

TECHNICAL MEMORANDUM

May 26, 2010

TO: Interested Parties

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Resource Projects Department

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SUBJECT: 2010 Regional Water Supply Plan: Public Supply Water Demand Projections

Introduction

Chapter 373, Florida Statutes (F.S.) sets forth the requirement for regional water supply planning. Under the provisions of this chapter, a Regional Water Supply Plan (RWSP) must be developed for those areas where available water supplies are not expected to meet projected demands over a 20-year planning horizon. Guidance for developing projections is contained in the publication Final Report: Development and Reporting of Water Demand Projections in Florida's Water Supply Planning Process (September 2001). This guidance document was produced by the Water Demand Projection Subcommittee of the Water Planning Coordination Group. This group includes representatives from the Florida Department of Environmental Protection (FDEP) and each of the five water management districts. Following a district-wide water supply assessment that identified water demands and existing sources, the Governing Board of the Southwest Florida Water Management District (SWFWMD or District) determined the need for a RWSP in the southern ten counties of the District, and the District produced its first RWSP in 2001. The statute requires that the determination of the need for a RWSP be made every five years. Accordingly, in 2003, the Governing Board determined the need for a RWSP existed in the same ten-county area. For the 2010 edition of the RWSP, the Governing Board directed District staff to include demand projections for all sixteen (16) counties within the District.

Purpose

This technical memorandum details those actions taken and methodologies utilized to develop the projections for the Public Supply component. The Public Supply sector includes water use associated with large water utilities (those with average annual withdrawals of 0.1 million gallons per day [mgd] or more), small water utilities (average annual withdrawal is less than 0.1 mgd), domestic self supply (residential dwellings system that are provided water from a dedicated, on-site well and are not connected to a central utility) and residential irrigation wells (these are

wells that serve the outdoor needs of individual residential dwellings that are connected to a central water utility system that serves indoor needs).

Background

Prior editions of the RWSP addressed two planning regions, the Southern Water Use Caution Area (SWUCA) and Northern Tampa Bay (NTB). Although data is still available for these two areas, the 2010 RWSP will address four planning regions encompassing all 16 counties. The Southern Planning Region includes Charlotte, DeSoto, Manasota, and Sarasota Counties; the Heartland Planning Region includes Hardee, Highlands, and Polk Counties; and the Tampa Bay Planning Region includes Hillsborough, Pasco, and Pinellas Counties. The Northern Planning Region consists of those counties being included in the RWSP for the first time, specifically Citrus, Hernando, Lake, Levy, Marion and Sumter. For the 2010 RWSP, 2005 is the starting point, or baseline year, for the purpose of developing and reporting water demand projections. This is consistent with the methodology agreed upon by the Water Planning Coordination Group. The data for the baseline year consist of reported and estimated usage for 2005, whereas data for the years 2010 through 2030 are projected demands (estimated needs).

Data and Information Sources

The methodology to develop public supply water demand projections utilizes many data sources. The District's Estimated Water Use reports (2003 – 2007) were used to gather base information for public supply water utility populations, water use, and per capita water use rates. The University of Florida's Bureau of Economic and Business Research (BEBR) publications (2006, 2008) were used to gather base year population and future county population projections. The District's geographic information system (GIS) model (GIS Associates, Inc., 2008, 2009) also incorporates a large amount of data gathered from stakeholders, enabling the District to project population at the utility service area level.

Methodology

2005 Base Year Population Methods and Assumptions

As a measure of consistency, all water management districts agreed that 2005 would be the base year from which projections are determined. Population and per capita water use information was obtained from historical data using previously reported data collected and analyzed by the District (described below), or from data provided as part of the parallel District effort within the RWSP process to determine the Public Supply water use projections through the year 2030. In order to project future water use it is first necessary to determine the water use for the 2005 base year or starting point. The 2005 base year population for each county was derived from the Estimated Water Use report (2005).

The large utility category contains the individual populations within the service areas of those utilities with an average daily permitted withdrawal quantity of 0.1 mgd or greater. Large utility populations were taken from the Estimated Water Use report (2005). This report is produced

using utility-supplied information, among other sources, for those utilities permitted for over 100,000 gallons per day (gpd). Table A-1 of the Estimated Water Use report (2005) contains the values used in this assessment. The values contained in Table A-1 were in some cases reported by the utility and, if not reported, developed by the District, based on past data and 2005 county population estimates from the BEBR.

Small utility populations are those populations contained in the Estimated Water Use report (2005) related to those utilities with a permitted average daily withdrawal of less than 0.1 mgd. In the Estimated Water Use report (2005), small utilities with a permitted annual average withdrawal quantity of less than 100,000 gpd are generally not reported individually. Utilities with permitted annual average withdrawal quantities of less than 100,000 gpd are typically not required to report pumpage to the District and, therefore, their service area population is estimated as described below.

Domestic self-supply is defined as that portion of the county population not serviced by either a large or small utility. County domestic self-supply populations are calculated as the difference in 2005 baseline total county population and the combined 2005 large and small utility service area populations.

For those counties not fully contained within the District boundaries, only that portion of the population within the District is included (see Table 2). The basis for population allocation is provided in Estimates of 2005 Census Populations by Political and Geographic Boundaries of the SWFWMD (GIS Associates, Inc., February 2008).

2005 Base Year Water Use

The 2005 Public Supply base year water use for each large utility is derived by multiplying the average 2003 – 2007 unadjusted gross per capita rate, as defined below, by the 2005 estimated population for each individual utility.

Base year water use for small utilities is derived by multiplying the average 2003 – 2007 unadjusted gross county-wide per capita rate, as defined below, by the 2005 estimated population for the additional estimated population associated with those non-reporting utilities, contained in Table 1 of the Estimated Water Use report (2005). For example, the base year water use for small utilities located within Charlotte County is derived by multiplying the average 2003 – 2007 unadjusted gross per capita rate for Charlotte County by the 2005 estimated population for small utilities.

Base year water use for domestic self-supply is calculated by multiplying the 2005 domestic self-supply population for each county by the average 2003 – 2007 residential county-wide per capita water use as defined below.

2003 – 2007 Average Per Capita Rate

The year 2001 was a relatively dry year and the year 2004 was a relatively wet year in terms of precipitation (with an annual average relative district-wide rainfall of 46.40" and 63.36"). The

relationship between public supply water use and annual precipitation amounts is typically inverse (less rain results in increased water use, largely due to outdoor water use). This is confirmed by a higher district-wide average per capita water use rate in 2001 of 126 gpd versus the district-wide average per capita water use rate of 114 gpd in 2004. Water use projections based on observed 2001 per capita rates would be higher than a reasonable average water use projection and water use projections based on observed 2004 per capita rates would be lower than a reasonable average water use projection. The per capita water use rate is the factor applied to projected population to project water demand (described below). Therefore, it is necessary for the base year per capita rate to represent water use in an average year. To address this situation, the District has calculated average five year per capita use rates for large utilities, small utilities, and domestic self-supply (using data provided in the Estimated Water Use reports (2003 – 2007), see Note 4 on Tables 3 through 18).

The unadjusted gross per capita rate used is calculated as $\text{Withdrawals} + \text{Imports} - \text{Exports} - \text{Treatment Losses}$ divided by the Served Population. For large utilities, this information is provided in Table A-1 of the Estimated Water Use reports (2003 – 2007). For small utilities, this information is derived by dividing the sum of $\text{Withdrawals} + \text{Imports} - \text{Exports}$ for small utilities listed in Table A-1 and Reported Water Use and Estimated Water Use in Table 1, divided by the sum of small utility population provided in Table A-1 and Additional Population provided in Table 1. Domestic self-supply per capita was taken from the county-wide residential per capita provided in Tables 2 and A-2 of the Estimated Water Use reports (2003 – 2007).

Population Projections

The District contracted with GIS Associates, Inc., to provide small-area population projections for the 16 counties entirely or partly within the SWFWMD.

The population projections made by BEBR are generally accepted as the standard throughout the state of Florida. However, these projections are made at the county level only. Accurately projecting future water demand requires more spatially precise data than the county level BEBR projections. The District projections are based on census block-level data, which is the smallest level of census geography. They are then disaggregated to land parcel data, which is the smallest area of geography possible for population studies.

MODEL OVERVIEW

This GIS based projection model used by the District projects future permanent population growth at the census block level, distributes that growth to parcels within each block, and normalizes those projections to BEBR county projections. First, a county-wide build-out model is developed from the base parcel dataset. Current permanent population is estimated and then the maximum population a county can grow is determined at the parcel level. Areas which cannot physically or lawfully sustain residential development (built-out areas, water bodies, public lands, commercial areas, etc.) are excluded from the county-wide build-out model. Conversely, the model identifies areas where growth is more likely to occur based on proximity to existing infrastructure.

Next, population growth is modeled between the current estimated population and the build-out population. Projections are based on a combination of historic growth trends and spatial constraints and influences, which restrict or direct growth.

Population growth calculations are limited by BEBR's projected growth for a particular year. BEBR develops three projections for each county: "low", "medium" and "high". The medium projection is BEBR's forecast, or most likely growth scenario. For this reason, the District's small area projections are controlled by BEBR's medium projection for each county.

The base year for the model is 2005, however an update to reflect 2008 parcel data was developed. Projections were made through the year 2030 in the following five-year increments: 2005 through 2010, 2010 through 2015, 2015 through 2020, 2020 through 2025, 2025 through 2030.

All estimates and projections coincide with April 1st of the year of the estimation or projection.

Finally, the parcel level projections are easily aggregated by any set of boundaries desired (utility service areas, municipalities, watersheds, etc.). For the District's planning efforts, parcel projections are summarized by Water Utility Retail Service Areas that the District maintains as a GIS layer.

Complete methodology, references, tables, and data sources can be found by referring to the published technical memorandums supporting the GIS Model: "The Small-Area Population Projection Methodology of The Southwest Florida Water Management District," September 29, 2008 and "Updates to The Southwest Florida Water Management District's Small-Area Population Projection Model," September 29, 2008 and April 17, 2009, GIS Associates, Inc.

