0.006	0.007	0.008	0.008	0.009	0.009	0.009	0.008
Edwards GW		0.022	0.039	0.051	0.058	0.063	0.067	0.069	0.069	0.067	0.057
Trinity GW - Suburban		0.012	0.022	0.029	0.033	0.036	0.038	0.039	0.039	0.038	0.032
Total	**0.000**	**0.039**	**0.070**	**0.093**	**0.109**	**0.121**	**0.131**	**0.138**	**0.142**	**0.142**	**0.126**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	1,109	1,187	1,252	1,301	1,337	1,363	1,385	1,399	1,407	1,407	1,375
Per Capita Water Use (gpcd)	120	119	118	117	116	115	114	113	112	111	110
Per Capita Water Use w/Addit. Conservation		118	115	113	110	108	105	103	101	99	96
Water Demand											
Annual (ac-ft)	149.1	158.3	165.5	170.5	173.7	175.6	176.8	177.0	176.5	174.9	169.4
Average Day (mgd)	**0.133**	**0.141**	**0.148**	**0.152**	**0.155**	**0.157**	**0.158**	**0.158**	**0.158**	**0.156**	**0.151**
Existing Water Supply (avg day mgd)											
Rainwater Collection Systems	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013
Edwards GW	0.077	0.077	0.077	0.077	0.077	0.077	0.077	0.077	0.077	0.077	0.077
Trinity GW - Rural	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043
Total	**0.133**	**0.133**	**0.133**	**0.133**	**0.133**	**0.133**	**0.133**	**0.133**	**0.133**	**0.133**	**0.133**
No Action Surplus or Unmet Need	**0.000**	**(0.008)**	**(0.015)**	**(0.019)**	**(0.022)**	**(0.024)**	**(0.025)**	**(0.025)**	**(0.025)**	**(0.023)**	**(0.018)**
Use of Additional Water Management Measures (avg day mgd)											
Additional Water Conservation		0.002	0.004	0.006	0.008	0.010	0.012	0.014	0.016	0.018	0.019
Rainwater Collection Systems		0.001	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.003	0.002
Edwards GW		0.004	0.006	0.007	0.007	0.007	0.006	0.005	0.004	0.002	(0.002)
Trinity GW - Rural		0.002	0.003	0.004	0.004	0.004	0.004	0.003	0.002	0.001	(0.001)
Total	**0.000**	**0.008**	**0.015**	**0.019**	**0.022**	**0.024**	**0.025**	**0.025**	**0.025**	**0.023**	**0.018**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Water Service Demand (avg day mgd)	**0.305**	**0.352**	**0.389**	**0.417**	**0.436**	**0.450**	**0.461**	**0.468**	**0.472**	**0.470**	**0.449**
Use of Existing and New Supply (avg day mgd)											
Additional Water Conservation	-	0.004	0.009	0.014	0.019	0.024	0.030	0.036	0.041	0.046	0.049
Rainwater Collection Systems	0.022	0.025	0.028	0.030	0.031	0.032	0.033	0.034	0.034	0.034	0.031
Edwards GW	0.181	0.207	0.226	0.239	0.247	0.251	0.254	0.255	0.254	0.250	0.236
Trinity GW	0.102	0.116	0.127	0.135	0.139	0.142	0.143	0.144	0.143	0.141	0.133
Total Use of Existing & New Supply	**0.305**	**0.352**	**0.389**	**0.417**	**0.436**	**0.450**	**0.461**	**0.468**	**0.472**	**0.470**	**0.449**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

TABLE B-36
WASTEWATER MANAGEMENT PLAN
PLANNING AREA 12-B
SCENARIO NA

	Estimated					Projected					
Planning Area	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**	**2055**	**2060**
PLANNING FACTORS											
Planning Area Est./Projected Population	2,410	2,802	3,125	3,371	3,549	3,680	3,788	3,858	3,900	3,899	3,740
Annual Growth Rate	3.0%	3.1%	2.2%	1.5%	1.0%	0.7%	0.6%	0.4%	0.2%	0.0%	-0.8%
Suburban % of Planning Area Population	54.0%	57.6%	59.9%	61.4%	62.3%	63.0%	63.4%	63.7%	63.9%	63.9%	63.2%
% of New Growth that is Suburban		80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%
% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rural % of Planning Area Population	46.0%	42.4%	40.1%	38.6%	37.7%	37.0%	36.6%	36.3%	36.1%	36.1%	36.8%
% of New Growth that is Rural		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
% of Growth served by Central Wastewater Systems		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SUBURBAN AREA											
Population	1,301	1,614	1,873	2,069	2,213	2,317	2,403	2,460	2,493	2,492	2,365
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Suburban - Wastewater Service Demand											
Average Day (mgd)	**0.093**	**0.115**	**0.133**	**0.146**	**0.155**	**0.161**	**0.166**	**0.169**	**0.170**	**0.169**	**0.159**
Existing Wastewater Treatment (mgd)											
OSSFs	0.093	0.093	0.093	0.093	0.093	0.093	0.093	0.093	0.093	0.093	0.093
No-Discharge WWTP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	**0.093**	**0.093**	**0.093**	**0.093**	**0.093**	**0.093**	**0.093**	**0.093**	**0.093**	**0.093**	**0.093**
Suburban - No Action Surplus or Unmet Need	**0.000**	**(0.022)**	**(0.040)**	**(0.053)**	**(0.062)**	**(0.068)**	**(0.073)**	**(0.076)**	**(0.077)**	**(0.076)**	**(0.066)**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.022	0.040	0.053	0.062	0.068	0.073	0.076	0.077	0.076	0.066
No-Discharge WWTP		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	**0.000**	**0.022**	**0.040**	**0.053**	**0.062**	**0.068**	**0.073**	**0.076**	**0.077**	**0.076**	**0.066**
Suburban - Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RURAL AREA											
Population	1,109	1,187	1,252	1,301	1,337	1,363	1,385	1,399	1,407	1,407	1,375
Wastewater Return Flow (gpcd)	72	72	71	71	70	70	69	69	68	68	67
Wastewater Service Demand											
Average Day (mgd)	**0.079**	**0.085**	**0.089**	**0.092**	**0.094**	**0.095**	**0.096**	**0.096**	**0.096**	**0.095**	**0.092**
Existing Wastewater Treatment (mgd)											
OSSFs	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079
Total	**0.079**	**0.079**	**0.079**	**0.079**	**0.079**	**0.079**	**0.079**	**0.079**	**0.079**	**0.079**	**0.079**
No Action Surplus or Unmet Need	**0.000**	**(0.006)**	**(0.010)**	**(0.012)**	**(0.014)**	**(0.016)**	**(0.016)**	**(0.017)**	**(0.017)**	**(0.016)**	**(0.013)**
Use of Additional Wastewater Management Measures (avg day mgd)											
OSSFs		0.006	0.010	0.012	0.014	0.016	0.016	0.017	0.017	0.016	0.013
Total	**0.000**	**0.006**	**0.010**	**0.012**	**0.014**	**0.016**	**0.016**	**0.017**	**0.017**	**0.016**	**0.013**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
TOTAL PLANNING AREA											
Wastewater Service Demand (avg day mgd)	**0.172**	**0.200**	**0.222**	**0.238**	**0.249**	**0.256**	**0.262**	**0.265**	**0.266**	**0.264**	**0.251**
Use of Existing and Capacity (avg day mgd)											
OSSFs	0.172	0.200	0.222	0.238	0.249	0.256	0.262	0.265	0.266	0.264	0.251
No-Discharge WWTP	-	-	-	-	-	-	-	-	-	-	-
Total Use of Existing & New Supply	**0.172**	**0.200**	**0.222**	**0.238**	**0.249**	**0.256**	**0.262**	**0.265**	**0.266**	**0.264**	**0.251**
Surplus or Unmet Need	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

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APPENDIX C
DETAILS OF FACILITIES COSTING

Table C-1. Cost Estimate Summary
October 2010 Prices
Wimberley/Woodcreek Supply Options (2011 Region L)

Item	Option A** FM 150 Route 19 miles		Option B** RR 12 Route Around San Marcos System 18 miles		Option C** RR 12 Route Through San Marcos System 10 miles	
	Short-Term Supply (1 MGD)	Long-Term Supply (4 MGD)	Short-Term Supply (1 MGD)	Long-Term Supply (4 MGD)	Short-Term Supply (1 MGD)	Long-Term Supply (4 MGD)
Capital Costs						
Intake and Pump Station (4 MGD)	$0	$0	$0	$0	$0	$
Transmission Pipeline (16 inch diameter)	$11,997,000	$11,997,000	$11,489,000	$11,489,000	$5,341,000	$5,341,00
Transmission Pump Station(s)	$6,751,000	$6,751,000	$7,257,000	$7,257,000	$3,349,000	$3,349,00
Water Treatment Plant or Plant Expansion (4 MGD)	$0	$5,340,000	$0	$5,340,000	$0	$5,340,00
Terminal Storage Tank (0.4 MG)	$390,000	$390,000	$390,000	$390,000	$390,000	$390,00
Interconnection to GBRA Hays IH35 Pipeline	$52,000	$52,000	$0	$0	$0	$
Total Capital Cost	**$19,190,000**	**$24,530,000**	**$19,136,000**	**$24,476,000**	**$9,080,000**	**$14,420,00**
Engineering, Legal Costs, and Contingencies	$7,986,000	$7,986,000	$7,992,000	$7,992,000	$4,780,000	$4,780,00
Environmental & Archaeology Studies and Mitigation	$543,000	$543,000	$524,000	$524,000	$302,000	$302,00
Land Acquisition and Surveying	$738,000	$738,000	$711,000	$711,000	$406,000	$406,00
Interest During Construction (1 years)	$1,352,000	$1,352,000	$1,349,000	$1,349,000	$797,000	$797,00
Total Project Cost	**$29,809,000**	**$35,149,000**	**$29,712,000**	**$35,052,000**	**$15,365,000**	**$20,705,00**
Annual Costs						
Debt Service (6 percent, 20 years)	$2,599,000	$3,064,000	$2,590,000	$3,056,000	$1,340,000	$1,805,00
Operation and Maintenance						
Intake, Pipeline, Pump Station	$283,000	$283,000	$294,000	$294,000	$141,000	$141,00
Water Treatment Plant	$0	$487,000	$0	$487,000	$0	$487,00
Pumping Energy Costs ($0.09/kW-hr)	$93,000	$554,000	$116,000	$678,000	$49,000	$329,00
Raw Water Rate ($/acft)[1]	$105	$1,000	$105	$1,000	$105	$1,00
Purchase of Raw Water						
Treated Water Rate ($/kgal)[2,3]	$2.34	$5.09	$1.70	$4.45	$2.94	$5.6
Purchase of Treated Water	$854,000	$7,426,000	$620,000	$6,491,000	$1,073,000	$8,301,00
Total Annual Cost	**$3,829,000**	**$11,814,000**	**$3,620,000**	**$11,006,000**	**$2,603,000**	**$11,063,00**
Available Project Yield (acft/yr)	1,120	4,480	1,120	4,480	1,120	4,48
Annual Cost of Water ($/acft/yr)	$3,419	$2,637	$3,232	$2,457	$2,324	$2,46
Annual Cost of Water ($/kgal)	$10.49	$8.09	$9.92	$7.54	$7.13	$7.5

See footnotes on next page

Footnotes continued.

All estimates based on 2011 Region L Plan Table 4C.8-3, Volume II.

* System facilities are sized for uniform delivery to Wimberley at 4 MGD. No peaking capacity has been included.

** Summary information descriptive of each option follows:

Option A: Short-Term = Committed, but presently unused, water from Canyon Reservoir available on a short-term basis. Treated water delivery from the existing San Marcos WTP via the GBRA Hays IH35 Pipeline.

Long-Term = Water from a new project (e.g., GBRA Mid-Basin, Hays/Caldwell PUA, etc.) available on a long-term basis. Treated water delivery from an expanded San Marcos WTP via the GBRA Hays IH35 Pipeline.

Option B: Short-Term = Committed, but presently unused, water from Canyon Reservoir available on a short-term basis. Treated water delivery from the existing San Marcos WTP in a new pipeline bypassing the San Marcos distribution system.

Long-Term = Water from a new project (e.g., GBRA Mid-Basin, Hays/Caldwell PUA, etc.) available on a long-term basis. Treated water delivery from an expanded San Marcos WTP in a new pipeline bypassing the San Marcos distribution system.

Option C: Short-Term = Committed, but presently unused, water (GBRA/Canyon and/or Edwards) that San Marcos believes it can serve on a short-term basis. Treated water delivery from the existing San Marcos WTP through the San Marcos distribution system.

Long-Term = Water from a new project (e.g., GBRA Mid-Basin, Hays/Caldwell PUA, etc.) available on a long-term basis. Treated water delivery from an expanded San Marcos WTP through the San Marcos distribution system.

Expansion of transmission capacity within the San Marcos distribution system has not been evaluated.

[1] $1000/ac-ft is preliminary estimate of cost of raw water at the San Marcos WTP provided through development of a new project.