COUNTY-WIDE BUILD-OUT MODELS

The County-wide Build-out Models are composed of multiple GIS data elements. Each model is based on the county's property appraiser GIS parcel database, including the associated tax roll information. Other elements incorporated into each build-out model include the 2000 U.S. Census block data, District wetland data, local government future land use (FLU) maps, and Development of Regional Impact (DRI) plans for the county of interest.

A. Parcels

GIS parcel layers and county tax roll databases were obtained from each county's property appraiser office. Parcel geometry was checked for irregular topology, particularly overlaps and fragments. Parcel tables were checked for errors, particularly non-unique parcel identifiers and missing values. Required tax roll table fields include actual year built, Florida Department of Revenue (DOR) land use code, and the total number of existing residential units for each unique parcel. In cases where values or even fields were missing, other information was extrapolated and used as a surrogate. For example, when dwelling unit information was absent,

records with the same subdivision header were tallied and applied to the existing dwelling unit count of a multi-family residential parcel.

B. 2000 U.S. Census Block Data

Some of the essential attribute information contained in the County-wide Build-out Models was derived from the 2000 Census data at the census block level of geography. Census blocks are the smallest geographic unit for which the Census Bureau tabulates data (as small as a city block in urban areas), but these entities are almost always larger than parcels. Existing and projected population occurring in parcels within a census block are assigned the average values of that block from the 2000 Census values. This census block data is utilized by the model to translate parcels to population includes total population, the average housing unit vacancy ratio, and average household size.

In cases where property appraiser data were missing or incomplete, census block-level data were used. For example, census block data includes the number of mobile homes within a block. The number of mobile homes within parcels identified as mobile home parks can then be estimated using block-level data.

C. 2000 U.S. Census Place Data

Each parcel in the county-wide build-out models was also attributed with the Incorporated Place or Census Designated Place (CDP) in which it is located. Incorporated Place includes cities or towns, and the CDP includes “a densely settled concentration of population that is not within an incorporated place, but is locally identified by a name” (U.S. Census Bureau Web Site 2007: p. <http://www.census.gov/acs/www/UseData/geo.htm>). These are from the U.S. Census Bureau, and they are used by the models primarily to aggregate parcels for density calculations by future land use code. (See the Average Density section below). They can also be used for quality assurance checks against population estimates from BEBR, as those are available by both County and Incorporated Place.

D. Water Management District Boundaries

Each parcel in the County-wide Build-out Models was also attributed with the SWFWMD boundaries, which enables the county-wide models for any counties split between two or more water management districts to be summarized by each water management district. Whenever shared counties are discussed, only the portion of the population within the SWFWMD is accounted for in the model.

E. Wetlands

Wetlands play a large role in modeling a county’s build-out. The District and FDEP, under the auspices of the U.S. Army Corps of Engineers, have a permit process by which wetlands can be destroyed for development. The county-wide build-out models consider the impact wetlands have on residential development. Due to its permitting authority, the District maintains detailed

GIS databases of wetland areas and wetland mitigation areas within its boundaries. These databases contains the location and spatial extent of the wetlands and wetland mitigation areas, as well as the specific types of wetlands as defined by the District's land use and land cover classification system. Certain wetland types were identified that would be difficult and expensive to convert to residential development. These areas were identified in the District's wetland database and applied to the build-out model. The wetland types include streams and waterways, lakes, marshy lakes, reservoirs, bays and estuaries, slough waters, wetland hardwood forests, mangrove swamp, mixed wetland hardwoods, cabbage palm wetland, cabbage palm hammock, wetland coniferous forest, cypress, pond pine, hydric pine flatwoods, wetland forested mixed, freshwater marshes, saltwater marshes, wet prairies, emergent aquatic vegetation, mixed scrub-shrub wetland, and non-vegetated wetland.

Using GIS techniques, wetland polygons exceeding one acre were removed from the net buildable area for parcels in the County-wide Build-out Models.

There were exceptions to this procedure. In some cases, parcels with little or no developable area were already developed, thus the wetland calculation was modified. In other cases, mapping inaccuracies of the wetlands map and/or property parcels led to modifications to the wetland calculations.

F. Future Land Use

Future Land Use (FLU) maps are essential elements of each county's build-out model, as they help guide where and at what density residential development will occur within a county. FLU maps are a part of the Local Government Comprehensive Plans required by Chapter 163, Part II, Florida Statutes. They are typically developed by the local government's planning department, or, in some cases, a regional planning council with guidance from the local government. The latest available FLU map was obtained and applied to the build-out model.

FLU classifications for residential land uses are assigned maximum dwelling unit densities (per acre) or density ranges. These ranges are intended to guide the type and density of development. However, development does not always occur at FLU guided densities. For example, a FLU classification targeted at five dwelling units per acre may only develop at 2.6 dwelling units per acre. For this reason, the build-out model reflects the 10-year average densities of the specific incorporated place or CDP instead of the FLU maximum density. The assumption is that densities over the last ten years will be a good indicator of future densities.

To allow for the accommodation of infrastructure needs such as access and water retention and detention the FLU classifications for residential land uses includes a reduction of the buildable area over five acres and under 25 acres by 10 percent and a reduction of the buildable area over 25 acres by 25 percent.

As an exception, some FLU and census place combinations have an insufficient sample size to create average density values. In these cases, the countywide average density was applied for

that FLU class. Vacant or open parcels less than one acre are considered single family residential and calculated with a population of one dwelling unit.

Each parcel feature in the build-out model received a FLU designation. In places where features overlapped multiple FLU areas, the feature was assigned the FLU class its center fell within. Build-out population was only modeled for residential FLU types. FLU classes including agricultural, low density residential, medium density residential, high density residential, and mixed use were assigned residential densities in the build-out models.

G. Build-out Density Calculation

For each county, the above data layers were overlaid with the parcel layer to assign attributes to the parcels and make the build-out calculations. For the purposes of this model, the build-out population represents the total permanent residential population (existing and future) that can inhabit a parcel. Permanent population is calculated by multiplying the parcel-level dwelling units by the census block's average persons per dwelling unit, and then multiplying that result by the census block's average housing unit occupancy.

For areas developed after the 2000 Census and where the 2000 average persons per dwelling unit may not represent the new development, the county's average persons per dwelling unit was used. An example of this is a largely undeveloped census block in 2000 that had perhaps one or two homes with an average of 4.8 persons per dwelling unit. If after 2000, a large multi-family development was built, the block-level average persons per dwelling unit would likely be too high. For this reason, the county's average persons per dwelling unit was used instead of the census block-based numbers.

H. Developments of Regional Impact

The final step in the development of the County-wide Build-out Models is adjusting build-out densities to coincide with approved Developments of Regional Impact (DRI), or other large development plans (where available). DRI plans are another component of Florida's growth management legislation required by Chapter 380, F.S. DRIs are defined by Section 380.06(1), F.S., as "any development that, because of its character, magnitude or location, would have a substantial effect on the health, safety or welfare of citizens in more than one county." The state annually updates population-based thresholds by county to determine when a development must undergo the DRI review process. For residential DRIs, dwelling unit thresholds range from 250 units (in counties with fewer than 25,000 people) to 3,000 units (in counties with more than 500,000 people). A DRI plan delineates the boundaries of a DRI, the number of dwelling units within the boundaries, and the projected timing of when these units will be built. Although DRIs often do not develop as originally planned by the developer, the total number of units planned (regardless of timing) is likely to be a more accurate control for the build-out of that DRI than the average historic densities. Therefore, in each of the build-out models, parcel features that are within a DRI are attributed with the name of the DRI. Parcels within a particular DRI are then controlled to the DRI development plan and the build-out population for that area is recalculated.

REGIONAL GROWTH DRIVERS MODEL

The Regional Growth Drivers Model is a raster (cell-based) dataset representing development potential. This model is a continuous surface of 10-meter cells containing relative values of 1-10, with 10 having the highest development potential and 1 having the lowest development potential. It influences the Population Projection Model by factoring in the attraction of certain spatial features, or growth drivers, have on development. These drivers are defined from transportation features and land use/cover types including:

1. Distance from roads grouped by four levels of use (with each road type modeled separately, additionally, one of the levels of use included limited access interchanges)(data is obtained from the Florida Department of Transportation (FDOT) Road Characteristics Inventory (RCI) Database),
2. Distance from existing residential development (data is obtained from County Property Appraiser Parcel Data),
3. Distance from existing commercial centers (selected from parcels with commercial land use codes deemed attractors to residential growth) (data is obtained from County Property Appraiser Parcel Data),
4. Distance from coastal and inland waters (data is obtained from the District's Land Cover Data), and the
5. Distance from active Developments of Regional Impact and Planned Unit Developments (PUD) (data is obtained from GIS Associates Compiled Data).

Each of the drivers listed above were used as independent variables in a logistic regression equation. Dependent variables included existing residential built after 1994 as the measure of "presence", and large undeveloped vacant parcels outside of DRIs or PUDs were used to measure "absence". The resulting equation could then be applied back to each of the regional grids resulting in a single regional grid with values of 0 through 1. These were scaled up to a range of 0 through 10 in the resulting grid, for which a value of 0 represented the lowest relative likelihood of development, and a value or 10 represented the highest relative likelihood of development.

This seamless, "regional" model covers all the counties all or partially within the District, plus a one-county buffer to eliminate "edge effects". In this case, the edge effects refer to the presence or absence of growth drivers outside the District that could influence growth within the District. This model was then used by the Population Projection Model to rank parcels in undeveloped census blocks based on their development potential.

POPULATION PROJECTION MODEL

The Population Projection Model integrates the County-wide Build-out Models and the Regional Growth Drivers Model with historic growth trends and county-level population controls from BEBR.