[2] Treated water rates include raw water cost, treatment, O&M, pumping, and wheeling costs per GBRA for Options A and B and per San Marcos for Option C.

[3] Treated water rates are adjusted to account for increase in raw water rate for long-term supply.

Table C-2. Cost Estimate Summary ***October 2010 Prices*** ***Wimberley & Woodcreek Supply from CLWSC***	
Item	***Estimated Costs for Facilities***
Capital Costs	
Transmission Pipeline (12 in dia., 9 miles)	$4,073,000
Water Treatment Plant (1 mgd)	62,000
Wimberley Water Tank (0.4 MG)	$391,000
Total Capital Cost	**$4,526,000**
Engineering, Legal Costs and Contingencies	$1,381,000
Environmental & Archaeology Studies and Mitigation	$237,000
Land Acquisition and Surveying (33 acres)	$323,000
Interest During Construction (1 years)	$259,000
Total Project Cost	**$6,726,000**
Annual Costs	
Debt Service (6 percent, 20 years)	$586,000
Operation and Maintenance	
Intake, Pipeline, Pump Station	$45,000
Purchase of Water (1,120 ac-ft/yr @ $1,173/ac-ft)	$1,314,000
Total Annual Cost	**$1,973,000**
Available Project Yield (ac-ft/yr)	1,120
Annual Cost of Water ($ per ac-ft)	$1,762
Annual Cost of Water ($ per 1,000 gallons)	$5.41

Table C-3. Cost Estimate Summary *October 2010 Prices* *Interconnect between Wimberley WSC and Aqua Texas*	
Item	***Estimated Costs for Facilities***
Capital Costs	
Transmission Pipeline (8 in dia., 4 miles)	$2,316,000
Transmission Pump Station(s)	$1,173,000
Distribution	$626,000
Total Capital Cost	**$4,115,000**
Engineering, Legal Costs and Contingencies	$1,324,000
Environmental & Archaeology Studies and Mitigation	$108,000
Land Acquisition and Surveying (18 acres)	$150,000
Interest During Construction (1 years)	$228,000
Total Project Cost	**$5,925,000**
Annual Costs	
Debt Service (6 percent, 30 years)	$516,000
Operation and Maintenance	
Intake, Pipeline, Pump Station	$59,000
Pumping Energy Costs (691264 kW-hr @ 0.09 $/kW-hr)	$62,000
Purchase of Water (ac-ft/yr @ $/ac-ft)	$0
Total Annual Cost	**$637,000**
Available Project Yield (ac-ft/yr)	1,120
Annual Cost of Water ($ per ac-ft)	$569
Annual Cost of Water ($ per 1,000 gallons)	$1.75

Table C-4. Cost Estimate Summary October 2010 Prices Hamilton Pool Road Pipeline Extension	
Item	***Estimated Costs for Facilities***
Capital Costs	
Ground Storage Tank at Hamilton Pool (1 MG)	$1,758,000
Elevated Storage Tank west of RR12 on Hamilton Pool (1 MG)	$2,110,000
Hamilton Pool Pump Station Capacity Increase (2,400 gpm)	$473,000
Line from Hamilton Pool to Tank Site west of RR12 (16 in dia, 3.65 miles)	$2,673,000
Total Capital Cost	**$7,014,000**
Contingency	$1,403,000
Engineering, Surveying & Construction Management	$1,052,000
General Administration	$631,000
LCRA Project Management	$140,000
Total Project Cost	**$10,240,000**
Annual Costs	
Debt Service (6 percent, 20 years)	$893,000
Operation and Maintenance	
Elevated Storage Tanks	$39,000
Pipelines	$27,000
Pump Stations	$12,000
Pumping Energy Costs	-
Purchase of Water (@ $138/ac-ft)	$603,000
Total Annual Cost	**$1,574,000**
Available Project Yield (ac-ft/yr)	4,368
Annual Cost of Water ($ per ac-ft)	$360
Annual Cost of Water ($ per 1,000 gallons)	$1.11

Estimate based on 2001 cost data from West Travis County Regional Water System: Master Plan and Modeling Update (Table 7-1); and updated to Oct 2010 prices.

Energy estimates for this project were not available and will increase the annual cost of water.

Table C-5. Cost Estimate Summary
October 2010 Prices
RR12 Pipeline Extension

Item	Estimated Costs for Facilities
Capital Costs	
Line from Hamilton Pool Rd to Fitzhugh on RR12 (20 in dia., 2.78 miles)	$2,481,000
Line from Dripping Springs to Storage Tank (20 in dia., 0.91 miles)	$810,000
Line from Fitzhugh Rd to Hwy 290 on RR12 (20 in dia, 4.73 miles)	$4,219,000
Total Capital Cost	**$7,510,000**
Contingency	$1,502,000
Engineering, Surveying & Construction Management	$1,127,000
General Administration	$676,000
LCRA Project Management	$150,000
Total Project Cost	**$10,965,000**
Annual Costs	
Debt Service (6 percent, 20 years)	$956,000
Operation and Maintenance	
Pipelines	$75,000
Pumping Energy Costs	-
Purchase of Water (@ $138/ac-ft)	$603,000
Total Annual Cost	**$1,634,000**
Available Project Yield (ac-ft/yr)	4,368
Annual Cost of Water ($ per ac-ft)	$374
Annual Cost of Water ($ per 1,000 gallons)	$1.15

Estimate based on 2001 cost data from West Travis County Regional Water System: Master Plan and Modeling Update (Table 7-1); and updated to Oct 2010 prices.
Energy estimates for this project were not available and will increase the annual cost of water.

Table C-6. Cost Estimate Summary ***October 2010 Prices*** ***Region K Brackish Edwards-BFZ Desalination Option***	
Item	***Estimated Costs for Facilities***
Capital Costs	
Water Treatment Plant (10 MGD)	$12,923,000
Well Field (23 wells, 750 gpm, 1,000 ft depth)	$9,110,000
Well Collection Lines (6 in dia., 5,000 ft)	$343,000
Pump Station	$2,036,000
Distribution Line (8 in dia., 7 miles)	$2,856,000
Brine Disposal Wells (2 wells, 1,000 ft depth)	$4,622,000
Total Capital Cost	**$31,890,000**
Engineering, Legal Costs and Contingencies	$10,770,000
Environmental & Archaeology Studies and Mitigation	$575,000
Land Acquisition and Surveying (115 acres)	$575,000
Total Project Cost	**$43,810,000**
Annual Costs	
Debt Service (6 percent, 20 years)	$3,820,000
Operation and Maintenance	
Water Treatment Plant	$4,158,000
Well Field	$369,000
Pump Station & Distribution Line	$106,000
Brine Disposal	$90,000
Pumping Energy Costs	$460,000
Total Annual Cost	**$9,003,000**
Available Project Yield (ac-ft/yr)	8,800
Annual Cost of Water ($ per ac-ft)	$1,023
Annual Cost of Water ($ per 1,000 gallons)	$3.14

Original costs from 2011 Region K Plan updated to Oct 2010 costs
Additional 6 miles of pipeline and energy costs added to original estimate

Table C-7. Cost Estimate Summary October 2010 Prices City of Austin Water Line Extension for Hays County (2011 Region K)	
Item	***Estimated Costs for Facilities***
Total Project Cost	**$3,114,000**
Annual Costs	
Debt Service (6 percent, 20 years)	$271,000
Operation and Maintenance	$24,400
Purchase of Treated Water from COA ($3.20/kgal)	$1,147,000
Total Annual Cost	**$1,442,400**
Available Project Yield (ac-ft/yr)	1,100
Annual Cost of Water ($ per ac-ft)	$1,311
Annual Cost of Water ($ per 1,000 gallons)	$4.02

Original costs from 2011 Region K Plan Vol. 1, Table 4.81 and updated to Oct 2010 costs

Table C-8. Cost Estimate Summary October 2010 Prices Exempt Middle Trinity Well	
Item	***Estimated Costs for Facilities***
Capital Costs	
Well Construction (500 ft)	$12,500
Well pump (5 HP)	$3,000
Treatment (aeration tank, softening)	$1,000
Total Capital Cost	**$16,500**
Contingency	$1,000
Engineering, Surveying & Construction Management	$500
Total Project Cost	**$18,000**
Annual Costs	
Debt Service (6 percent, 20 years)	$2,000
Operation and Maintenance	$150
Pumping & Treatment Energy Costs	$100
Total Annual Cost	**$2,250**
Available Project Yield (ac-ft/yr)	1
Annual Cost of Water ($ per ac-ft)	$2,250
Annual Cost of Water ($ per 1,000 gallons)	$6.90

Table C-9. Cost Estimate Summary October 2010 Prices Commercial Middle Trinity Well	
Item	***Estimated Costs for Facilities***
Capital Costs	
Well (600 ft, 100 gpm)	$60,000
Treatment (disinfection)	$17,000
Distribution line (6,040 ft, 4-in dia)	$151,000
Storage Tank (35,000 gal)	$60,000
Pump Station (6 HP)	$146,000
Total Capital Cost	**$434,000**
Contingency	$43,000
Engineering, Surveying & Construction Management	$87,000
Total Project Cost	**$564,000**
Annual Costs	
Debt Service (6 percent, 20 years)	$49,000
Operation and Maintenance	
Treatment	$5,000
Wells, Pipeline, Pump Station	$2,700
Pumping & Treatment Energy Costs (92,100 kW-hr @ 0.09 $/kW-hr)	$8,300
Total Annual Cost	**$65,000**
Available Project Yield (ac-ft/yr)	36
Annual Cost of Water ($ per ac-ft)	$1,791
Annual Cost of Water ($ per 1,000 gallons)	$5.49

Table C-10. Cost Estimate Summary October 2010 Prices Rainwater Harvesting	
Item	***Estimated Costs for Facilities***
Capital Costs	
Site Preparation	$2,500
Fiberglass Storage Tank(s) (20,000 gal)	$12,500
Roof Improvements (gutters, leaf screens)	$3,000
Pump	$800
Treatment (UV)	$1,200
Total Capital Cost	**$20,000**
Contingency	$4,000
Engineering, Surveying & Construction Management	$1,000
Total Project Cost	**$25,000**
Annual Costs	
Debt Service (6 percent, 20 years)	$2,000
Operation and Maintenance	$400
Pumping & Treatment Energy Costs	$100
Total Annual Cost	**$2,500**
Available Project Yield (ac-ft/yr)	0.252
Annual Cost of Water ($ per ac-ft)	$9,919
Annual Cost of Water ($ per 1,000 gallons)	$30.44

Assumes 3 months of storage, average rainfall of 34 in/yr, system efficiency of 85%, 5,000 ft^2 of roof area, for a monthly demand of 2,250 gal. Based on historical rainfall data, firm yield would be about 55% of the project yield for this system and demand

Table C-11. Cost Estimate Summary October 2010 Prices Wastewater Collection System for Wimberley[1] Phase I, Option A	
Item	**Estimated Costs for Facilities**
Capital Costs	
Collection System	
Gravity Sewer (5,000 feet)	$475,000
Force Main (4,900 feet)	$267,000
Manholes	$86,000
Lift Stations (1)	$215,000
Street/Driveway Repair	$27,000
Service Connections & Erosion Control	$83,000
Subsurface Drip Dispersal System	$515,000
Soil Importation (14,815 cubic yards)	$477,000
Ground Storage Tanks (1)	$91,000
Construct New Treatment Plant	$644,000
Decommission Existing Plant and Septic Field	$54,000
Total Capital Cost	**$2,934,000**
Contingency (20 percent)	$587,000
Engineering/Overhead/Financing (15 percent)	$528,000
Total Project Cost	**$4,049,000**
Annual Costs	
Debt Service (6 percent, 20 years)	$353,000
Operation and Maintenance	
Collection System	$115,000
Effluent Disposal	$217,000
WW Treatment Plant	$209,000
Pumping Energy Costs	-
Total Annual Cost	**$894,000**
Available Project Capacity (MGD)	0.05
Annual Cost of WW System ($/MGD)	$17,880,000
Annual Cost of WW System ($ per 1,000 gallons)	$48.99

1. Costs are for Phase I, Option A (New Plant Construction) as detailed in the Preliminary Engineering Report, "Wastewater Collection and Treatment System Options for the Village of Wimberley," dated December 2009 (page 37); and updated to Oct 2010 costs.

Table C-12. Cost Estimate Summary October 2010 Prices Wastewater Collection System for Wimberley[1] Phase II, Option A	
Item	**Estimated Costs for Facilities**
Capital Costs	
Collection System	
Gravity Sewer (8,200 feet)	$708,000
Force Main (4,400 feet)	$244,000
Manholes	$97,000
Lift Stations (1)	$338,000
Street/Driveway Repair	$43,000
Service Connections & Erosion Control	$96,000
Subsurface Drip Dispersal System	$644,000
Soil Importation (18,500 cubic yards)	$596,000
Ground Storage Tanks (1)	$107,000
Expand WW Treatment Plant to 100,000 GPD	$429,000
Total Capital Cost	**$3,302,000**
Contingency (20 percent)	$660,000
Engineering/Overhead/Financing (15 percent)	$594,000
Total Project Cost	**$4,556,000**
Annual Costs	
Debt Service (6 percent, 20 years)	$397,000
Operation and Maintenance	
Collection System	$153,000
Effluent Disposal	$269,000
WW Treatment Plant	$129,000
Pumping Energy Costs	-
Total Annual Cost	**$948,000**
Available Project Capacity (MGD)	0.05
Annual Cost of WW System ($/MGD)	$18,960,000
Annual Cost of WW System ($ per 1,000 gallons)	$51.95

1. Costs are for Phase II, Option A (New Plant Construction) as detailed in the Preliminary Engineering Report, "Wastewater Collection and Treatment System Options for the Village of Wimberley," dated December 2009 (page 41); and updated to Oct 2010 costs.

APPENDIX D

PUBLIC COORDINATION, COMMENTS AND COMMENT RESPONSE

COORDINATION EFFORTS

Three official public meetings were conducted during the course of the project: (1) an initial kick-off meeting in Wimberley on April 15, 2009, (2) a second meeting in Dripping Springs on November 10, 2010 that reviewed initial study result prior to publication of a draft report, and (3) a third public meeting in Wimberley on January 19, 2011 that reviewed findings of the published draft report. These meetings were advertised through published public notices in newspapers, newspaper articles, web listings, and email advisories to various stakeholder groups.

In addition to these public meetings, numerous individual and group coordination meetings were held with various stakeholders, as well as continuing telephone and email communications. A series of on-going status briefings were made to the Hays County Commissioners Court. Meetings and presentations (in several cases, multiple meetings) were held with the TWDB; cities of Wimberley, Woodcreek, Dripping Springs, Hays City, Buda, Kyle, and San Marcos; the GBRA and LCRA; the Barton Springs Edwards Aquifer Conservation District, the Edwards Aquifer Authority, and the Hays Trinity Groundwater Conservation District; the Wimberley and Dripping Springs WSCs, Aqua Texas, and Canyon Lake Water Service Company; representatives of the Wimberley Valley Watershed Association and the Citizens for Responsible Development; and various communications with the general public, the media, and Regional Planning Groups K and L consultants.

PUBLIC COMMENTS RECEIVED

The comment responses received have been printed in full below and where appropriate, personal information was redacted to protect privacy. Comments have been numbered on the left hand side of the page and are keyed to comment responses in the following section.

Attachment 1

TWDB Comments on Hays County Water/Wastewater Facility Plan Report

TWDB Contract #0804830842

1

1. Please include a summary of all public meetings held on this project and any other public participation activities in the final report

2

2. Chapter 2.0, Page 2-7, "Water Supply", final sentence in section: The summary states "Maximum use of firm water supplies in recent years" but it is unclear if this refers to total LCRA customer use or use in some portion of the basin. Please consider clarifying the statement in order to better highlight approximately how much water would be available for development.

3

3. Chapter 3.4, Page 3-5, "Population and Service Demand Forecasting": Please consider including a chart showing existing and projected populations by entity for the study area. For example, Table 3.4-1 shows existing and projected per capita uses by entity but not population. This additional information would better support future demand data.

4

4. Chapter 3.7.2.1, "Centralized Treatment Plants": Please consider including a county-wide map of existing treatment plants and highlighting areas not satisfactorily serviced.

5

5. Page 3-16, section 3.7.1.2, Implementation Issues: Please consider including a discussion regarding Certificates of Convenience and Necessity (CCN), utilities that have CCN's for this area already, and what is required to obtain a CCN from TCEQ for areas that do not currently have a CCN.

6

6. There are numerous typographical errors throughout the report which should be corrected before submitting the final report.

Barton Springs
Edwards Aquifer
CONSERVATION DISTRICT

February 3, 2010

Mr. Jeff Hauff
Hays County Grants Administration
111 E. San Antonio Street, Suite 303
San Marcos, TX 78666

RE: Comments to the draft Hays County Water-Wastewater Facilities Plan

Dear Mr. Hauff:

The Barton Springs/Edwards Aquifer Conservation District (District, or BSEACD) has reviewed the above referenced draft plan and offers the following comments.

7 2.2.2.2 Groundwater Districts (p.2-8)

The write up on the BSEACD is sufficient and largely accurate. However, a more detailed description of our permitting program might offer some insight into the availability of groundwater within the District's jurisdiction. Suggested language:

The BSEACD permits groundwater production from all of the aquifers within its jurisdictional area, namely the Edwards and Trinity Aquifers. The different aquifers fall within specified management zones with regulations specific to each zone. Groundwater from new wells in the freshwater portion of the Edwards Aquifer is only permitable on an interruptible-supply basis and is subject to complete curtailment of pumpage during extreme drought Firm-yield permits for groundwater production are available from the Saline portion of the Edwards Aquifer to the east of the freshwater Edwards, and the underlying Middle and Lower Trinity Aquifers. As such, an increasing amount of Trinity Aquifer is now being used in the District, and the District is actively promoting desalination as a future water supply.

This clarification also provides context to the management zones depicted in figure 3.7-3.

8 3.7.1.11mported Water, Edwards-BFZ Brackish Water Desalination (p. 3-13)

The last paragraph in this section refers to the Lower Trinity as a potential alternative water supply. We suggest that you expand this to include the Middle Trinity Aquifer. As mentioned in section 2.2.2.2 describing the BSEACD, development of groundwater in our

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area has shifted from the freshwater Edwards aquifer to both the Saline Edwards and the Trinity Aquifers with much of this development focused on the Middle Trinity. We are still acquiring data to more accurately characterize the Middle Trinity Aquifer, but the initial assessments suggest variable water quality (particularly with respect to sulfate concentrations) with some areas producing good amounts of relatively fresh groundwater. Future development of the Middle Trinity will ultimately be limited by Managed Available Groundwater (MAG) estimates, but at present, the Middle Trinity is relatively underutilized and is available for permitting.

9 3.7.1.2 Community Wells (p. 3-16)

The first paragraph of this section refers to the pumping capacity limits of exempt wells as being 25,000 gallons per day. Please note that pumping capacity limits of exempt wells in the BSEACD are more stringent by statute and our rules. Exempt wells within the BSEACD are limited in capacity to 10,000 gallons per day or ~7 gpm.

10 3.7.1.3 Individual Wells (p.3-17)

- As mentioned, please refer to the more stringent statutory exempt well pumping limits of 10,000 gallons per day within the BSEACD in the exempt well discussion of this section, distinct from exempt use in the rest of Hays County.

- In the section on implementation issues, the plan refers to a Trinity Aquifer DFC of 30 feet of drawdown. This is true of the Trinity Aquifer within Groundwater Management Area (GMA) 9. GMA 10, however, has established a slightly more stringent DFC that allows up to 25 feet drawdown. This DFC is primarily applicable to the Trinity Aquifer underlying the Edwards Aquifer within GMA 10. An additional DFC was also established for the very small areas of GMA 10 where the (Upper) Trinity crops out and are within the Hays Trinity GCD. The DFC for these small areas allows for zero drawdown which effectively prohibits any Trinity Aquifer production except for exempt wells.

11 3.7.1.5 Wastewater Reuse (P. 3-23)

Reclaimed wastewater can be an effective alternative to other sources of water in many, but not all situations. The District recommends that this alternative water source be implemented with caution, particularly where such proposed use may occur on the recharge zone of the Edwards Aquifer and, outside our District, in the recharge zones of the Middle and Lower Trinity. Similar to large-scale proposals for disposal of wastewater by spray irrigation via a Texas Land Application Permit (TLAPs), reuse of effluent over the recharge zone should be assessed on a case-by-case basis, with extra scrutiny given to areas known to contribute directly to recharge of the Edwards Aquifer. Advanced wastewater treatment and additional best management practices such as buffering of sensitive environmental karst features and management of stormwater and effluent runoff should be

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implemented as necessary. In especially sensitive areas where effluent reuse is not appropriate, other sources should be utilized.

12 Typographical Errors

There were a few instances of typos throughout the plan when referring to the District acronym (i.e. "BSEAC" or "BSEDCD"). Please correct these and replace with "BSEACD".

As one of the sponsoring entities, we appreciate the opportunity to participate and we hope that these comments are constructive and are considered in the final draft of plan. If you have questions related to any of the comments or information provided, please feel free to contact myself or john T. Dupnik, P.G. at (512)282-8441.

Sincerely

W.F. Holland

W F (Kirk) Holland, P.G.
General Manager

1124 RegalRow · Austin, Texas 78748 · (512) 282-8441 · Fax: (512) 282- 7016 · www.bseacd. org · e-mail:bseacd@bseacd.org

David Baker Comments regarding:
Hays County Water & Waste Water Plan presented by HDR
January 2011

COMMENTS

I appreciate the opportunity to comment on the Hays County Water & Waste Water Plan developed by HDR Engineering. HDR did an excellent job of collecting data and analyzing the future projected water needs of the region and were very professional, inclusive and exhaustive in their traditional engineering approach. I recognize that public participation was very limited and the majority of Hays County citizens have not had a chance to participate in this study. I encourage Hays County to conduct further public outreach with the study and gather additional public comment and feedback before finalizing the plan. I hope the County will adopt an adaptive approach and integrate public comment into the final plan before implementation begins. We recommend the plan be updated and modified every five years as conditions change.

1) The HDR study begins with projections of population growth based on Texas Water Development Board estimates and historical Pedernales Electrical Service (PEC) electrical meter data from 1980 through 2010 and then develops a very detailed case of what the county can do to make sure that this projected demand for water is met. These estimates are based on the high growth scenario and an assumption that the recently adopted 30' Desired Future Condition (DFC) or decline of the aquifer by GMA-9 over the next 50 years, when modeled by TWDB, will in theory provide 9155 acre feet of water from the Trinity over that time period (HTGCD current management plan calls for 3714 acre feet annually). I find the 30' decline policy to be
13 unreasonable and in conflict of the mission and goals of the Hays Trinity Groundwater Conservation District to conserve, preserve, recharge and prevent waste of groundwater within western Hays County. The 30' draw down is considered mining of the aquifer and is in conflict with policies of Region K & L State water plans. The 30' (DFC) should be overturned and reduced to between 0-5'DFC to sustain current water levels in the Trinity Aquifer and to protect the property rights and historic water use in the area. Also, springflows from Jacob's Well, springs, creeks and rivers in Western Hays County would be negatively impacted by increasing the pumping to this level in order to support the high growth scenario. Mining the aquifer in this way is unsustainable and will cause property values to be diminished with negative economic and ecological impact on the region, causing many more wells to dry up and perennial springs to
14 stop flowing. The median and low growth scenarios should be considered in projecting exempt groundwater use and total demand as well as the cost estimates for infrastructure.

2) I support the recommendation by HDR to cap pumping of the Trinity Aquifer at current pumping levels and recommend further reductions in aquifer pumping to achieve a balance of annual pumping of 3714 acre feet as called for in the Hays Trinity Groundwater Conservation Districts management plan. I also support the recommendation by the TCEQ executive director to form a Regional Groundwater Conservation District over the Priority Groundwater Management Area along the I-35 corridor including Travis, Hays and Comal County. Aquifer Management Zones should be developed in the Western Hays County and limits on pumping should be required to
15 maintain spring flow between 4-7 cubic feet per second at Jacob's Well. No wells should be allowed in the conduits that feed springs and drought contingency plans should be tied to spring flows.

16

3) One strategy that is not adequately explored in this study is that of proactively managing growth, rather than just reacting to it with increasingly expensive infrastructure solutions. A strategy of encouraging infill within existing urban areas rather than facilitating growth in areas that currently lack infrastructure. Developing Conservation Development Standards that require Rainwater Harvesting and incentives for landowners to conserve the remaining open space land to protect Aquifer recharge and water quality should be considered as a viable alternative to building nearly half a billion dollars of new infrastructure into the western reaches of Hays County. This study does not adequately address the need for comprehensive land use planning tools that Hays County will need to manage and direct growth to existing urbanized areas that currently have access to secure long-term water supply as opposed to rural areas that may have a less secure water future because of limited groundwater availability.

4) The huge projected cost of providing this infrastructure to county residents (nearly half a billion dollars) must be considered in the context of the total cost incurred for providing services to new developments. Before taking these population projections as a given, Hays County should consider the total cost outlay versus revenue generated by new developments. In addition to water and wastewater infrastructure, new developments also require transportation, schools, police, fire, and other community services that often fall within the county's jurisdiction to provide. A Cost to Communities Study for Hays County by the American Farmland Trust (2000) found that income versus expenditures for agricultural and residential lands makes a regulatory framework that helps to maintain open space a fiscally attractive policy for counties:

"The revenues-to-expenditures ratios show agricultural and open space more than pay their fair share of local taxes, even when these lands are taxed at the agricultural valuation. For every dollar these lands generated in revenue for the county, school and public service districts, they required back only $0.33 in services. Commercial and industrial lands provided a similar net benefit to the county, needing only $0.30 back for every $1 generated in taxes. While residential lands generated significantly more dollars in property taxes, they required even more in services — $1.26 for every $1 paid in taxes."