A. Historic Growth Trends

The historic growth trends are based on historic population estimates at the 2000 Census block level of geography. The population estimates for 1990 and 2000 are from the U.S. Census Bureau, and a 2008 estimate is derived from property parcel data summarized by census block. These estimates are used to produce six projection calculations using four different methods. The minimum and maximum calculations are discarded, and the remaining four are averaged.

The four methods utilized by the model include: Linear, Exponential, Share of Growth, and Shift Share. The Linear and Exponential techniques employ a “bottom-up” approach, extrapolating the historic growth trends of each census block with no consideration for the county’s overall growth. The Share of Growth and Shift Share techniques employ a “top-down” approach, allocating a portion of the total projected county growth to each census block based on that census block’s percentage of county growth over the historical period. Each of the four methods is a good predictor of growth in different situations and growth patterns, so an average of the four was the best way to avoid the largest possible errors resulting from the least appropriate techniques for each census block within the 16 county area.

This methodology is patterned after that used by BEBR, and is well suited for small area population projections. The details of the methods are as follows:

1. Linear Projection Method

The Linear Projection Method assumes that future population change for each census block will be the same as over the historic period. Two linear growth rate calculations were made, one from 1990 through 2008, and one from 2000 through 2008.

2. Exponential Projection Method

The Exponential Projection Method assumes that population will continue to change at the same annual growth rate as over the historic period.

3. Share of Growth Projection Method

The Share of Growth Projection Method assumes that each census block’s percentage of the county’s total growth will be the same as over the historic period. Two share of growth rate calculations were made, one from 1990 through 2008, and one from 2000 through 2008.

4. Shift Share Projection Method

The Shift Share Projection Method assumes that each census block's percentage of the county's total annual growth will change by the same annual amount as over the historic.

By their definitions, the "Share of Growth" and the "Shift Share" Methods will project census block population that will add up to the BEBR projected county totals.

5. Average of the Projection Extrapolations

The minimum and maximum of the six extrapolations are dropped to reduce errors resulting from the "worst" techniques for each census block. The four remaining extrapolations are then averaged to account for the considerable variation in growth rates and patterns over all of the census blocks within the 16 county area.

The averaging of the four remaining projection methods reduces the errors associated with using various techniques for each census block.

B. Growth Calculation Methodology

The methodology for calculating growth within the Population Model includes the following steps:

1. Apply census block-level average historical growth rate to parcels within that block.
2. Check growth projections against build-out population, and reduce any projections exceeding build-out to the build-out numbers.
3. After projecting growth for all census blocks within the particular county, summarize the resulting growth and compare against the County-wide BEBR target growth.
 - a. If the Model's projections exceed the BEBR target (which is unlikely), reduce the projected growth for all blocks by the percentage that the projections exceeded the BEBR target, and go on to the next time increment.
 - b. If the Model's projections are less than the BEBR target (which is typical due to high growth areas building out), continue growing the county using the Growth Drivers.
4. Select parcels in undeveloped census blocks with the highest Growth Driver value and develop them. (Note that most parcels are projected to completely build out in this step, which represents a five-year interval. However, some large parcels may require two or more five-year intervals to build out.) Summarize growth and check against build-out. Continue this process until the county growth target is reached.

NON-PERMANENT POPULATION PROJECTIONS

In addition to the permanent population projections generated by the Population Projection Model, projections of non-permanent population were also made. Those projections include peak seasonal population, permanent plus seasonal population (or functionalized seasonal population), tourist population and net commuter population. The methods derived by the District and implemented by GIS Associates for projecting those population types are described below. For a more detailed explanation of these methods, see the District's Water Use Permit Information Manual, Part D – Requirements for the Estimation of Permanent and Temporal Service Area Population.

A. Peak Population

Seasonal population is estimated using a combination of 2000 Census data (at the Zip Code Tabulation Area or ZCTA level) and hospital admissions data. Average 1999 - 2001 emergency room admissions data was utilized for a population cohort typical of seasonal residents (between the ages of 45 and 74).

A "Seasonal Resident Ratio" was calculated by ZCTA to estimate the proportion of peak (including seasonal) to permanent population. This 2000 Census era ratio is held constant over time when applied to future projections of population, but it will be updated with each decennial Census. The ratio was derived using the following generalized steps:

1. Subtract total 1999 – 2001 total third quarter (Q3, or July, August and September) hospital admissions from first quarter (Q1, or January, February and March) admissions.
2. Calculate the average annual difference between Q1 and Q3 by dividing above result by three.
3. Calculate a seasonal population estimate for ZCTA by dividing above difference by the general population's probability of being admitted to the emergency room.
4. Calculate the Seasonal Resident Ratio by adding the seasonal population to the permanent population and dividing that total by the permanent population.

This ratio can then be applied to future projections of permanent population to derive peak population projections.

B. Permanent plus Seasonal Population or Functionalized Seasonal Population

The functionalized seasonal population is the peak seasonal resident population adjusted downward to account for the percentage of the year seasonal residents typically reside elsewhere, and the lack of indoor water use during that time. It was calculated using the following generalized steps:

1. Determine the appropriate proportion of the year seasonal residents spend in Florida. This varies from beach destination counties (44.2%) to non-beach destination counties (56.7%).
2. Develop a seasonal resident adjustment based on average per capita water use.
 - a. The six-year (1996 – 2001) District-wide average per capita use is 132 gallons per person per day, and 69.3 (1999) is estimated indoor per capita use.
 - b. The adjustment factor is calculated using the following equation for “beach destination” counties (Charlotte, Manatee, Pinellas and Sarasota):
$$((0.442 \times 132 \text{ gpd}) + ((1 - 0.442) \times (132 \text{ gpd} - 69.3 \text{ gpd})) / 132 \text{ gpd} = 0.707$$
 - c. The adjustment factor is calculated using the following equation for “non-beach destination counties”:
$$((0.567 \times 132 \text{ gpd}) + ((1 - 0.567) \times (132 \text{ gpd} - 69.3 \text{ gpd})) / 132 \text{ gpd} = 0.773$$
3. Calculate “functionalized” seasonal population by multiplying the seasonal population by the appropriate seasonal resident adjustment factor for the particular county (0.707 or 0.773).
4. Calculate total functional population by adding the functionalized seasonal population to the permanent population.
5. Calculate ratio of census era functional population to permanent population.
6. Apply above ratio to future projections of permanent population to derive functional population projections.

C. Tourist Population

The tourist population projections were based on 10 years (1998 – 2007) of county level lodging room data from the Florida Department of Business and Professional Regulation (DBPR). This data was used to extrapolate a linear trend for the increase in rooms by county. This linear trend was then applied to existing lodging facility locations. This projection on future rooms was then converted to tourist population by applying county level average unit occupancy and party size ratios developed by the District.

D. Net Commuter Population

The net commuter population projections were based on net commuter data from the 2000 Census at the tract level. A census era ratio was developed by tract of net commuters to permanent population. This ratio was then applied to future projections of permanent population to derive projections for net commuter population. That population was then “functionalized” with the following ratios:

1. 8 / 24 (typical working hours per day)
2. 5 / 7 (typical working days per week)

By applying both of these ratios to the net commuter population, the resulting functional net commuter population is 23.8% of the actual net commuter population. This functional number better reflects the water use that is expected for net commuters.

SUMMARIZE BY UTILITY SERVICE AREAS

The parcel-level results are then summarized by water utility retail service area boundaries for all utilities District-wide that average 0.1 mgd or greater of total water use. These boundaries, maintained by the District, are overlaid with each county's parcel-level results, and each parcel within a service area is assigned a unique identifier for that service area. The projected population can then be summarized by that identifier and joined to the District's potable service area database to produce tabular or GIS output.

Spatial Incongruity of Boundaries

Due to mapping errors, the service area boundaries do often bisect parcel boundaries. However, the error associated with this spatial incongruity at the parcel level is inconsequential. (This is one of the benefits of disaggregating census block-level data to the parcel level.) Parcels are deemed to be within a given service area if its center point (or "centroids") falls inside the service area boundary. The percentage of parcels erroneously attributed or excluded from a service area by this process is insignificant.

FINAL RESULTS

The final results are provided in tabular format (Microsoft Excel spreadsheet) and GIS format (Environmental Research Systems Institute's (ESRI's file based geodatabase). The utility-level spreadsheets were distributed by District staff to utilities for comparison with their own and/or other projections for their service areas. If there are discrepancies, the spatial results (each county's parcel-level population layer) are useful in that they graphically depict projected patterns of future growth. The spatial data is available for download from GIS Associates' server via File Transfer Protocol (FTP).

The population projections detailed in Tables 3 – 19 are the sum of the functionalized seasonal population, the net commuter population and the tourist population. It should be noted that only positive net commuters were aggregated, service area with negative net commuters were not penalized.

There are some uncertainties with the model projections and in some instances the projections detailed in Tables 3 – 19 may not match the raw model output in the tabular format (Microsoft Excel spreadsheet) and the GIS format (ESRI's file based geodatabase). As the parcel level projections are summarized by water utility retail service area boundaries, if the service area is incorrect or includes domestic self supply population that is not delineated as self-served the aggregated population could be less than or greater than what the utility is actually projected to serve. Upon review and identification of such cases (including stakeholder input), the functional

population for such instances was revised to reflect the correct service area boundaries and/or reduction of domestic self supply.

Water Demand Projections

Water demand projections are calculated for the years 2010, 2015, 2020, 2025 and 2030. To develop these projections, the District used the 2003 – 2007 average per capita water use rate and applied it to the projected populations, described above. For example, in Pasco County (Table 14), the 2003 – 2007 average per capita rate for small utilities was 110 gpd. For future year water demand projections, the projected population for small utilities is multiplied by the 2003 - 2007 average per capita rate of 110. For example, in the year 2010, the service population of small utilities in Pasco County is projected to be 36,535; to develop the estimated demand for that same year and population, 36,535 is multiplied by 110, for an estimated small utility demand in the year 2010 of 4 mgd. (Rounding may account for nominal discrepancies.)

Water demand projections included in the attached tables are generally consistent with water use projections provided in the District's 2005 Regional Water Supply Plan. Of the 16 counties within the District, water demand projections in Sumter County reflect by far the largest change from the published 2005 RWSP Appendices projections. As provided in Table 18, the 2010 water use projection has changed from 17 mgd in the published 2005 RWSP Appendices to 23 mgd, or an increase of almost 37 percent in projected water demand. This is largely due to the significant and recent growth in areas such as The Villages and On Top of the World, as well as Wildwood. Other factors that have changed the projections in other counties such as Hillsborough can be attributed to the change in methodology for the per capita rate used, the change in methodology and threshold for the large utility category, and the general trend of decreases in per capita water use reported by permittees in Hillsborough County. For example, the City of Tampa's per capita water use rate was reported to be 139 gpd in the published 2005 RWSP (which uses 2000 as the base year and references utility-reported per capita water use rates from the Estimated Water Use report, 2001). Table 9, which reflects a five year average of the utility-reported per capita water use rates, provides the City of Tampa's 2003 – 2007 average per capita water use rate as 118 *gpd*. The City of Tampa's population comprises 54 percent of Hillsborough County's total population, so this decrease in per capita water use significantly impacts the county-wide projections.

This trend is consistently observed in all large utilities in Hillsborough County. The reduction in per capita water use in Hillsborough County may be attributed to a variety of factors, including indoor and outdoor conservation and source substitution. An example of source substitution is water users developing supplies separate from the utility's supply system. Such use is not reflected in the metered data submitted to the District and would usually take the form of private wells used for outdoor irrigation at residences that are connected to the central utility system for indoor water use.

1-in-10 Drought Event

The 1-in-10 "is an event that results in an increase in water demand of a magnitude that would have a 10 percent probability of occurring during any given year," (Final Report: 1-in-10-year Drought Requirement in Florida's Water Supply Planning Process, September 2001). The 1-in-10 year Drought Subcommittee of the Water Planning Coordination Group, as stated in their final report, determined that a six percent increase in demand will occur in such an event for public supply water use. Therefore, the 1-in-10 year water demand projections are the average year demands times 1.06.

Residential Irrigation Wells

These are defined as private wells smaller than 6", that do not require a District Water Use Permit, utilized for outdoor irrigation purposes at residences that are connected to and receive potable water service for indoor use from a central utility system and are addressed in a separate report titled "Southwest Florida Water Management District Irrigation Well Inventory," D.L. Smith and Associates, August 12, 2004. This report provides the estimated number of domestic irrigation wells within the District and their associated water demand. This information was updated and incorporated into the attached Public Supply demand projections, Table 21 attached. Currently the District estimates that approximately 300 gpd are used for each irrigation well. The District, in cooperation with the University of Florida, IFAS is currently undergoing a five year study to determine more accurately how much water is used for outdoor irrigation in the different regions of the District.

Review

This technical memorandum, including demand projection tables, was provided to Regulation staff and public use stakeholders for review. Comments were incorporated as appropriated. It is important to note that as this is a long term planning effort, and methodology changes based on short term trends were not incorporated, but considered as public supply population and water use is continually monitored. Comments and suggested changes were only taken into consideration if they were justifiable, defensible, based on historical regression data and long term trends, and supported by complete documentation.

The District understands and shares stakeholder's concerns of how critically important accurate demand projections are, however, the District must comply with Chapter 373.0361, Florida Statutes (F.S.) which sets forth requirements for regional water supply planning. (*"Population projections used for determining public water supply needs must be based upon the best available data. In determining the best available data, the district shall consider the University of Florida's Bureau of Economic and Business Research (BEBR) medium population projections and any population projection data and analysis submitted by a local government pursuant to the public workshop described in subsection if the data and analysis support the local government's comprehensive plan."*)

Tables and Figures

Tables 1 and 2 provide permanent and functional future populations for each county. Tables 3 – 19 provide county population and public supply water demand estimates and projections on a

county-wide basis. Both average year demand and the one-in-ten drought year demands are reflected in these tables. Table 20 summarizes the information on a county-wide basis and provides public supply water demand information on the basis of SWUCA, NTB and District planning regions. Table 21 summarizes the existing irrigation wells and the exponential growth rate used to project future irrigation wells.

Summary

Overall, for the Public Supply sector, the District is expecting an increase in demand of 283 mgd by 2030 in the 16 county area. The 283 mgd increase by 2030 is distributed as follows; 72 mgd increase in the Northern Planning Region, 91 mgd increase in the Tampa Bay Planning Region, 75 mgd increase in the Heartland Planning Region, and 45 mgd in the Southern Planning Region. Even though the District is expecting an overall increase in the Public Supply sector, the projected demands have decreased from those projected in the previous 2005 RWSP. Reasons for this reduction include using a five year average per capita versus a one year per capita to project demand, more accurate utility level population projections using a GIS model that take into account growth and build out at the parcel level, and the reduction of the threshold for large utilities to 100,000 gpd permitted average versus the previous 500,000 gpd permitted average which allows for more accurate demand projections.

References

Estimated Water Use reports 2003 - 2007, Southwest Florida Water Management District, December 2006, June 2007, June 2008, and February 2009,

Estimates of 2005 Census Populations by Political and Geographic Boundaries of the SWFWMD, GIS Associates, Inc., February 2008,

Projections of Florida Population by County, 2005 – 2030, Bureau of Economic and Business Research, February 2006,

Projections of Florida Population by County, 2007 – 2035, Bureau of Economic and Business Research, March 2008,

The Small-Area Population Projection Methodology of The Southwest Florida Water Management District, September 29, 2008,

Updates to The Southwest Florida Water Management District's Small-Area Population Projection Model, GIS Associates, Inc., September 29, 2008, and

Updates to The Southwest Florida Water Management District's Small-Area Population Projection Model, GIS Associates, Inc., April 17, 2009.

Appendix 3-3

Public Supply Data Tables

Water Supply Assessment Population and Demand Projections

Water Supply Assessment
Public Supply Population and Demand Projections
Southwest Florida Water Management District
04/21/2009 DRAFT RWSP Update

Table 1. County-Wide Permanent Population Projections

County	BEBR Medium Permanent Population ¹						Permanent Population ²					
	2005	2010	2015	2020	2025	2030	2005	2010	2015	2020	2025	2030
Charlotte	154,030	169,700	183,300	195,900	208,000	219,300	153,907	157,630	170,638	182,854	194,673	205,746
Citrus	132,635	145,000	158,200	170,300	182,000	192,900	130,897	145,000	158,200	170,300	182,001	192,901
DeSoto	32,606	34,700	37,500	39,200	40,700	42,100	31,638	34,700	37,500	39,200	40,700	42,100
Hardee	27,333	27,700	28,300	28,700	29,200	29,600	26,311	27,909	28,300	28,700	29,200	29,600
Hernando	150,784	169,100	187,800	205,100	221,900	237,600	150,784	169,100	187,800	205,100	221,900	237,600
Highlands	93,456	101,600	109,400	116,500	123,400	129,800	92,337	101,600	109,400	116,500	123,400	129,800
Hillsborough	1,131,546	1,234,900	1,346,600	1,449,900	1,549,900	1,643,400	1,131,546	1,234,867	1,346,566	1,449,865	1,549,863	1,643,359
Lake	263,017	303,500	347,900	389,500	430,200	468,700	286,409	293,428	336,371	377,467	417,708	455,481
Levy	37,985	41,400	45,200	48,600	52,000	55,100	36,958	41,400	45,200	48,600	51,999	55,099
Manatee	304,364	327,500	358,400	387,000	414,600	440,500	304,364	331,945	362,887	391,502	419,104	445,026
Marion	304,926	340,500	381,400	419,300	456,300	491,100	301,082	331,354	372,258	410,180	447,213	482,023
Pasco	406,898	454,200	507,400	556,600	604,500	649,500	406,898	454,233	507,434	556,636	604,537	649,541
Pinellas	947,744	950,300	966,900	982,200	997,000	1,010,900	947,744	950,300	966,900	982,200	991,854	991,854
Polk	541,840	602,500	660,500	713,900	765,500	813,800	541,307	602,500	660,500	713,900	765,500	813,800
Sarasota	367,867	400,600	436,100	468,800	500,300	529,800	367,867	408,225	444,275	477,345	509,123	538,828
Sumter	74,052	97,400	117,400	136,100	154,500	172,100	74,052	109,938	117,395	136,074	154,439	172,028
Total	4,971,083	5,400,600	5,872,300	6,307,600	6,730,000	7,126,200	4,984,101	5,394,129	5,851,624	6,286,423	6,703,214	7,084,786

Reference Sources for County-Wide Permanent and Permanent Population Projections

¹Source for years 2005 - 2030 BEBR Estimates from "Projections of Florida Population by County, 2007-2035," BEBR, March 2008.

²Source for years 2005 - 2030 is based on GIS Associates Population Projection Model, "The Small Area Population Projection Methodology of the Southwest Florida Water Management District," GIS Associates, February 2009.