5) The HDR study does view Conservation and Rainwater Harvesting as important strategies in their recommendations. If this can be implemented collectively at a local level through Conservation Campaigns and financial incentives for Rainwater Harvesting, there will be a greater chance of success and the possibility that longer term proposed water supply solutions like holding Bastrop County residents accountable for fixing Hays County problems through the Simsboro Project would be unnecessary. The initial cost, infrastructure, and long term maintenance and upkeep to the infrastructure for Simsboro is a short term fix, at a tremendous cost, for a long term problem. Given the current State budget deficit and current deep cuts to other necessities like our educational system, funding a project of this magnitude seems impractical and not in line with our current financial climate. Rainwater Harvesting should
17 become mandatory on all new construction, public buildings and impervious surfaces. Reuse of storm water for irrigation and aquifer recharge enhancement should be a high priority for Hays County.

Given the Priority Groundwater Management Area in which we live and it's limited amount of groundwater resources, slow recharge, and the fact that the Trinity aquifer is already in a pumping deficit; it is not recommended we continue to pump more water from the aquifer or transfer water from Bastrop to Hays. It is recommended that the most effective and responsible way to handle this problem is to call on every resident and PWS company in Hays to do their part to help sustain and conserve groundwater while looking at alternative water strategies. Financial incentives and legislation creating standards for integrating Rainwater Harvesting into PWS CCNs, aggressive per-capita water conservation goals and education programs, large scale land conservation & water stewardship incentives (to reduce demand & protect aquifer recharge and water quality), storm water and decentralized wastewater re-use, and clustered conservation development standards should be developed.

18

6) Local Public Water Supply Companies can reduce water consumption by adopting tiered rate structures. All PWS companies must be held accountable for meeting strict conservation goals through the adoption of a sustainable regional water budget and a coordinated drought contingency plan that does not take more from the aquifer than recharges annually. The TCEQ should regulate and only allow PWS companies water permits if they maintain no more than 10% line loss in their systems. If they are not capable of that standard, they should be given a reasonable amount of time to come into compliance or risk fines and a decrease in CCN while a more accountable solution is considered. Under Chapter 36, PWS are required to provide water; it is important given the magnitude of groundwater supply shortages that PWS companies be accountable for their expansion in a responsible fashion. There currently are no consequences for running a wasteful water supply business.

19

7) Population growth of the magnitude projected in the HDR study will require new wastewater treatment plants, as acknowledged in the study. These new WWTPs will require discharge permits, which could have implications for in-stream water quality, recreational uses, etc., and the costs of water quality mitigation and associated environmental costs are not taken into account in the study. Hays County should commit to managing growth in such a way that it is water-neutral in terms of impacts on water quality. Hays County will need additional authority from the legislature in order to efficiently manage impervious cover and storm water generated by the higher density development anticipated from surface water supply. High density development is currently occurring in the Wimberley area and along the 290 corridor with very little, if any, water quality treatment.

The Decentralized Waste Water approach, along with allowance of cluster development and lot size averaging in preferred growth areas, is beneficial in that it will hold developers more accountable for an environmentally sensitive development. The cost of centralized Waste Water systems may slow development slightly and allow for more time for implementation of Conservation and Rainwater legislation promoting decentralized waste water treatment, in conjunction with Rainwater Harvesting implementation, Gray Water Reuse for irrigation, and minimum lot sizing in sensitive areas will help to slow the need for imported water. These measures, along with accountability standards for PWS companies, conservation adoption by the general public, and incentives from the government should help to curb the supply and demand issues.

20

8) Western Hays County is a unique and beautiful place with a long tradition of ranching, farming, family lands and tourism. The character of this area will be dramatically changed in 50 years if the population is allowed to continue to create sprawling development across the region. Clustering development along the I-35 corridor downstream of the aquifer and planning conservation development in existing urbanized areas while encouraging the preservation of the remaining open spaces will preserve the ecological services these lands provide today. A cost

21 comparison between conserving the remaining open space and building nearly half a billion dollars worth of infrastructure needs to be analyzed and presented to the public for debate. No money should be invested in large pipelines any further into the Hill Country without a vote of the citizens who will ultimately have to pay for the infrastructure. In general, I believe that by planning ahead, communities can play an important role in determining their future, rather than having it determined for them by outside forces. We believe that the quality of life and water security of existing residents should not be sacrificed for the uncertain future of potential new residents.

RECOMMENDATIONS & GENERAL COMMENTS

22 1) Update and include all public comments in the final plan with recommendations summarized.

23 2) Appoint a Citizens Advisory Board and a technical advisory committee to update the plan with public input and prioritize the Hays County Water & Waste Water Plan and develop an implementation schedule and adaptive management criteria.

24 3) Establish a Water Conservation Task Force– Promote Education

25 4) Utilize Hays County Water and Sewer Authority (HCWSA) to develop regional water district in Wimberley and areas that are rapidly expanding.

26 5) Rainwater harvesting and conservation are the most cost effective and sustainable new source of water for everyone living in Western Hays County. Expand incentives for new development and retrofit homes in Woodcreek North in Wimberley to protect spring flows of Jacob's Well.

27 6) Prevent private investor owned utilities and private MUDs from owning and controlling CCNs and operating in Hays County. The County should work to purchase the Aqua Texas System in Wimberley and create a publicly owned system that has locally elected board members and manages this system for local residents and interest. Join together with HCWSA, Wimberley Water Supply, City of Wimberley, Woodcreek and Woodcreek North to create one regional district. Do not let AquaTexas dry up the Aquifer and Cypress Creek to export our water and money to Wall Street.

28 7) Coordinate Regional Groundwater Conservation

   a. File Petition with TWDB on the unreasonableness of the 30'DFC outlining impacts to County assets ie. Jacob's Well, Cypress Creek, Blue Hole, Private and Public Water Supply Wells. Protect the property rights of all citizens dependent on the aquifer.

   b. 6.7 Enhanced Groundwater Management. Work with the legislature to create equity for all water users. Pass legislation to create a functional full Chapter 36 GCD across entire Trinity Aquifer. The Aquifer does not follow political boundaries. Manage the entire resource equitably for all landowners, water users and to maintain spring flows, creeks and rivers.

   c. Create a County Liaison with the GCDs and GMA-9 , work with local cities & PWA to incorporate standards and define target conservation measures to achieve Desired Future Condition

d. Participate with GCDs in GMA-9 to clarify DFC measures to meet the Managed Available Groundwater

Database

Monitoring System

29 8) Promote legislation and tax incentives for existing developments or individuals who:

a. Switch to rainwater harvesting

b. Use low flow appliances and fixtures

c. Irrigate with Reuse or Rainwater

d. Xeriscaping

e. Manage their land for water stewardship (aquifer recharge and water quality)

30 9) Develop and promote incentive programs for:

a. Conservation Development

b. Land Conservation & Habitat Protection

c. Larger lot sizing in spring flow recharge areas

d. Parkland dedication and open space protection

e. Rainwater Harvesting

f. Decentralized Waste Water Reuse

g. Reuse of Greywater

h. Xeriscaping

i. Stream Set Backs and Riparian Restoration

31 10) Increase Impact Fees from Development that opts out of Best Practices Standards

32 11) Hold Public Water Supply Accountable to performance measures before increase in water permits and CCN expansion.

33 12) Conduct a Best Practice Study on how other States are resolving Water problems and incorporation of best practice for:

a. Development

b. Open Space

c. Golf Course Installation

d. Schools and other Public Buildings

34 13) Offer Training for Rainwater Harvesting Installation and programs to help promote mass adoption of rainwater systems for new home installations and retrofitting existing homes.

GENERAL COMMENTS

35 14) This Facilities Plan is an engineering report, biased toward the centralized, large-scale water and wastewater infrastructure options that benefit engineering companies.

36 15) Although the Executive Summary prominently lists expanded water conservation efforts and rainwater collection, the amount of the water supply proposed by the plan to be met by these options in 2060 is 7% and 11%, respectively.

37 16) While the Executive Summary presents the total infrastructure cost of over $450 million, the report does not layout the basis for that estimate.

38 17) While the Executive Summary presents the total infrastructure costs of $450 million for a high-growth scenario, there is no comparative cost information provided for the medium growth or no action alternatives.

39 18) The plan fails to provide detailed supporting information for the $450 million facility cost projection. The detailed information should be broken out by region, by water supply source, and by wastewater technology.

40 19) The plan fails to provide cost comparisons for alternative options to meet water and wastewater needs.

41 20) The plan fails to present cost information for alternative options in a single cost basis to facilitate comparison.

42 21) The plan is based upon TWDB high water-use per capita water demand factors (see page 3-6). These high water-use factors compound the conservatism of the high population growth projections.

43 22) Even where the TWDB uses 110 gpcd as a default for water planning in rural areas, this plan is based on a higher per capita use factor of 120 gpcd.

44 23) This facility plan is presented based upon underlying assumptions that:

a. Population growth would not be restricted by a lack of water supply (page 3-5);

b. That lawn watering on hot, dry summer days would not be restricted by a lack of water supply (page 3-6), and that imported water projects are more cost effective when they are designed for larger volumes of water (page 3-9).

c. The unit cost estimates per gallon in Table 5.4-1 (page 5-7) should include an estimate of the unit cost for each project under a low water demand scenario.

45 24) The Plan should provide an estimate of the water supply to be met by each proposed source.

46 25) Provide a basis to justify assumed 1% per year reduction for water conservation (page 3-21). What are the actual reduction rates for communities implementing conservation measures? The report fails to account for significant differences among per capita water use among different entities. Provide additional analysis of what demand could reasonably be met with conservation measures.

47 26) Reuse costs do not consider the prohibition on direct wastewater effluent discharge.

48 27) The facility plan does not address the cost impacts to all water and wastewater utility users of extending imported wastewater service to low-density rural development. How will costs to meet new demand influence the utility rate structure for all users, including existing water users?

49 28) The recommendation for well-managed, small, centralized wastewater systems in lieu of septic tanks fails to recognize the failure of existing regulation and enforcement of the TCEQ Texas Land Application Permits.

50 29) p. 3-25 "The water quality impact of reuse is often a concern for the communities when attempting to implement these types of projects. Much of the study area is within the contributing and recharge zone of the Edwards Aquifer, the drinking water source for numerous communities." This statement ignores the more significant environmental problems associated with direct wastewater effluent discharge.

51 30) ·p. 3-25. "There is significant public resistance to treated wastewater being disposed into surface water within western portions of the County.' This statement discounts significant scientific foundation for opposition to surface water discharges.

52 31) The report provides no reference to the problems of wastewater lift station failure, the single largest source of pollution spills in urban areas; nor sanitary sewer line leakage.

53 32) The Plan fails to offer a comprehensive policy approach to conjunctive use of Groundwater and Surface Water.

Hays County
Water & Wastewater Facilities Plan

November 10, 2010, 6-8 pm
Dripping Springs City Hall, 511 Mercer Street

COMMENTS

Name: Pat Sullivan e-mail: ——

Address[redacted]ty/State Wimberley, TX ZIP 78676

(The above information will be used to add you to the Hays Co. Water & Wastewater Facilities Plan mailing list; it will not be shared with other organizations.)

1. Please provide us with your comments regarding the overall project or any other project-related issues and concerns. *If additional space is required, please attach another sheet.*

Only have one person explain all items
54 with 2 talking one is louder than the
Other. It is hard to understand either of them

Submit comments at meeting, or mail by November 20, 2010 to:
Water & Wastewater Facilities Plan
c/o HDR Engineering, Inc., attn.: Tony Bagwell, 4401 West Gate Blvd, Suite 400, Austin, TX 78745

Hays County
Water & Wastewater Facilities Plan

November 10, 2010, 6-8 pm
Dripping Springs City Hall, 511 Mercer Street

COMMENTS

Name: BRIAN DUDLEY e-mail: [redacted]

Address [redacted] City/State Austin Tx ZIP 78737

(The above information will be used to add you to the Hays Co. Water & Wastewater Facilities Plan mailing list; it will not be shared with other organizations.)

1. Please provide us with your comments regarding the overall project or any other project-related issues and concerns. *If additional space is required, please attach another sheet.*

55 A major local issue is w/w stream discharge (Belterra's WCID). It's important to relate study recommendations to the likelyhood of putting pressure on the new development discharging to streams.

Submit comments at meeting, or mail by **November 20, 2010** to:
Water & Wastewater Facilities Plan
c/o HDR Engineering, Inc., attn.: Tony Bagwell, 4401 West Gate Blvd, Suite 400, Austin, TX 78745

January 31,2011

Jeff Hauff
Hays County
San Marcos, TX 78666

Dear Mr. Hauff:

Thank you for the opportunity to comment on the Hays County Water/Wastewater Plan.

The San Marcos River Foundation is very concerned that a pipeline route to Wimberley continues to crop up in many water plans, proposed for recharge zone and artesian zone land above Spring Lake, which is the head of the San Marcos River. We see that it is one of the two possible routes proposed in this Hays County Water/Wastewater Plan.