Water Supply Assessment
Public Supply Population and Demand Projections
Southwest Florida Water Management District
04/21/2009 DRAFT RWSP Update

Table 2. County-Wide Functional Population Projections

County	Share in District ¹	Permanent Population in SWFWMD ¹						Functional Population in SWFWMD ²					
		2005	2010	2015	2020	2025	2030	2005	2010	2015	2020	2025	2030
Charlotte	0.9976	153,657	157,101	170,082	182,273	194,077	205,137	162,671	175,816	189,429	202,145	214,363	225,749
Citrus	1	130,897	145,000	158,200	170,300	182,001	192,901	132,265	164,429	178,835	192,031	204,752	216,608
DeSoto	1	31,638	34,700	37,500	39,200	40,700	42,100	31,638	37,490	40,544	42,415	44,072	45,622
Hardee	1	26,311	27,909	28,300	28,700	29,200	29,600	26,311	31,314	31,791	32,269	32,854	33,133
Hernando	1	150,784	169,100	187,800	205,100	221,900	237,600	154,953	176,258	194,019	211,789	228,102	245,301
Highlands	0.9106	85,096	93,247	100,036	106,291	112,361	117,969	86,412	98,650	105,460	111,272	117,408	123,226
Hillsborough	1	1,131,546	1,234,867	1,346,566	1,449,865	1,549,863	1,643,359	1,213,686	1,348,606	1,434,725	1,509,970	1,606,703	1,703,255
Lake	0.0025	658	720	741	764	780	805	658	720	741	764	780	805
Levy	0.5781	21,368	23,817	26,117	28,243	30,433	32,460	21,368	26,290	28,722	30,974	33,289	35,431
Manatee	1	304,364	331,945	362,887	391,502	419,104	445,026	350,230	412,567	444,689	474,744	503,511	530,600
Marion	0.296	87,860	104,849	123,646	140,420	158,805	177,888	87,860	114,119	134,553	152,349	171,512	191,348
Pasco	1	406,898	454,233	507,434	556,636	604,537	649,541	448,078	514,949	565,435	618,797	670,967	720,105
Pinellas	1	947,744	950,300	966,900	982,200	991,854	991,854	1,075,131	1,116,794	1,135,743	1,154,104	1,166,060	1,166,995
Polk	0.9361	507,199	560,968	612,046	660,973	707,476	750,697	537,474	684,874	780,883	864,056	944,719	1,027,212
Sarasota	1	367,867	408,225	444,275	477,345	509,123	538,828	410,161	445,027	484,873	521,069	555,859	585,503
Sumter	1	74,052	109,938	117,395	136,074	154,439	172,028	82,371	125,948	144,047	172,243	183,881	203,536
Total		4,427,939	4,806,919	5,189,925	5,555,886	5,906,653	6,227,793	4,821,267	5,473,851	5,894,489	6,290,991	6,678,832	7,054,429

Reference Sources for County-Wide Permanent in SWFWMD and Functional Population Projections

¹From Table A-1 of "Estimates of 2005 Census Populations by Political and Geographic Boundaries of the Southwest Florida Water Management District," GIS Associates, February 2008.

²Source for years 2005 - 2030 is based on GIS Associates Population Projection Model, "The Small Area Population Projection Methodology of the Southwest Florida Water Management District," GIS Associates, February 2009.

Water Supply Assessment
Public Supply Population and Demand Projections
Southwest Florida Water Management District
04/21/2009 DRAFT RWSP Update

TABLE 3. CHARLOTTE COUNTY POPULATION ESTIMATES AND PROJECTIONS

	(1)	(2)	(3)					(4)	(5)				
	ESTIMATED 2005 POP	ESTIMATED 2005 WITHDRAWAL (MGD)	2010	2015	2020	2025	2030	2003-2007 AVG GPCD	2010	2015	2020	2025	2030
(6) Domestic-Self Supply	27,152	2.389	31,656	35,121	38,482	41,704	44,878	88	2.786	3.091	3.386	3.670	3.949
(8) Small Utility	1,595	0.179	1,623	1,651	1,667	1,673	1,676	112	0.182	0.185	0.187	0.187	0.188
Gasparilla Island Water Assoc. (718)	3,602	0.998	5,137	5,200	5,224	5,239	5,249	277	1.423	1.440	1.447	1.451	1.454
City of Punta Gorda (871)	31,718	4.187	37,064	39,371	41,214	42,503	43,327	132	4.892	5.197	5.440	5.610	5.719
Charlotte Harbor Water Assoc. (1512)	4,607	0.332	5,152	5,496	5,800	6,076	6,352	72	0.371	0.396	0.418	0.437	0.457
Charlotte County Utilities / Burnt Store (3522)	5,662	0.487	6,120	6,440	6,818	7,260	7,769	86	0.526	0.554	0.586	0.624	0.668
Charlotte County Utilities (7104)	87,977	8.358	88,706	95,722	102,431	109,327	115,882	95	8.427	9.094	9.731	10.386	11.009
Island Harbor Beach Club (7768)	358	0.039	358	428	509	581	616	109	0.039	0.047	0.055	0.063	0.067
(9) Additional Irrigation Demand	4,099	1.230	4,430	4,773	5,093	5,401	5,688		1.329	1.432	1.528	1.620	1.706
Total County	162,671	18.198	175,816	189,429	202,145	214,363	225,749		19.975	21.435	22.779	24.051	25.218
(7) 1-10 Drought Year Demand									21.174	22.721	24.146	25.494	26.731

Notes:

MGD = million gallons per day

(1) From SWFWMD, 2005 Estimated Water Use Report, Table A-1 (June 2007).

(2) Estimated using average 2003-2007 GPCD, as provided in Table A-1 of the District's reports titled *Estimated Water Use, 2003-2007*.

(3) Projected County Population source for years 2010-2030 are utility specific projections based on GIS Associates Population Projection Model, "The Small Area Population Projection Methodology of the Southwest Florida Water Management District," GIS Associates, February 2009.

(4) For utilities with at least 0.1 mgd average annual withdrawal (i.e., the utilities individually listed in the table), year 2003-2007 average estimated per capita water use rates, as provided in Table A-1 of the District's reports titled *Estimated Water Use, 2003-2007* were used to project demands. See footnotes 6 and 8 for descriptions of the per capita used for the Domestic Self-Supply and Small Utility.

(5) Computed as projected population multiplied by 2001-2005 average per capita water use.

(6) County residential per capita rate from the District's reports titled *Estimated Water Use, 2003-2007* was used to calculate average estimated 2003-2007 usage, Table A-2. If a county residential per capita rate was not available, the District's 2003-2007 average residential per capita rate was used.

(7) 1-10 Drought Year Demand is calculated as 1.06 x Projected Future Water Use.

(8) Small Utility population is the "Additional Population" of Table 1, 2005 Estimated Water Use, District (June 2007). Small Utility 2005 Population Unit Use (Per Capita) is defined as follows: [the sum of "Estimated Water Use" and "Reported Water Use" on Table 1] divided by [the "Additional Population" from Table 1] of the District's reports titled *Estimated Water Use (2003-2007)*.

(9) Additional Irrigation Demand is defined as water demand from residential irrigation wells utilized by residents that depend upon a centralized system for indoor water needs. See attached table.

Water Supply Assessment
Public Supply Population and Demand Projections
Southwest Florida Water Management District
04/21/2009 DRAFT RWSP Update

TABLE 4. CITRUS COUNTY POPULATION ESTIMATES AND PROJECTIONS

	(1)	(2)	(3)					(4)	(5)				
	ESTIMATED 2005 POP	ESTIMATED 2005 WITHDRAWAL (MGD)	2010	2015	2020	2025	2030	2003-2007 AVG GPCD	2010	2015	2020	2025	2030
(6) Domestic-Self Supply	40,478	5.060	40,835	41,192	41,586	42,224	43,171	125	5.104	5.149	5.198	5.278	5.396
(8) Small Utility	5,842	1.034	6,035	6,317	6,441	6,547	6,665	177	1.068	1.118	1.140	1.159	1.180
City of Crystal River (207)	3,685	0.652	12,132	12,582	12,915	13,332	13,773	177	2.147	2.227	2.286	2.360	2.438
City of Inverness (419)	9,300	1.535	24,457	26,126	27,628	29,324	31,368	165	4.035	4.311	4.559	4.838	5.176
Floral City Water Association (1118)	5,668	0.317	6,876	7,169	7,371	7,574	7,850	56	0.385	0.401	0.413	0.424	0.440
Citrus Co. Water Resources / Citrus Springs (2842)	13,080	2.367	14,894	17,567	21,036	25,031	29,119	181	2.696	3.180	3.808	4.531	5.271
Rolling Oaks Utilities Inc (4153)	12,242	2.179	12,653	12,700	12,704	12,726	12,777	178	2.252	2.261	2.261	2.265	2.274
Homasassa Special Water District (4406)	6,075	0.790	6,488	7,013	7,588	7,972	8,353	130	0.843	0.912	0.986	1.036	1.086
Gulf Highway Land Corporation (6691)	578	0.083	590	646	760	816	819	143	0.084	0.092	0.109	0.117	0.117
Citrus Co. & Withlacoochee RWSA (7121)	23,917	4.712	27,851	33,977	38,126	41,608	44,462	197	5.487	6.693	7.511	8.197	8.759
Citrus County Water Resources / Oak Forest (7879)	415	0.049	424	426	426	430	440	119	0.050	0.051	0.051	0.051	0.052
Citrus County Water Resources / Sugarmill (9791)	9,659	2.183	9,743	11,552	13,769	15,373	15,903	226	2.202	2.611	3.112	3.474	3.594
Walden Woods LTD (11839)	752	0.142	832	945	1,058	1,171	1,284	189	0.157	0.179	0.200	0.221	0.243
Citrus Co. Water Resources / Lakeside Estates (13219)	574	0.075	619	623	623	624	624	130	0.080	0.081	0.081	0.081	0.081
(9) Additional Irrigation Demand	2,745	0.824	3,146	3,712	3,986	4,250	4,496		0.944	1.113	1.196	1.275	1.349
Total County	132,265	22.001	164,429	178,835	192,031	204,752	216,608		27.537	30.379	32.910	35.308	37.455
(7) 1-10 Drought Year Demand									29.189	32.201	34.884	37.426	39.702

Notes:

MGD = million gallons per day

(1) From SWFWMD, 2005 Estimated Water Use Report, Table A-1 (June 2007).

(2) Estimated using average 2003-2007 GPCD, as provided in Table A-1 of the District's reports titled *Estimated Water Use, 2003-2007*.

(3) Projected County Population source for years 2010-2030 are utility specific projections based on GIS Associates Population Projection Model, "The Small Area Population Projection Methodology of the Southwest Florida Water Management District," GIS Associates, February 2009.

(4) For utilities with at least 0.1 mgd average annual withdrawal (i.e., the utilities individually listed in the table), year 2003-2007 average estimated per capita water use rates, as provided in Table A-1 of the District's reports titled *Estimated Water Use, 2003-2007* were used to project demands. See footnotes 6 and 8 for descriptions of the per capita used for the Domestic Self-Supply and Small Utility.

(5) Computed as projected population multiplied by 2001-2005 average per capita water use.

(6) County residential per capita rate from the District's reports titled *Estimated Water Use, 2003-2007* was used to calculate average estimated 2003-2007 usage, Table A-2. If a county residential per capita rate was not available, the District's 2003-2007 average residential per capita rate was used.

(7) 1-10 Drought Year Demand is calculated as 1.06 x Projected Future Water Use.

(8) Small Utility population is the "Additional Population" of Table 1, 2005 Estimated Water Use, District (June 2007). Small Utility 2005 Population Unit Use (Per Capita) is defined as follows: [the sum of "Estimated Water Use" and "Reported Water Use" on Table 1] divided by [the "Additional Population" from Table 1] of the District's reports titled *Estimated Water Use (2003-2007)*.

(9) Additional Irrigation Demand is defined as water demand from residential irrigation wells utilized by residents that depend upon a centralized system for indoor water needs. See attached table.

Water Supply Assessment
Public Supply Population and Demand Projections
Southwest Florida Water Management District
04/21/2009 DRAFT RWSP Update

TABLE 5. DESOTO COUNTY POPULATION ESTIMATES AND WATER DEMAND PROJECTIONS

	(1)	(2)	(3)					(4)	(5)				
	ESTIMATED 2005 POP	ESTIMATED 2005 WITHDRAWAL (MGD)	2010	2015	2020	2025	2030	2003-2007 AVG GPCD	2010	2015	2020	2025	2030
(6) Domestic-Self Supply	19,887	1.591	19,968	21,958	23,349	24,643	25,874	80	1.597	1.757	1.868	1.971	2.070
(8) Small Utility	1,188	0.140	1,264	1,366	1,428	1,483	1,534	118	0.149	0.161	0.169	0.175	0.181
City of Arcadia (4725)	8,942	1.091	10,432	10,636	10,756	10,842	10,925	122	1.273	1.298	1.312	1.323	1.333
PRMRWSA / Lake Suzy (10420)	1,621	0.139	5,826	6,584	6,882	7,104	7,289	86	0.501	0.566	0.592	0.611	0.627
(9) Additional Irrigation Demand	626	0.188	695	802	839	871	902		0.208	0.240	0.252	0.261	0.271
Total County	31,638	3.149	37,490	40,544	42,415	44,072	45,622		3.729	4.022	4.192	4.342	4.481
(7) 1-10 Drought Year Demand									3.953	4.263	4.444	4.602	4.750

Notes:

MGD = million gallons per day

(1) From SWFWMD, *2005 Estimated Water Use Report, Table A-1 (June 2007)*.

(2) Estimated using average 2003-2007 GPCD, as provided in Table A-1 of the District's reports titled *Estimated Water Use, 2003-2007*.

(3) Projected County Population source for years 2010-2030 are utility specific projections based on GIS Associates Population Projection Model, "The Small Area Population Projection Methodology of the Southwest Florida Water Management District," GIS Associates, February 2009.

(4) For utilities with at least 0.1 mgd average annual withdrawal (i.e., the utilities individually listed in the table), year 2003-2007 average estimated per capita water use rates, as provided in Table A-1 of the District's reports titled *Estimated Water Use, 2003-2007* were used to project demands. See footnotes 6 and 8 for descriptions of the per capita used for the Domestic Self-Supply and Small Utility.

(5) Computed as projected population multiplied by 2001-2005 average per capita water use.

(6) County residential per capita rate from the District's reports titled *Estimated Water Use, 2003-2007* was used to calculate average estimated 2003-2007 usage, Table A-2. If a county residential per capita rate was not available, the District's 2003-2007 average residential per capita rate was used.

(7) 1-10 Drought Year Demand is calculated as 1.06 x Projected Future Water Use.

(8) Small Utility population is the "Additional Population" of Table 1, *2005 Estimated Water Use, District (June 2007)*. Small Utility 2005 Population Unit Use (Per Capita) is defined as follows: [the sum of "Estimated Water Use" and "Reported Water Use" on Table 1] divided by [the "Additional Population" from Table 1] of the District's reports titled *Estimated Water Use (2003-2007)*.

(9) Additional Irrigation Demand is defined as water demand from residential irrigation wells utilized by residents that depend upon a centralized system for indoor water needs. See attached table.

Water Supply Assessment
Public Supply Population and Demand Projections
Southwest Florida Water Management District
04/21/2009 DRAFT RWSP Update

TABLE 6. HARDEE COUNTY POPULATION ESTIMATES AND WATER DEMAND PROJECTIONS

	(1)	(2)	(3)					(4)	(5)				
	ESTIMATED 2005 POP	ESTIMATED 2005 WITHDRAWAL (MGD)	2010	2015	2020	2025	2030	2003-2007 AVG GPCD	2010	2015	2020	2025	2030
(6) Domestic-Self Supply	13,793	1.076	14,050	14,307	14,580	14,930	15,219	78	1.096	1.116	1.137	1.165	1.187
(8) Small Utility	1,314	0.171	1,332	1,360	1,380	1,404	1,423	130	0.173	0.177	0.179	0.183	0.185
City of Bowling Green (30)	3,072	0.276	3,408	3,416	3,424	3,432	3,238	90	0.307	0.307	0.308	0.309	0.291
City of Wauchula (4461)	6,075	0.954	6,825	6,910	6,995	7,097	7,182	157	1.072	1.085	1.098	1.114	1.128
Town of Zolfo Springs (7658)	1,662	0.223	2,177	2,191	2,202	2,212	2,219	134	0.292	0.294	0.295	0.296	0.297
Hardee County / Wauchula Hills (13026)	395	0.062	3,522	3,607	3,688	3,779	3,852	157	0.553	0.566	0.579	0.593	0.605
(9) Additional Irrigation Demand	597	0.179	711	722	732	746	752		0.213	0.216	0.220	0.224	0.226
Total County	26,311	2.941	31,314	31,791	32,269	32,854	33,133		3.705	3.761	3.817	3.884	3.919
(7) 1-10 Drought Year Demand									3.928	3.987	4.046	4.117	4.154

Notes:

MGD = million gallons per day

(1) From SWFWMD, 2005 Estimated Water Use Report, Table A-1 (June 2007).

(2) Estimated using average 2003-2007 GPCD, as provided in Table A-1 of the District's reports titled *Estimated Water Use, 2003-2007*.

(3) Projected County Population source for years 2010-2030 are utility specific projections based on GIS Associates Population Projection Model, "The Small Area Population Projection Methodology of the Southwest Florida Water Management District," GIS Associates, February 2009.

(4) For utilities with at least 0.1 mgd average annual withdrawal (i.e., the utilities individually listed in the table), year 2003-2007 average estimated per capita water use rates, as provided in Table A-1 of the District's reports titled *Estimated Water Use, 2003-2007* were used to project demands. See footnotes 6 and 8 for descriptions of the per capita used for the Domestic Self-Supply and Small Utility.

(5) Computed as projected population multiplied by 2001-2005 average per capita water use.

(6) County residential per capita rate from the District's reports titled *Estimated Water Use, 2003-2007* was used to calculate average estimated 2003-2007 usage, Table A-2. If a county residential per capita rate was not available, the District's 2003-2007 average residential per capita rate was used.

(7) 1-10 Drought Year Demand is calculated as 1.06 x Projected Future Water Use.

(8) Small Utility population is the "Additional Population" of Table 1, 2005 Estimated Water Use, District (June 2007). Small Utility 2005 Population Unit Use (Per Capita) is defined as follows: [the sum of "Estimated Water Use" and "Reported Water Use" on Table 1] divided by [the "Additional Population" from Table 1] of the District's reports titled *Estimated Water Use (2003-2007)*.

(9) Additional Irrigation Demand is defined as water demand from residential irrigation wells utilized by residents that depend upon a centralized system for indoor water needs. See attached table.

Water Supply Assessment
Public Supply Population and Demand Projections
Southwest Florida Water Management District
04/21/2009 DRAFT RWSP Update

TABLE 7. HERNANDO COUNTY POPULATION ESTIMATES AND WATER DEMAND PROJECTIONS

	(1)	(2)	(3)					(4)	(5)				
	ESTIMATED 2005 POP	ESTIMATED 2005 WITHDRAWAL (MGD)	PROJECTED POPULATION					2003-2007 AVG GPCD	PROJECTED WATER DEMANDS (MGD)				
			2010	2015	2020	2025	2030		2010	2015	2020	2025	2030
(6) Domestic-Self Supply	9,482	1.252	17,379	19,385	25,535	34,406	43,332	132	2.294	2.559	3.371	4.542	5.720
(8) Small Utility	3,405	0.555	3,819	4,241	4,632	5,011	5,365	163	0.622	0.691	0.755	0.817	0.874
Hernando County Water and Sewer (*)	129,476	22.140	138,820	153,193	163,548	169,451	176,076	171	23.738	26.196	27.967	28.976	30.109
City of Brooksville (7627)	12,590	1.397	16,240	17,200	18,074	19,234	20,528	111	1.803	1.909	2.006	2.135	2.279
(9) Additional Irrigation Demand	9,334	2.800	10,618	11,688	12,758	13,741	14,777		3.185	3.506	3.827	4.122	4.433
Total County	154,953	28.145	176,258	194,019	211,789	228,102	245,301		31.643	34.862	37.926	40.592	43.415
(7) 1-10 Drought Year Demand									33.541	36.953	40.202	43.027	46.020

Notes:

MGD = million gallons per day

(1) From SWFWMD, *2005 Estimated Water Use Report, Table A-1 (June 2007)*.

(2) Estimated using average 2003-2007 GPCD, as provided in Table A-1 of the District's reports titled *Estimated Water Use, 2003-2007*.