The Edwards aquifer limestone rock in this area is made in a way that makes big excavations like this seriously destructive in this watershed. There are many endangered species in the aquifer, Spring Lake and the river that would be affected by increased sedimentation from such construction, and it is likely that springflow routes could be altered when cuts are made into the limestone of this area.

56 SMRF will be asking U.S. Fish and Wildlife Service to be sure to require detailed environmental impact statements, and it is likely that such a pipeline location would require much mitigation and restoration work. It would be best for Hays County to avoid this particular area with such large infrastructure. Running a big water line into this sensitive area would also encourage commercial and residential development on a very large scale for this particular area northwest of Spring Lake, which is the last place that dense development should occur in Hays County.

57 A second point we feel is important: when water is pipelined from other counties to Wimberley or western Hays County, this is likely to cause very rapid growth in the Glen Rose or Edwards aquifer regions. For this to happen without a good plan in place for a preferred growth corridor would be devastating to the fragile ecosystem that characterizes this semi-arid land. The way that aquifers recharge means that the thin vegetation on the surface of the land has to be left in place, if the water is to be clean.

58 Water is such a precious resource for Hays County, we cannot afford to contaminate our aquifers, nor reduce their recharge capabilities. Reducing recharge is exactly what occurs when impervious cover is increased with urbanization. Runoff is speeded up, and less water filters down to the aquifer. What does make it down to the aquifer is then often silted and dirty, because of the increased speed of water flow from urbanized land. If we grow without good planning about density and location, we will reduce the ability to recharge the very water we need. Such a preferred growth plan must avoid recharge zones.

59 We congratulate you on assessing water and wastewater issues in this draft plan, and we endorse the points made by CARD in their comment letter sent to you also. Particularly their last paragraph re preferred growth corridors along highways, and then setting aside rural growth areas, reiterates our points stated in this letter. Water is the lifeblood of this county and we need to keep our springs and rivers flowing and clean for the economic engine of tourism to continue to generate income. And we need to think about the quality of life and water supplies of the citizens who live here now, as well as those who will come here to live. Making short term financial gains for those who wish to develop with no thought for the future of the county cannot be the focus---we all have to think about the long term impact.

Thank you for considering our comments,

Dianne Wassenich, Program Director
San Marcos River Foundation

From: Joe Nick Patoski [mailto:[redacted]
Sent: Tuesday, February 01, 2011 3:26 PM
To: Jeff Hauff
Cc: Will Conley; Bert Cobb
Subject: Western Hays Water and Wastewater Study

Mr. Hauff,

A quick note to let you know that this voter, resident, and landowner opposes any pipeline from Canyon Lake or other sources to this part of the county.
Pipelines bring unregulated growth to unincorporated parts of the county.
60 Until counties are given rule-making authority by the Texas Legislature and consulting firms such as HDR are held accountable for recommendations made without citizen input, such pipelines are nothing but a land grab for developers made at the expense of those citizens already residing in Hays County.
We like our wide open spaces and dark skies just fine out here. The county should not participate in aiding development that will forever alter the qualities of life that distinguish Hays County from the rest of Texas. In other words, if growth is desirable, keep it to I 35 and let rural parts of the country remain rural.

61 I am particularly troubled that the report does not address the benefits of conservation and rainwater collection,
62 nor does it place an economic value on a healthy Blanco River to the community.

It's all about the pipe, isn't it?

From what I understand, Bill West of the GBRA says water from Canyon Reservoir, as he likes to call it, is already spoken for.

Sincerely,

Joe Nick Patoski
[redacted]
Wimberley, Texas 78676
[redacted]

From: Munde, Alan [mailto:[redacted]
Sent: Tuesday, February 01, 2011 3:30 PM
To: Jeff Hauff
Subject: Comments on Draft Hays County Water-Wastewater Facilities Plan for the portion west of IH-35

Dear Sir:

I am writing to register my protest over the planned water pipeline that is to come up RR12 from the south into Wimberley. As you know water is the one big element that helps restrict sprawling growth in Wimberley Valley. With the water pipeline comes mega development with densely packed subdivisions. If development must come surely there is a better way. Rather than piped water to subdivisions packed in a ten acre development with tract houses
63 (see Kyle) how about promoting modest use of wells with a big push for rain water collections systems. These could be one house on a 5-10 acre lot. Even that is bad environmentally but at least less so than the densely developed subdivisions that the water
pipeline would bring.

Please register my respectful, heart-felt objection to the pipeline.

Alan Munde
P.O. Box [redacted]
Wimberley, Texas 78676
[redacted] office
[redacted] cell
http://[redacted]
com
http://[redacted]
http://[redacted]

COMMENTS ON: ***WATI!-'R AND WASTEWATER FACILITIES PLAN FOR THE PORTION OF HAYS COUNTY WEST OF THE IH-35 CORRIDOR***
From Citizens Alliance for Responsible Development

Citizens Alliance for Responsible Development (CARD), a citizen organization, promotes sensible growth in the Wimberley Valley and western Hays County. Our mission includes:

- **Support** and **promote** sustainable development that protects natural resources
- **Work** with elected officials, developers, and others to preserve natural resources
- **Educate** and **inform** citizens of impending threats to our community's future
- **Encourage** active participation to protect this land we love

The study addresses planning in western Hays County's **unincorporated areas, which arc key locations of concern to CARD.** We support the theme of moving away from our current dependence on local groundwater. We especially commend the recommendations to diversify water resources through expanded water conservation, rainwater collection and water reuse.

In addition, we congratulate HRD on its professional methodology and exhaustive compilation of management plans to arrive at facility needs and policy recommendations. These recommendations will make this study the **reference document for 2010-2060 county water/waste water planning.**

CARD offers the following comments on Policy Recommendations under Section 6.0:

64

- **We support using the Hays County Water and Sewer Authority (HCWSA) where it will most benefit the citizens of Hays County. Move the discussions of the HCWSA to 6.1** County Planning, Regulation & Coordination Role where it belongs.
- **We support the recommendations of 6.2 Innovating Appropriate Technologies.** Many builders and developers are already using "green" building techniques and subdivision planning with preservation of open space. Rainwater collection is the most practical and sustainable new source of potable/non-potable water for most residents and small businesses in much of western Hays County.
- **We support the principle of public ownership of major water and wastewater systems as recommended** in 6.5 Integrated Municipal Growth Management. These not-for-profit facilities are directed by locally elected officials responsible for managing the systems and protecting the health, safety, and welfare of the citizens whom they serve.
- **We support full TWC 36 authority to strengthen the dysfunctional HTGCD** as detailed in 6.7 Enhanced Groundwater Management. The exempt pumping problem must be solved creating a viable GCD to effectively and fairly manage groundwater.

65

In summary: **rural western Hays County needs to be developed differently** than most sprawling suburban areas in the Austin-San Antonio region. The suburban and rural areas between IH-35 and US-290 compete over very limited local water resources and quality of life issues. **Therefore, CARD proposes creating two 10-mile wide preferred suburban development corridors.** These corridors (plus/minus 5 miles on each side of IH-35 and US-290) would allow more intensive, dense development. **The rest of western Hays County would remain a preferred rural sustainable development area** because of its more rugged topography and vulnerability to surface water and groundwater issues. Analyzing the potential impact of these preferred development areas – and the inappropriateness of saddling the entire region with a one size fits-all growth plan -offers potential solutions for many of the cost problems raised in this study.

HARVEY & ANNE MABRY
[redacted] WIMBERLEY, TX 78676
TEL [redacted] MOBILE [redacted] EMAIL [redacted]E.COM

2 February 2011

To Whom it may concern,

HDR did an excellent job evaluating the future requirements and conflicting interests within Hays County. But, we truly feel that the citizens have to examine the traditional approach that HDR uses in proposing solutions to our future requirements. We feel that we must reference the following points prior to continuance of our comments:

- Taking water from one watershed to another
- Extend service and more fully utilize existing capacity in the LCRA-Hwy 290 and Hamilton Pool Road (HPR) treated surface water pipelines
- Sometime in the 2025-2030 timeframe or earlier, construct a 3.7 mile extension of the 16"diameter HPR pipeline and a new 8.5 mile, 20" diameter pipeline to Dripping Springs along RR-12 connecting the HPR and Hwy 290 pipelines. This will provide additional treated water service in the northwestern part of the County and to Dripping Springs, as well as provide an enhanced looped-system capacity to the existing Hwy 290 pipeline:
- Construct a pipeline from the City of Austin system to serve certain development areas that were limited purpose annexed by the City; Development of a brackish water desalination facility to serve higher-density demand centers; Further examine use of Middle Trinity Aquifer supplies for municipal supply purposes; and Extend municipal water and wastewater service westward into Kyle and Buda's ETJ.
- As an interim new water supply for the Wimberley/Woodcreek area, in the near-term construct an 8.5 mile. 12" diameter treated water pipeline from Canyon Lake Water Service Company storage facilities on RR 32 cross-country to the north side of the Blanco River in Wimberley. Also provide for associated pumping and an 8" interconnect pipeline to wheel a portion of the water from the Wimberley WSC system to Aqua Texas facilities:
- In the longer-term around 2030, new or existing development the intervening area between San Marcos and Wimberley could access treated water supplies from the recommended GBRA supply pipeline extending from the San Marcos WTP to Wimberley
- About the year 2030 when the interim supply agreement with CLWSC would expire, construct an 18 mile, 16" diameter treated water pipeline from GBRA facilities at the San Marcos Water Treatment Plant, along RR 12, to the City of Wimberley. As before, the Wimberley/Aqua system interconnect would provide a portion of the water' on to the Woodcreek service area. The previously-utilized 12" supply line from the CLWSC system could then be converted to an emergency interconnect, as well as a treated water transmission line serving the intervening area and being fed from the Wimberley WSC system;
- Total needed investment in water infrastructure over the 50 year planning period is estimated at almost $446 million

HDR's points above really deal with treated water and the delivery mechanisms of treated surface water. We really must point out that treating surface water is expensive to treat, expensive to deliver, expensive to maintain and very wasteful as only 20% of treated water is used for potable applications.

66 HDR estimates the costs of the treated surface water infrastructures to be at $446 million. Let's conduct an open forum and public debate on what these costs will really be.

HDR very aptly stated that "There are many stakeholder groups with differing water interests in Hays County. The County can provide a key role as a regional leader, facilitator and actor to help bridge jurisdictional boundaries, better integrate water planning and policy, and facilitate needed actions." HDR continued a little later by stating "The County and other jurisdictions within the County should continue to promote and incentivize water management actions that are more sustainable, including broad support for water conservation and reuse, and rainwater collection systems as an alternative to groundwater."

We must emphasize that our feelings are the real water problem that exists in Hays County is the lack of Leadership by the multiple governing bodies. We have sufficient water as approximately 30" of rain falls on our county each year. Leadership may be defined as the leadership of the Coalition: directorship, governorship, governance, administration, captaincy, control, ascendancy, supremacy, rule, command, power, dominion, influence.

67 We urge the county to adopt measures to become self-reliant on the resources that have been presented to us by nature. We urge the county to adopt measures that would require all commercial and residential buildings to harvest rainwater from their impermeable footprints using said water for irrigation, toilet & urinal flushing, and wash-down applications. Using treated surface water for these applications is a total waste of money, energy and maintenance time. This may be accomplished by
68 establishing governance for the following:

- Requiring all new buildings in Hays County to harvest rainwater.
- Requiring all new building to use rainwater or reclaimed water for toilet & urinal flushing.
- Requiring all new buildings to use rainwater or reclaimed water for irrigation and swimming pool applications
- Requiring all new building not to have any outside bibs for potable treated surface water delivered by MUD systems
- Establish incentives for all existing commercial and residential buildings to come into compliance with the points above by the year 2030. Said incentives may be tax reductions, loans and technical expertise.
- The same $446 million that HDR referenced could accomplish this long-term sustainable requirements.

Again, we urge the county to assume the leadership role that we elected them to do and solve problems with existing resources in lieu of resolution with unsustainable expensive and cumbersome infrastructures.

Thank you for your time.

Harvey & Anne Mabry

PAGE:_

HAYS COUNTY WATER AND WASTE WATER FACILITIES DRAFT PLAN

(Comments presented at the January 19, 2011 Public Meeting - Wimberley, Texas by Leslie J. Harwell, [redacted], Wimberley – [redacted])

The basic Plan recommendation for Wimberley area water supply shortfall is to purchase water from outside the area and importation via pipeline. An interim 12" water supply from Canyon Lake WSC is proposed, with longer term needs met by an 18 mile, 16" pipeline from GBRA facilities at San Marcos. Capital cost would be in the range of $65 million.

69 It is proposed that HDR revise the recommendations to include an option to utilize surface water directly from the Blanco River as an alternate to the costly pipeline schemes.

The required facilities would presumably be owned and operated by GBRA and would include an intake pumping station at the river with a short pipeline to a small, packaged treatment plant. The treated water would be connected into the Aqua/Wimberley water systems, the same as for the pipeline proposal.