(3) Projected County Population source for years 2010-2030 are utility specific projections based on GIS Associates Population Projection Model, "The Small Area Population Projection Methodology of the Southwest Florida Water Management District," GIS Associates, February 2009.

(4) For utilities with at least 0.1 mgd average annual withdrawal (i.e., the utilities individually listed in the table), year 2003-2007 average estimated per capita water use rates, as provided in Table A-1 of the District's reports titled *Estimated Water Use, 2003-2007* were used to project demands. See footnotes 6 and 8 for descriptions of the per capita used for the Domestic Self-Supply and Small Utility.

(5) Computed as projected population multiplied by 2001-2005 average per capita water use.

(6) County residential per capita rate from the District's reports titled *Estimated Water Use, 2003-2007* was used to calculate average estimated 2003-2007 usage, Table A-2. If a county residential per capita rate was not available, the District's 2003-2007 average residential per capita rate was used.

(7) 1-10 Drought Year Demand is calculated as 1.06 x Projected Future Water Use.

(8) Small Utility population is the "Additional Population" of Table 1, *2005 Estimated Water Use, District (June 2007)*. Small Utility 2005 Population Unit Use (Per Capita) is defined as follows: [the sum of "Estimated Water Use" and "Reported Water Use" on Table 1] divided by [the "Additional Population" from Table 1] of the District's reports titled *Estimated Water Use (2003-2007)*.

(9) Additional Irrigation Demand is defined as water demand from residential irrigation wells utilized by residents that depend upon a centralized system for indoor water needs. See attached table.

*Includes Permit #s 2179, 2983, 5789, 5817, 12011, 13286.

Water Supply Assessment
Public Supply Population and Demand Projections
Southwest Florida Water Management District
04/21/2009 DRAFT RWSP Update

TABLE 8. HIGHLANDS COUNTY POPULATION ESTIMATES AND WATER DEMAND PROJECTIONS

	(1)	(2)	(3)					(4)	(5)				
	ESTIMATED 2005 POP	ESTIMATED 2005 WITHDRAWAL (MGD)	2010	2015	2020	2025	2030	2003-2007 AVG GPD	2010	2015	2020	2025	2030
(6) Domestic-Self Supply	6,730	0.478	8,718	9,770	10,640	11,693	13,310	71	0.619	0.694	0.755	0.830	0.945
(8) Small Utility	6,353	0.692	6,907	7,437	7,919	8,389	8,824	109	0.753	0.811	0.863	0.914	0.962
Lake Josephine Heights Water (4167,11768)	1,431	0.116	1,454	1,523	1,593	1,668	1,737	81	0.118	0.123	0.129	0.135	0.141
City of Sebring (4492)	33,546	3.288	37,200	39,472	41,675	43,738	45,721	98	3.646	3.868	4.084	4.286	4.481
Lake Placid Holding Company (4980)	3,085	0.275	3,369	3,718	3,718	3,718	3,718	89	0.300	0.331	0.331	0.331	0.331
Town of Lake Placid (5270)	4,040	0.578	4,098	4,337	4,528	4,690	4,840	143	0.586	0.620	0.648	0.671	0.692
City of Avon Park (5786,6029)	15,287	1.544	17,539	18,100	18,605	19,549	19,877	101	1.771	1.828	1.879	1.974	2.008
Highlands Co BOCC / Tomoka Heights (6326)	2,515	0.174	2,540	2,598	2,634	2,654	2,667	69	0.175	0.179	0.182	0.183	0.184
Buttonwood Bay Utilities (7139)	1,932	0.203	4,838	5,330	5,820	6,323	6,810	105	0.508	0.560	0.611	0.664	0.715
Country Club Utilities Inc. (7704)	837	0.248	949	1,046	1,089	1,111	1,125	296	0.281	0.310	0.322	0.329	0.333
Mink Assoc. / Crystal Lake Club (7811)	990	0.156	1,056	1,138	1,214	1,273	1,302	158	0.167	0.180	0.192	0.201	0.206
LP Utilities Inc. (9490)	536	0.047	555	710	784	816	832	88	0.049	0.062	0.069	0.072	0.073
Highlands Ridge Utilities (9516)	1,325	0.249	1,523	1,598	1,641	1,675	1,706	188	0.286	0.300	0.309	0.315	0.321
Sun n Lake of Sebring Improv. District (13099)	7,805	1.186	7,904	8,683	9,412	10,111	10,757	152	1.201	1.320	1.431	1.537	1.635
(9) Additional Irrigation Demand	9,098	2.729	10,387	11,104	11,715	12,362	12,974		3.116	3.331	3.515	3.708	3.892
Total County	86,412	11.963	98,650	105,460	111,272	117,408	123,226		13.576	14.517	15.319	16.151	16.918
(7) 1-10 Drought Year Demand									14.391	15.388	16.238	17.120	17.933

Notes:

MGD = million gallons per day

(1) From SWFWMD, 2005 Estimated Water Use Report, Table A-1 (June 2007).

(2) Estimated using average 2003-2007 GPCD, as provided in Table A-1 of the District's reports titled *Estimated Water Use, 2003-2007*.

(3) Projected County Population source for years 2010-2030 are utility specific projections based on GIS Associates Population Projection Model, "The Small Area Population Projection Methodology of the Southwest Florida Water Management District," GIS Associates, February 2009.

(4) For utilities with at least 0.1 mgd average annual withdrawal (i.e., the utilities individually listed in the table), year 2003-2007 average estimated per capita water use rates, as provided in Table A-1 of the District's reports titled *Estimated Water Use, 2003-2007* were used to project demands. See footnotes 6 and 8 for descriptions of the per capita used for the Domestic Self-Supply and Small Utility.

(5) Computed as projected population multiplied by 2001-2005 average per capita water use.

(6) County residential per capita rate from the District's reports titled *Estimated Water Use, 2003-2007* was used to calculate average estimated 2003-2007 usage, Table A-2. If a county residential per capita rate was not available, the District's 2003-2007 average residential per capita rate was used.

(7) 1-10 Drought Year Demand is calculated as 1.06 x Projected Future Water Use.

(8) Small Utility population is the "Additional Population" of Table 1, 2005 Estimated Water Use, District (June 2007). Small Utility 2005 Population Unit Use (Per Capita) is defined as follows: [the sum of "Estimated Water Use" and "Reported Water Use" on Table 1] divided by [the "Additional Population" from Table 1] of the District's reports titled *Estimated Water Use (2003-2007)*.

(9) Additional Irrigation Demand is defined as water demand from residential irrigation wells utilized by residents that depend upon a centralized system for indoor water needs. See attached table.

Water Supply Assessment
Public Supply Population and Demand Projections
Southwest Florida Water Management District
04/21/2009 DRAFT RWSP Update

TABLE 9. HILLSBOROUGH COUNTY POPULATION ESTIMATES AND WATER DEMAND PROJECTIONS

	(1)	(2)	(3)					(4)	(5)				
	ESTIMATED 2005 POP	ESTIMATED 2005 WITHDRAWAL (MGD)	PROJECTED POPULATION					2003-2007 AVG GPD	PROJECTED WATER DEMANDS (MGD)				
			2010	2015	2020	2025	2030		2010	2015	2020	2025	2030
(6) Domestic-Self Supply	12,227	0.880	27,346	32,402	35,700	76,730	130,497	72	1.969	2.333	2.570	5.525	9.396
(8) Small Utility	15,148	1.727	16,532	18,027	19,410	20,749	22,000	114	1.885	2.055	2.213	2.365	2.508
City of Temple Terrace (450)	31,577	3.726	31,909	33,438	35,401	37,265	38,052	118	3.765	3.946	4.177	4.397	4.490
City of Plant City (1776)	34,528	5.663	38,934	42,049	47,516	52,742	54,852	164	6.385	6.896	7.793	8.650	8.996
City of Tampa (2062)	655,993	77.407	665,474	686,114	700,625	714,962	722,778	118	78.526	80.961	82.674	84.366	85.288
Charles E Springer / Davpam MHP (2285)	1,325	0.115	1,325	1,325	1,325	1,325	1,325	87	0.115	0.115	0.115	0.115	0.115
Eastlake Water Service, Inc. (2707)	2,290	0.229	2,536	2,536	2,536	2,536	2,536	100	0.254	0.254	0.254	0.254	0.254
Hillsborough County (4352,NW)	443,175	45.647	544,287	598,030	646,110	678,506	708,785	103	56.062	61.597	66.549	69.886	73.005
Wilder Mobile Home, Inc / Hawaiian Isles (4757)	1,000	0.093	1,000	1,000	1,000	1,000	1,000	93	0.093	0.093	0.093	0.093	0.093
Tampa Bay Water - Carrollwood (5886)	3,587	0.488	3,587	3,587	3,587	3,587	3,587	136	0.488	0.488	0.488	0.488	0.488
C W Utility Systems LLC (6879)	2,830	0.204	2,830	2,830	2,830	2,830	2,830	72	0.204	0.204	0.204	0.204	0.204
Malco Industries Inc. / Featherock (7002)	1,044	0.113	1,044	1,044	1,044	1,044	1,044	108	0.113	0.113	0.113	0.113	0.113
Cax Riverside LLC (7637)	754	0.173	945	1,486	2,029	2,570	3,112	230	0.217	0.342	0.467	0.591	0.716
Uniprop Income Fund II (7790)	1,228	0.074	2,849	2,849	2,849	2,849	2,849	60	0.171	0.171	0.171	0.171	0.171
Windemere Utility Company (10443)	3,080	0.367	3,080	3,080	3,080	3,080	3,080	119	0.367	0.367	0.367	0.367	0.367
Pebble Creek Utilities (12994)	3,900	0.452	4,928	4,928	4,928	4,928	4,928	116	0.572	0.572	0.572	0.572	0.572
(9) Additional Irrigation Demand	6,512	1.954	7,236	7,698	8,102	8,621	9,139		2.171	2.309	2.431	2.586	2.742
Total County	1,213,686	139.311	1,348,606	1,434,725	1,509,970	1,606,703	1,703,255		153.355	162.815	171.249	180.741	189.515
SWUCA	240,795	27.639	273,014	302,509	335,488	382,281	417,040		30.993	34.202	37.847	42.554	45.713
(7) 1-10 Drought Year Demand									162.556	172.584	181.524	191.586	200.886

Notes:

MGD = million gallons per day

(1) From SWFWMD, 2005 Estimated Water Use Report, Table A-1 (June 2007).