The Blanco has ample capacity for this option in all but the severest droughts. In Table 4.3-25 the Plan calls for importation of 1.075 mgpd of water in 2030, increasing to 2.263 mgpd in 2060 which is 1.7 and 3.5 cubic feet per second (CFS) respectively. The attached graph developed from the USGS site shows that even at the worst of the most recent two-year drought, the flow of the Blanco was never below 4 CFS. Typical flow is in the range of 30 – 40 CFS and higher.

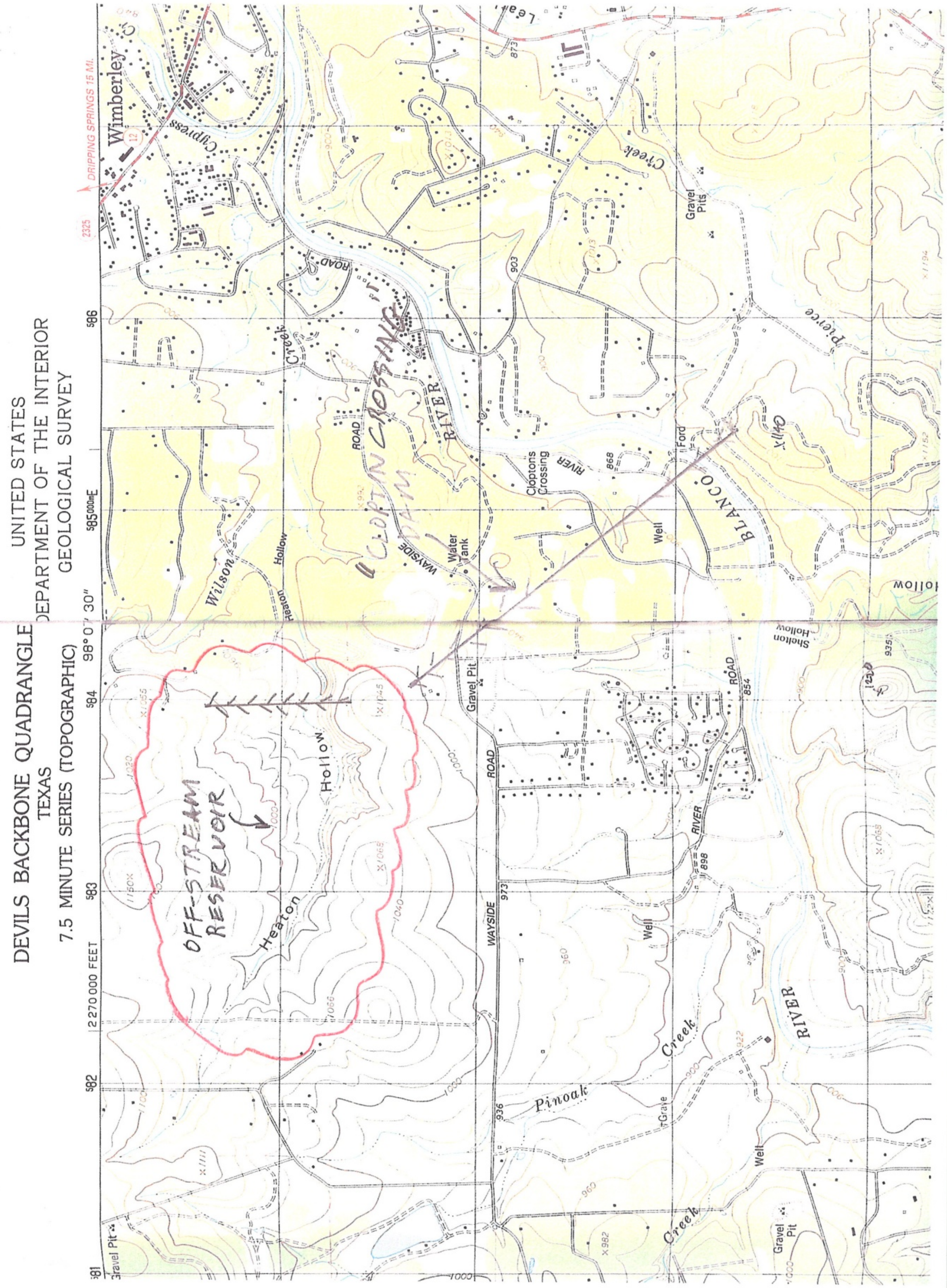
It is proposed that pumping from the Blanco be limited or stopped as necessary when river flow is less than, say, 10 CFS. During this period Aqua/Wimberley systems would pump from the aquifer which would presumably have a higher water table due to use of river water most of the time.

To essentially eliminate all pumping from the aquifer, a small 50 – 100 acre off-stream reservoir could be incorporated into the surface water supply scheme. During periods of high flow, river water would be pumped to this reservoir to be located two or three miles from the river. This reservoir would then supply the Wimberley system during low river flow periods. This reservoir would be sized for 3 – 4 months of water supply.

One possible location for the off-stream reservoir is the Heaton Hollow watershed above Wilson Creek (See attached topo map). The required dam would be about a half mile in length at 1000 ft AMSL. The lake would be about 100 Acres at a 970' pool elevation with an average depth of 20feet. This equates to 2000 AcFt full capacity. This reservoir would be about two miles from the Blanco River. At 2060 water consumption rate of 2.263 mgpd, a drawdown of 1000 AcFt would provide water for 4.7 months.

The new reservoir would feed water into Wilson Creek which flows under Green Acres Road and convert the creek from seasonal to year-round flow. The new lake would also provide recreation opportunities.

This system should cost less than the recommended pipeline schemes. A "guesstimate" would be in the range of $10 million for the basic intake-treatment plant system plus $15 million for the off-stream reservoir.


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
DEVILS BACKBONE QUADRANGLE
TEXAS
7.5 MINUTE SERIES (TOPOGRAPHIC)
OFF-STREAM RESERVOIR
CLOPTON CROSSING DAM
Wimberley
Cloptons Crossing
BLANCO RIVER
WAYSIDE ROAD
Heaton Hollow
Wilson Hollow
Pinoak Creek
Cypress Creek
Pierce
Shelton Hollow
Water Tank
Gravel Pit
Gravel Pits
Well
Ford
DRIPPING SPRINGS 15 MI.

Andrew Backus
[redacted]
Hays County Resident
Comments on HDR DRAFT Water and Waste Water Facilities Plan
Feb. 3, 2011

General Comment:

You can't manage a finite ground-water resource with an ever increasing number of users unless you are merely managing the depletion of the resource or a news service that is reporting on the rate of depletion. Its hard for those that are not involved in planning to grasp abstract ideas such as a projected water deficit years in the future.

In a nut shell, projections indicate that there is explosive population growth predicted for the study area. Single family residential home well use is projected to dominate groundwater production from the aquifer in the next couple years. The HTGCD has no authority under its enabling legislation to manage this production as other GCDs do under Chapter 36. The 'Andy Sansom majority opinion letter' requesting legislative changes for the 2011 session further exempts many thousand more as yet undeveloped lots for exempt single-family well installation and water budget commitment in perpetuity. This is a huge water liability going forward and if the area develops as expected will lead to everyone loosing as the aquifer is uncontrollably mined out by exempt users competing against one another. You obviously can't have an unlimited number of users on an aquifer with a finite carrying capacity if the aquifer is going to
70 continue to reliably server anyone. A possible approach to buy more time may be to allow these undeveloped lots a lesser amount of exempt production than the grandfathered wells that have been in use for a certain number of years.

(Pg 2-2) Needs WORK **Geology and Soils**. The Habitat Plan relates that this portion of
71 Hays County has generally shallow, rocky soils over limestone bedrock formations. Some of the limestone formations are highly porous that provide channels for surface water to recharge the underlying Edwards Aquifer. This area is crossed by spring-fed streams, many of which have eroded canyons in the limestone bedrock. Several large, perennial rivers or streams occur within Hays County over the Edwards Plateau including the Blanco River, San Marcos River, Pedernales River, Barton Creek, Onion Creek, and Cypress Creek, and many of these waterways are fed by major springs.

72 (Pg) NEEDS WORK **Aquifers**. Hays County is underlain by the Edwards Aquifer and the Trinity Aquifer. The Edwards Aquifer (Balcones Fault Zone or BFZ) extends across approximately 4,350 square miles over portions of eleven Texas counties from Bell County to Kinney County. The aquifer is composed of the ~~porous~~ karstic limestones of

the Edwards Group, Georgetown Limestone, and Comanche Peak Limestone formations (TWDB, 1995). The aquifer includes three distinct geographic ~~units or~~ subdivisions, two of which (the San Antonio segment and the Barton Springs segment) occur in the eastern portion of the study area in Hays County. The groundwater divide between the San Antonio and Barton Springs segments of the Edwards Aquifer is thought to occur west of the City of Kyle.

The Trinity Aquifer is composed of Trinity Group geologic formations, which include upper and lower members of the Glen Rose formation in Hays County, and extends across a wide band including 55 counties in the central part of Texas. The Glen Rose formation outcrops at the surface in portions of Hays County west of the Edwards Aquifer recharge zone (TWDB, 1995 and HTGCD, 2005 and latest geology report).
(End Section)

Page 3-33

"The minimum lot size for a subdivision using a non-public local groundwater system for water supply within the Hill Country Priority Groundwater Management Act (PGMA) is 6 acres."

73 (There is an exemption under the 6-acre rule that allows subdivisions of 5 or fewer lots to avoid the 6 acre rule and to size lots according to the pre-2009 subdivision rules. The vast majority of all subdivisions platted since the 2009 rules were passed have not had to comply with the 6-acre minimum rule. See attached Excel spread sheet.)

Page 6-7

74 "A number of contentious issues were discussed and debated, and ~~unanimous~~ majority agreement was ultimately reached in five issue areas and forwarded to the State Legislators in November 2010 for their consideration."

(I suggest this change because it was NOT unanimous but probably a majority did sign. I did not sign the letter because I don't believe it is responsible to allow every lot owner to drill an exempt residential well that can produce 25,000 gallons per day irregardless of lot size.   I think the letter to the legislator should be silent on this matter because this policy places a huge future liability on the groundwater budget. This issue should be managed by a locally controlled groundwater district with the Chapter 36 authority to determine how many acres are necessary for a well to be considered exempt when it is located on less than 10 acres and is used for residential purposes. AHB)

"If the Legislature proceeds to implement these ~~consensus~~ majority opinion recommendations, this will have a positive effect on the District and enhance its ability to
75 manage groundwater. This study also supports these proposed legislative changes."

(I agree that the fact that the voters would have control over whether the HTGCD has taxation authority is a good thing for the constituents and it is necessary for the HTGCD to have predictable funding to be able to conduct operations. Although it is unlikely that voters would approve a new tax any time soon it is a good thing the District can ask and the voters can decide. However, none of the other areas that actually affect the ability to manage the aquifer based on local conditions by a locally elected board are proposed to be changed in the majority opinion letter. The parts of the HTGCD's enabling legislation that need changing to allow the elected Board to manage the aquifer include:

Below are paragraph citations from the HTGCD enabling legislation that require legislative change to strengthen and increase the independence of the Hays Trinity GCD. The paragraph numbers are from SB-2, enrolled version, PART 3. (My comments are in parenthesis.)

HTGCD Enabling Legislation:
hb 3839, 77th Legislature, 1999
sb 1911, 77th Legislature, 1999

Full text may be found at:

http://www.capitol.state.tx.us/cgi-bin/tlo/textframe.cmd?LEG=77&SESS=R&CHAMBER=S&BILLTYPE=B&BILLSUFFIX=00002&VERSION=5&TYPE=B

1. 3.0304 (d) The Hays County Commissioners Court by resolution may require an election to affirm or reverse a decision of the board of directors of the district not later that six months after the date of the decision. *(Delete passage. Reason: this is County interference, the HTGCD is stand alone political subdivision of the State of Texas.)*

2. 3.0304 (e) The district may not adopt standards for the construction of a residential well that are more stringent than state standards for a residential well. *(Delete passage. Reason: the ability to create standards to match local geology/aquifer conditions is one of the reasons local GCDs were created because the aquifers are too variable across the State to create one standard.)*

3. 3.0305. EXEMPT WELLS This whole section needs to be deleted; it is covered adequately in Chapter 36.117, TX Water Code. For example, in (b) "The district may not require a permit to construct a well...used for conventional farming and ranching activities, including such intensive operations as aquaculture, livestock feedlots, or poultry operations." *(Frankly, this blatant special interest clause is puzzling. It is difficult to imagine support for this in Hays Co. The broad exemptions in the HTGCD legislation for single family residential users and the explosive growth projected for this*

class of users will overwhelm the carrying capacity of the aquifer and water levels will decline and spring flows decrease.)

4. 3.0306 (b) At the written request of the Hays County Commissioners Court, the county auditor shall audit the performance of the district. The court may request a general audit of the performance of the district or may request an audit of only one or more district matters. *(Delete passage, Reason: the State requires annual audits of GCDs. This provision blatantly seeks to reduce the independence of the District by putting its operation under the purview of the County, as also in (1.) above. If the commissioners want to see an audit they just have to request one from the office.)*

5. 3.0307 (g) If there is a vacancy on the board, the Hays County Commissioners Court shall appoint a director to serve the remainder of the term. *(Delete passage. Reason: More County interference. Chapter 36 allows the remaining directors of the District to appoint a replacement.)*

6. 3.0312. FUNDING AUTHORITY. generally allows for the collection of a $300 "permit fee" on the construction of any well -- no distinction between small domestic wells and large golf course or public water supply wells -- or on the connection of any new home or business to a public water supply,...and then ends with this part: "(c) Not withstanding Section 3.0304(a) of this part or Subchapter G, Chapter 36, Water Code, the district may not impose a tax or assess or collect any fees except as authorized by Subsection (a) or (b) of this section." *(This seriously inhibits the HTGCD from being able to carry out its State mandated duties and that was obviously the original intention. You have to give to the folks that first created this legislation, because it makes even the inadequate funding of the District completely dependent upon continuing growth, and aquifer depletion. During a recession, it leaves the District sorely without funding. Also, it places the funding burden on a tiny minority of the citizens, instead of spreading it fairly over those who benefit from the work and management of the district, i.e. present residents and property owners of the District. An ad valorem tax cannot be imposed by the District unless such taxing authority has been approved by the voters, a standard provision of Chapter 36. The present legislation does not allow the voters to make that choice; it is made for them. It is recommended that the limit on ad valorem taxing authority be set at 5-cents per $100 evaluation,. vs the 50 cents allowed in Chapter 36.)*

COMMENT RESPONSES

The comment responses provided below are numerically-keyed to comments listed in the previous section. In some cases, revisions to the report were warranted and are so noted. In other cases, the comment response itself addresses the issue. In several cases, some subject matter described in the comment letters were more statements of opinion, not specific comments that requested some form of change and the person's comments are noted.

Some comment letters addressed much the same set of issues or commented on more narrow issues that are intimately inter-related to broader issues, such as:

- Plan relied too much on conventional water management measures
- Use of water conservation and rainwater harvesting as broad solutions
- Environmental impacts of growth and infrastructure approaches
- Need for new Legislative authority to manage growth
- Want more detailed Plan content
- Public input to the Plan

In these cases, we have developed a consolidated response to these generalized issues. Later comments of a similar nature are directed back to the consolidated response.

No.

1. See the contents of Appendix D.

2. Section 2.2.2.1 has been revised in to address the comment.

3. The detailed population and water demand forecasts being requested are enumerated by planning sub-area in Tables 4.3-1 to 4.3-36 for the HI Case and in Appendices A and B for the MID and No Action Cases.

4. A map showing the general location of existing permitted wastewater treatment plants and discussion of areas not satisfactorily served has been added to Section 3.7.2.

5. A new Section 3.7.1.3 concerning CCNs has been added to the report.

6. The final report has been reviewed for typos.

7. Revisions have been made to Section 2.2.2.2.

8. Revisions have been made to Section 3.7.11.

9. Revisions have been made to Section 3.7.1.2.

10. Revisions have been made to Section 3.7.1.3.

11. Revisions have been made to Section 3.7.1.5.

12. Typos have been corrected.

13. HDR generally concurs with the points being made in this comment, but we should point out that we did not make full use of the potential pumping rate of 9,115 ac-ft/yr that produces the average 30 foot drawdown over 50 years modeled in the adopted Desired Future Conditions (or DFC). As indicated in Table 4.1-5, the various management measures identified to meet the HI case water demand essentially stabilizes the pumping of the Trinity in the study area between roughly 5,100 to 5,700 ac-ft/yr, which is roughly the level of current pumping of the aquifer. This is still in excess of the 3,714 ac-ft/yr identified in the HTGCD's current Management Plan, but is considerably lower than the 9,115 ac-ft/yr identified in the DFC process.

14. Comment noted.

15. Comment noted. Some portions of this comment should be directed to the near-term policy-making of the HTGCD.

16. This comment and several others received took exception to the draft report's planning for growth and recommendation of traditional water supply measures for certain areas. Planning for water supply must be pragmatic, while at the same time providing for innovation of new policies and strategies. In HDR's opinion, a responsible plan cannot form its significant recommendations around legal authority, policies, and management tools that either do not yet exist, have not been innovated into mainstream practice, may be inappropriate or inadequate tools for the context of the problem, or have longer-term unintended environmental and cost of service consequences that are not yet fully understood or desired.

    The comment calls for a detailed study of the costs and benefits of growth versus no growth which are outside the purview of this study. Whether we like it or not, the reality today and likely tomorrow is that Texas counties do not have noticeable governmental powers to condition growth, much less limit or stop growth (see also Comment Response #19). Even municipalities have very limited control of their suburban ETJ areas where much of the growth is occurring. Texas law, related to the formation of water districts and utility corporations, facilitate the provision of utility service in these areas, regardless of the wishes of the cities or counties. Growth is driven by a variety of factors, many of which are present in western Hays County, and the fact is that rapid growth has been occurring where it wants to occur and is likely to continue. We cannot assume that away in a responsible plan. As reflected in Appendices A and B, we did develop two alternate Plans reflecting different levels of slower growth.

    Concerning taking resources from other places for the needs of a specific growing area such as Hays County, that is how the world has developed. For most of history, resources have moved from places of "plenty" to places of need. Growth occurs in various locations for a whole host of dominating factors other than presence of adequate on-site resources. Where do we draw the line concerning not moving resources: no food, lumber, gas, steel or grocery imports into Hays County? No development in natural transportation corridors because of lack of on-site resources? Stopping the demographic shift to the Southern U.S. because of needing to move water to where people are locating?

We have been challenged in resolving various comments promoting certain water management measures with a related desire to preserve the livable/walkable small town ambience and sensitive environment in western Hays County. On-site water supplies, whether wells or rainwater systems, will result in lower density development that very likely will also rely on septic tanks for wastewater treatment. With thousands of new residents and the low density provisions brought about through use of on-site water and sewer systems, urban sprawl will simply result that is neither livable/walkable nor economic to provide with public services. Is impacting large land areas, exacerbating an already tight water budget with still a large cumulative water supply impact, the proliferation of roads and septic tanks, and lack of economic stormwater and water quality controls resulting from widespread low density development an environmentally sensitive approach?

The ambience and sustainable picture described in some comments are, in HDR's opinion, only achievable if the growth is significantly limited or is somehow channeled into certain development areas. Many entities who have attempted to limit or manage growth through various measures that bring about low density development have not been pleased with the outcome and have changed course towards what is termed "smart growth" type initiatives that promote more compact development which concentrates growth towards the center of a community to avoid urban sprawl and advocates environmentally-sensitive land development with the goals of minimizing dependence on auto transportation, reducing air and water pollution, and making infrastructure investments more efficient. Under the County's subdivision ordinance, this more compact, manageable development, that lessens its footprint on the environment, is only likely to occur with the provision of centralized utility services that allow for these more compact densities.

The draft and final report did recognize and recommend more significant implementation of other innovative water management measures in most portions of the study area, however these alternative technologies were most greatly emphasized in rural locales where that approach was deemed most appropriate, where development will likely be limited, and where this is a viable option as an alternative to limited groundwater supplies.

17. We agree that there are other ways of addressing the utility service needs of future development, but even these methods have their own impact and must be put into proper context. Western Hays County has a very limited water budget. There is just not that much surface or groundwater water resident within the study area, and these resources are highly susceptible to the effects of prolonged drought. Except for water conservation and drought restrictions that affect the water demand side of the equation, the consumptive portion of all "local" water supply management measures negatively impact the already very limited water budget in western Hays County. Savings from water conservation has its practical limits and eventually results in what is termed "demand hardening," where there are no easy conservation measures left available in times of drought. Neither are rainwater harvesting systems a panacea for the County's large-scale water problem; they intercept stormwater runoff from making its way into rivers, streams, and aquifers, albeit with less evapotranspiration loss.

    Whether it is a groundwater well or a rainwater system, all the local supply measures take a "consumptive bite" out of what is already a very tight water budget. We have a water supply problem *today* with all parts of the County experiencing some form of water supply scarcity. Yet even the No Action forecast (which assumes no new major water projects are developed) indicates that the study area population could grow by another 82% by 2060. If you multiply each new incremental bite of consumptive water use of these on-site measures times 54,000 new residents, you've made an already bad water resource situation even worse. With prospective growth, the only pragmatic way of addressing the larger scale water supply needs and not exacerbating the local resource problem is to import water supplies from outside areas with excess supplies.

Revisions will be made to the text recommending expanded use of stormwater for irrigation and for aquifer recharge enhancement.

18. Currently, the Texas Water Code and TCEQ rules have provisions related to waste of water and water pricing. Public water suppliers must have a water rate structure that does not *promote* or incentivize the use of water in order to gain state approval of their required water conservation plan. In practice, this has meant that water rate structures must be at least a uniform rate design (the same price per 1,000 gallons) and not lower the price per 1,000 gallons as consumption increases. In practice, a large number of utilities in the State have water conservation-oriented rate structures where the pricing incrementally increases with the level or seasonality of water use. Investor-owned utilities that come under direct rate regulation of the TCEQ are sometimes held to a rule of thumb standard in rate hearings of not exceeding 10% water loss in urban-type systems and 15% loss in more rural systems. Also, utilities performance on their water conservation programs can be a factor in the State's consideration of utilities' requests for permits and financial assistance. We agree, in both cases, that the State should do more to require water-conserving rate structures for residential uses and to consider maximum allowable water loss targets as stronger conditions of granting state permitting or financial assistance.

19. Revisions have been made to Section 6 recommending additional regulatory authority for counties to manage growth. However, it should be noted that the House Committee on County Affairs Interim Report to the 82nd Legislature recently made three recommendations for possible legislative action:

    a. The Texas Legislature should consider adopting limited and reasonable measures to protect against incompatible land uses in high growth areas outside of city jurisdiction. Such measures might include granting counties optional authority to adopt regulations for performance based buffer zones or the ability to designate reserved industrial land use areas, with appropriate safeguards for both new and existing homeowners as well as new and existing industry;
    b. The Texas Legislature should consider granting counties optional authority to adopt regulations that would assess impact fees or "in lieu" fees for the proportional costs of widening or extending roads required to serve new development, and
    c. The Legislature should continue to monitor growth management issues in counties experiencing high rates of population growth and take steps to provide county governments with the tools necessary *to protect private property rights, land values and development opportunities for all in the unincorporated areas of these counties* [emphasis added].

None of these recommendations really address the powers and authorities that would be needed by counties to limit development in certain areas or steer it towards preferred growth corridors. A careful reading of the third recommendation seems to run counter to the granting of additional county powers in this regard.

20. As previously noted, the County will need additional powers to try and concentrate development into preferred growth corridors and limit development in other areas. The County has already participated in preservation of open/natural spaces and should continue to so. The comment calls for a comparison of "nearly half of billion dollars worth of infrastructure needs" versus the benefits of conserving the remaining open spaces. We would clarify that of the $446 million in future water-related infrastructure needs identified in the report, only about $103 million (or 23%) of that total is for what could be termed as new outside water supplies. Additional rainwater collection systems comprises 24% of that projected total expenditure. It is our opinion that the provision of imported water, adding to the water balance in western Hays County and allowing for more compact development, will do more to protect that environment than hopes that growth will somehow be limited, targeted to only certain areas, and promoting solutions that continue to decrement the available water in the County and enhance urban sprawl.

21. The only legal requirement for a vote of the citizens is if General Obligation debt is proposed to be issued by a city or county to fund a large project, which in any case, would not be the likely source of funds for utility infrastructure. The three utilities currently serving the Wimberley/Woodcreek and Dripping Springs communities are non-profit or for-profit water supply corporations, which do not need voter approval to make funding decisions or even make application for state financial assistance. Even if the County or a municipality were sponsoring the project, these entities can (or in the case of counties required to) issue Revenue Bonds where the debt is backed by the future revenues of the utility system. Revenue bonds do not require voter approval. However because of the potential large investment reflected in some of these projects and the *need* for community backing of these actions, it is very likely that some mechanism to gauge community support will occur before any future action is taken to develop significant new water supplies.

    Concerning a vote of the citizens on what the future of the Hill Country or their community looks like, local voters can only implement development restrictions that are allowed within the powers and authorities granted state, county and municipal governments by State law. If a project can meet the legal requirements of a regulatory approval, then it is illegal to deny that permit. There are many issues and ideological positions on both sides of this regulatory/managed growth debate, including the need to better recognize common resources and manage the effects of growth balanced against protection of private property rights and limits on takings.

    It is unfortunate that the public meetings associated with this study, which were adequately noticed and publicized, were poorly attended by various interest groups and the public. It is also interesting that many of the topics addressed in this comment letter are somewhat critical of decisions or initiatives that were brought about by recent public processes and votes of the citizens. Societal values and laws do not ordinarily change dramatically overnight and are often a somewhat evolutionary longer-term process that hopefully achieves a desired goal of balanced public policy. It is perfectly valid to lobby for continued change, even if current decisions arrived at through some form of public process are not acceptable to all.

22. All comment letters have been included in the final report, as well as responses to those comments.

23. Comment noted. A Citizens Advisory Board is being contemplated to help formulate next steps.

24. Comment noted. Revisions have been made to Section 6 of the final report.

25. Comment noted. Current state and county limitations on the Authority's funding will pose challenges in garnering up-front money with which to make investments needed to bring this to fruition. See Section 6.0 of the report. A legislatively-created special water district may be needed to achieve these actions.

26. Comment noted.

27. Comment noted. Prohibiting WSCs from serving urban areas is not currently provided for under state law. Policy recommendations in Section 6 of the report encourage municipalities (or a special water district) to assume public control of these utilities over time as a valuable tool of integrated growth management. However, this is likely to occur only with some additional acquisition/transaction costs which could increase pressure on existing utility rates.

28. Comments noted. There are already public processes, elected bodies and advisory boards in place which have, are, or will be addressing some of these issues, including the GMA/DFC/MAG/PGMA considerations, powers of the HTGCD, and other issues. The Hays County Water and Wastewater Facilities Plan was somewhat circumspect in its policy recommendations in recognizing these efforts by others and calling for public processes underway to make timely decisions, so that more firm plans can be formulated around those decisions. Some additional revisions will also be made to Section 6 of the final report.

29. Comment noted. Revisions will be made to Section 6 of the final report.

30. Comment noted. Revisions will be made to Section 6 of the final report.

31. State law would have to be changed to provide for this recommendation. Currently, Chapter 395 of the Local Government Code only explicitly provides an impact fee mechanism for municipalities, and through the TCEQ, water districts. As noted in Comment Response # 19, there has been a Legislative Interim Study Committee recommendation to provide counties with the ability to levy an impact fee for roadway improvements.

32. As previously mentioned, State law already charges the TCEQ and TWDB to consider water conservation performance and water loss issues in their permitting and funding assistance decision-making, although strict numerical standards are not enforced. A recommendation has been added to Section 6 encouraging the State to do more.

33. Comment noted. Text revisions will be made to Section 6 of the final report.

34. Comment noted. Text revisions will be made to Section 6 of the final report.

35. As water engineers and planners, it is our mandate to develop solutions that are appropriate, safe, reliable and economically, socially, environmentally, and legally viable. The benefit of the Plan is for the people of Hays County. Solutions proposed recognize the limits of the current water resources with the potential for growth. Some solutions may require engineering but the majority of investment as indicated in Figure 5.4-2 and 5.4-3 are for on-site systems such as rainwater, wells and OSSFs which benefit local contractors and drillers.

36. Conservation and rainwater systems are important strategies for meeting water demand in the County. In the HI case, conservation strategies and rainwater systems are projected to reduce demand by 2060 by 4.36 million gallons per day or nearly 4,900 ac-ft/yr. These strategies provide for 23% of the *additional* demand between 2010 and 2060. We were circumspect in how much additional conservation is possible in that per capita water uses in most of the study area are already towards the low end of what we see in the State. For reasons already discussed in comment responses #16 and #17, HDR views rainwater collection systems as a technology *appropriate* to certain conditions. Given likely future trends, rainwater collection systems are not a broad panacea for the County's water issues or one that can address the immediacy of some of these issues. With continuing growth, a widespread implementation of this measure could have long-term adverse environmental effects in exacerbating urban sprawl.

37. Detailed costs for every water strategy are included in Appendix C, summarized in Table 5.4-1 and described in Section 3.7. The $446.4 million cost for additional water management measures includes costs for rainwater and wells during the 50-year planning period. To determine the total investment in on-site systems requires understanding how many new homes are utilizing these strategies each year.

38. Correct. The costs estimates are included for the HI Case since the majority of the discussion in the report focuses on this recommended planning scenario.

39. The report does not include this detailed information in order to keep the focus on the higher-level issues rather than getting lost in the details. The magnitude of investment for each planning area can be identified through the tables in Section 4. Also, the details of the calculations have been provided to the Mr. Baker's consultant.

40. Eleven water management strategies were used in the HI Case to meet water demand in western Hays County by 2060 as identified Figure 5.4-1. These strategies are necessary to provide the quantity and quality of water supply without depleting the groundwater. Table 5.4-1 includes unit costs for comparison of each water management measure. Costs for wastewater alternatives are identified on Table 3.7-8 and 3.7-10.

41. See comment 40.

42. Planning for water supply should include some safety factors to ensure a safe and reliable supply. This report relies on data from the water utilities reported to the TWDB adjusted to per capita use. As a TWDB-funded study, this report utilizes these approved per capita use numbers for consistency with regional plans. The per capita use numbers for the report are found in Table 3.4-1 and for each planning area in Section 4.

43. The TWDB approved per-capita use numbers for the rural portions of Hays County (Hays County-Other) begins at 132 gpcd in 2010 and is reduced to 120 gpcd by 2060. Because of the uncertainty of this use, this study uses 120 gpcd and reduces it to 110 gpcd by 2060.

44a. The HI and MID case scenarios do not assume water supply limitations. The No Action Case growth is limited to the capacity in major water infrastructure and additional capacity of new on-site systems.

44b. See comment 42. A portion of the additional conservation savings that can be achieved and embodied in the Plan's forecast also includes more efficient outdoor water use. Yes, it is normally true of any type of water supply that economies of scale (reductions in units costs) can be achieved as the project capacity grows within an economic range. This is a key factor in making cost-effective decisions as to oversizing facilities for future needs.

44c. See comment 38.

45. See Table 4.1-5.

46. The conservation strategies are based on the 2011 Region L Water Plan. See comment 42.

47. The cost for reuse strategies include additional treatment to meet TCEQ's Type 1 requirements, and transmission to a reuse customer. TCEQ's Chapter 213 prohibits discharges that add pollutants to waters in the recharge zone. Reuse in areas over the recharge zone will therefore require best management practices to reduce runoff and buffering of environmental features. Additional clarification will be added to the text.

48. This plan does not recommend extending centralized wastewater and water service to low density rural developments. Rural areas are assumed to use OSSF for all wastewater demands. See tables in Section 4.

49. The recommendation for centralized treatment for a portion of the demand in suburban areas is for cost effectiveness and to limit water quality and health risks due to the alternative wastewater treatment technology deficiencies, such as failing OSSFs over time. Centralized facilities receive considerably more attention, inspection, and facility upkeep than do septic tanks.

50. See comment 47.

51. Comment noted.

52. In the case of Wimberley, the largest pollution potential is in the aging septic tanks. Better to limit it to areas that we can monitor and provide best management practices to limit failures such as back up power supplies. Every built system needs to be maintained and requires appropriate budgets to keep the system operating efficiently and safely.

53. Due to the limitations of the current water resources in western Hays County, this plan identifies water management measures which limit the extent of groundwater from being mined over the next 50 years and provides reliability to future residents. The Plan incorporates a significant amount of conjunctive use in the Wimberley/Woodcreek and Dripping Springs areas. The Plan presents this information on an annual basis and does not purport to assess daily or monthly operating issues. Conjunctive management requires available surface water to shift demand under various operating rules. The specifics of just how water is conjunctively used will be affected by such factors as take or pay contracts, cost of ground versus surface water, groundwater permit requirements, operational considerations and other factors not known at this time. Under the HI case, the amount of groundwater use stabilizes to present levels of use because of the use of surface water, rainwater, conservation, interconnections and reuse.

54. Comment noted. This was addressed at the following public meeting in Wimberley in January 2011.

55. The study assumes that centralized wastewater treatment facilities will utilize land application disposal. The study also discusses how the large land application requirement associated with this approach will likely limit or forestall the implementation of any regional treatment facilities. The study also poses the likelihood that this will result in the proliferation of many small wastewater treatment facilities for which regional management and operations are needed. The study also poses the quandary that if in the future there are a proliferation of many small plants, this will increase the impetus for regional facilities with a likelihood of stream discharge to replace these many small facilities.

    Also as stated in Section 6.6 of the draft report, wastewater disposal in the study area will most likely be limited to land application due to associated impacts to the Edwards Aquifer from stream discharges. Chapter 213.6 prohibits municipal discharges into streams that will increase the pollutant loading in the recharge zone and require high water quality standards for stream discharges less than 5 miles upstream of the recharge zone. Additional text has been added in Section 3.7.2.

56. The conveyance pipeline referenced in the comment is not intended to provide for development in the area of stated concern. Its sizing was determined based on the current and future needs of the Wimberley/Woodcreek area as well as small increment for existing subdivisions on wells in the intervening area along the route near Wimberley.

57. Comment noted. Also see response to Comment #20.

58. Comment noted. Also see response to Comment #20. One of the goals of the report recommendations is to reduce future stress on the Trinity Aquifer, albeit in a manner that provides for future growth likely under current state and local law. The final report will call for additional research on aquifer recharge enhancement.

59. Comment noted. The report does think about long-term future impact, but does not assume legal and regulatory authorities that do not exist or are likely to exist in the near future. Also, see response to Comment #16 and 65.

60. Three public meetings were properly noticed, advertised, and conducted during the various stages of this study; one at the outset of the study, a second meeting prior to publication of a draft report, and a final public meeting subsequent to publication of the draft. We greatly appreciate those that did make the effort to participate, but attendance was light. Numerous coordination meetings were also held with affected entities and interest groups. The report was made available for public comment for a month, and comments were considered in the finalization of the report. See also response to Comment #20.

61. Water conservation and rainwater collection systems were sufficiently addressed in the report and included as priority measures prior to the implementation of other water management measures. There are limits to water conservation savings, and rainwater harvesting is an appropriate technology in the right setting, but neither are adequate solutions for the significant future water needs of the County. With additional growth, and there are no current or likely effective means of preventing that, measures that proliferate low density development are neither environmentally friendly nor conducive to the rural ambience or livable/walkable communities desired by many.

62. The Hays County Water and Wastewater Facilities Plan had a limited budget and scope and could not address all topics of interest to everyone, such as a broad benefit/cost assessment of development versus environmental values. The report does recommend measures which will help the Blanco River through avoiding Blanco River surface water supplies, stabilizing groundwater levels, helping to maintain spring flow, and providing for a density of compact development where it is economic and practical to provide for additional environmental protection, such as runoff controls.

63. Comment noted. See various prior comment responses.

64. This comment was discussed and the placement of this discussion was resolved in conversations with Mr. David Glenn, representing CARD. The opportunities and challenges facing the Hays County Water and Sewer Authority are discussed in Section 6 of the report.

65. We concur with the CARD comments concerning recognition of the *de facto* growth corridors along IH-35 and Hwy 290 West. The development in these corridors is already extensive and being driven forward by market forces. The Hays County Water and Sewer Plan report recognizes and addresses the *de facto* growth in these two corridors, and it also recognizes and addresses similar rapid growth trends in the Wimberley/Woodcreek area. Additional authority is needed by the county and municipalities to achieve the limits or conditions on growth embodied in this comment for the areas in between IH-36 and Hwy 290.

66. Comment noted. See also Comment Responses #19 and #20.

67. See prior comment responses #16 and #17.

68. See prior comment responses #16 and #17.

69. The Bureau of Reclamation previously examined an option to construct a reservoir on the Blanco River in 1978, which was subsequently carried forward into the 2001 Region L Water Plan as

Cloptin's Crossing Reservoir. The estimated cost for the reservoir in 2001 was $220,307,000. Although larger than the off-channel reservoir suggested in the comment, it serves to note the magnitude of expense involved in such a project. The off-channel reservoir suggested has not been studied in detailed to determine how much flow is legally available from the Blanco in this region, the impact to instream flow conditions and habitats, impacts to senior water right holders downstream, yield analysis, the structural feasibility of the suggested site, and the total cost including land acquisitions, environmental and archeological studies, permitting and construction. This information would take several years to develop and is beyond the scope of this Plan. If requested and approved by the Region L Water Planning Group and the TWDB, a more thorough analysis could be initiated as part of the 2016 Region L Water Plan.

The recommended projects to meet the near-term and future water supply needs for Wimberley and Woodcreek total between $33.3 million to $47.8 million. The cities of Woodcreek and Wimberley are in a very tight water situation today and readily available solutions need to be determined and actions taken relatively soon.

70. Comment noted.

71. Comment noted.

72. Suggested revisions have been added to the Aquifers section.

73. Additional description of the subdivision ordinance exemption has been added to Section 3.8.

74. Comment noted and revisions made.

75. Although the recommendations may not be as comprehensive as some would like, it is nonetheless a step in the right direction and as stated, will enhance the ability of the District to manage the groundwater. The suggested legislative changes for the HTGCD, made in the comment letter, addresses some of the issues recommended by the Advisory Group including reducing the County's oversight except in fiscal oversight of County funds, and funding issues for the District. This Plan has highlighted the issues of exempt wells throughout the planning area over the next 50 years which will add to groundwater depletions without having to carry the cost of mitigation (see Section 6.7).