(2) Estimated using average 2003-2007 GPCD, as provided in Table A-1 of the District's reports titled *Estimated Water Use, 2003-2007*.

(3) Projected County Population source for years 2010-2030 are utility specific projections based on GIS Associates Population Projection Model, "The Small Area Population Projection Methodology of the Southwest Florida Water Management District," GIS Associates, February 2009.

(4) For utilities with at least 0.1 mgd average annual withdrawal (i.e., the utilities individually listed in the table), year 2003-2007 average estimated per capita water use rates, as provided in Table A-1 of the District's reports titled *Estimated Water Use, 2003-2007* were used to project demands. See footnotes 6 and 8 for descriptions of the per capita used for the Domestic Self-Supply and Small Utility.

(5) Computed as projected population multiplied by 2001-2005 average per capita water use.

(6) County residential per capita rate from the District's reports titled *Estimated Water Use, 2003-2007* was used to calculate average estimated 2003-2007 usage, Table A-2. If a county residential per capita rate was not available, the District's 2003-2007 average residential per capita rate was used.

(7) 1-10 Drought Year Demand is calculated as 1.06 x Projected Future Water Use.

(8) Small Utility population is the "Additional Population" of Table 1, *2005 Estimated Water Use, District (June 2007)*. Small Utility 2005 Population Unit Use (Per Capita) is defined as follows: [the sum of "Estimated Water Use" and "Reported Water Use" on Table 1] divided by [the "Additional Population" from Table 1] of the District's reports titled *Estimated Water Use (2003-2007)*.

(9) Additional Irrigation Demand is defined as water demand from residential irrigation wells utilized by residents that depend upon a centralized system for indoor water needs. See attached table.

Water Supply Assessment
Public Supply Population and Demand Projections
Southwest Florida Water Management District
04/21/2009 DRAFT RWSP Update

TABLE 10. LAKE COUNTY POPULATION ESTIMATES AND WATER DEMAND PROJECTIONS

	(1)	(2)	(3)					(4)	(5)				
	ESTIMATED 2005 POP	ESTIMATED 2005 WITHDRAWAL (MGD)	2010	2015	2020	2025	2030	2003-2007 AVG GPD	2010	2015	2020	2025	2030
(6) Domestic-Self Supply	658	0.053	720	741	764	780	805	80	0.058	0.059	0.061	0.062	0.064
(8) Additional Irrigation Demand	16	0.005	17	18	18	19	19		0.005	0.005	0.006	0.006	0.006
Total County	658	0.057	720	741	764	780	805		0.063	0.065	0.067	0.068	0.070
(7) 1-10 Drought Year Demand									0.067	0.069	0.071	0.072	0.074

Notes:

MGD = million gallons per day

(1) From SWFWMD, 2005 *Estimated Water Use Report, Table A-1 (June 2007)*.

(2) Estimated using average 2003-2007 GPCD, as provided in Table A-1 of the District's reports titled *Estimated Water Use, 2003-2007*.

(3) Projected County Population source for years 2010-2030 are utility specific projections based on GIS Associates Population Projection Model, "The Small Area Population Projection Methodology of the Southwest Florida Water Management District," GIS Associates, February 2009.

(4) For utilities with at least 0.1 mgd average annual withdrawal (i.e., the utilities individually listed in the table), year 2003-2007 average estimated per capita water use rates, as provided in Table A-1 of the District's reports titled *Estimated Water Use, 2003-2007* were used to project demands. See footnotes 6 and 8 for descriptions of the per capita used for the Domestic Self-Supply and Small Utility.

(5) Computed as projected population multiplied by 2001-2005 average per capita water use.

(6) County residential per capita rate from the District's reports titled *Estimated Water Use, 2003-2007* was used to calculate average estimated 2003-2007 usage, Table A-2. If a county residential per capita rate was not available, the District's 2003-2007 average residential per capita rate was used.

(7) 1-10 Drought Year Demand is calculated as 1.06 x Projected Future Water Use.

(8) Small Utility population is the "Additional Population" of Table 1, 2005 *Estimated Water Use, District (June 2007)*. Small Utility 2005 Population Unit Use (Per Capita) is defined as follows: [the sum of "Estimated Water Use" and "Reported Water Use" on Table 1] divided by [the "Additional Population" from Table 1] of the District's reports titled *Estimated Water Use (2003-2007)*.

(9) Additional Irrigation Demand is defined as water demand from residential irrigation wells utilized by residents that depend upon a centralized system for indoor water needs. See attached table.

Water Supply Assessment
Public Supply Population and Demand Projections
Southwest Florida Water Management District
04/21/2009 DRAFT RWSP Update

TABLE 11. LEVY COUNTY POPULATION ESTIMATES AND WATER DEMAND PROJECTIONS

	(1)	(2)	(3)					(4)	(5)				
	ESTIMATED 2005 POP	ESTIMATED 2005 WITHDRAWAL (MGD)	2010	2015	2020	2025	2030	2003-2007 AVG GPCD	2010	2015	2020	2025	2030
(6) Domestic-Self Supply	15,068	1.673	19,148	21,290	23,325	25,472	27,476	111	2.125	2.363	2.589	2.827	3.050
(8) Small Utility	700	0.089	764	822	879	932	981	127	0.097	0.104	0.112	0.118	0.125
City of Williston (5640)	3,495	0.517	3,870	4,002	4,084	4,132	4,166	148	0.573	0.592	0.604	0.612	0.617
Town of Yankeetown (7755)	705	0.085	792	805	815	826	836	120	0.095	0.097	0.098	0.099	0.100
Town of Inglis (8953)	1,400	0.148	1,716	1,803	1,871	1,927	1,972	106	0.182	0.191	0.198	0.204	0.209
(9) Additional Irrigation Demand	121	0.036	149	163	176	189	201		0.045	0.049	0.053	0.057	0.060
Total County	21,368	2.548	26,290	28,722	30,974	33,289	35,431		3.117	3.396	3.654	3.917	4.161
(7) 1-10 Drought Year Demand									3.304	3.600	3.873	4.152	4.410

Notes:

MGD = million gallons per day

(1) From SWFWMD, 2005 Estimated Water Use Report, Table A-1 (June 2007).

(2) Estimated using average 2003-2007 GPCD, as provided in Table A-1 of the District's reports titled *Estimated Water Use, 2003-2007*.

(3) Projected County Population source for years 2010-2030 are utility specific projections based on GIS Associates Population Projection Model, "The Small Area Population Projection Methodology of the Southwest Florida Water Management District," GIS Associates, February 2009.

(4) For utilities with at least 0.1 mgd average annual withdrawal (i.e., the utilities individually listed in the table), year 2003-2007 average estimated per capita water use rates, as provided in Table A-1 of the District's reports titled *Estimated Water Use, 2003-2007* were used to project demands. See footnotes 6 and 8 for descriptions of the per capita used for the Domestic Self-Supply and Small Utility.

(5) Computed as projected population multiplied by 2001-2005 average per capita water use.

(6) County residential per capita rate from the District's reports titled *Estimated Water Use, 2003-2007* was used to calculate average estimated 2003-2007 usage, Table A-2. If a county residential per capita rate was not available, the District's 2003-2007 average residential per capita rate was used.

(7) 1-10 Drought Year Demand is calculated as 1.06 x Projected Future Water Use.

(8) Small Utility population is the "Additional Population" of Table 1, 2005 Estimated Water Use, District (June 2007). Small Utility 2005 Population Unit Use (Per Capita) is defined as follows: [the sum of "Estimated Water Use" and "Reported Water Use" on Table 1] divided by [the "Additional Population" from Table 1] of the District's reports titled *Estimated Water Use (2003-2007)*.

(9) Additional Irrigation Demand is defined as water demand from residential irrigation wells utilized by residents that depend upon a centralized system for indoor water needs. See attached table.

Water Supply Assessment
Public Supply Population and Demand Projections
Southwest Florida Water Management District
04/21/2009 DRAFT RWSP Update

TABLE 12. MANATEE COUNTY POPULATION ESTIMATES AND WATER DEMAND PROJECTIONS

	(1)	(2)	(3)					(4)	(5)				
	ESTIMATED 2005 POP	ESTIMATED 2005 WITHDRAWAL (MGD)	PROJECTED POPULATION					2003-2007 AVG GPCD	PROJECTED WATER DEMANDS (MGD)				
			2010	2015	2020	2025	2030		2010	2015	2020	2025	2030
(6) Domestic-Self Supply	1,955	0.158	3,535	6,082	8,486	11,567	14,233	81	0.286	0.493	0.687	0.937	1.153
(8) Small Utility	387	0.045	416	456	492	527	560	115	0.048	0.052	0.057	0.061	0.064
Manatee County (5387,7345,7470)	257,048	30.075	314,966	342,970	369,167	393,812	417,028	117	36.851	40.127	43.193	46.076	48.792
City of Bradenton (6392)	54,304	5.756	54,893	55,316	56,423	57,020	57,805	106	5.819	5.863	5.981	6.044	6.127
Longboat Key (10963)	23,501	2.021	23,501	23,501	23,501	23,501	23,501	86	2.021	2.021	2.021	2.021	2.021
City of Palmetto (12443)	13,035	1.473	15,256	16,364	16,675	17,084	17,473	113	1.724	1.849	1.884	1.930	1.974
(9) Additional Irrigation Demand	4,199	1.260	4,946	5,332	5,692	6,037	6,362		1.484	1.599	1.708	1.811	1.908
Total County	350,230	40.787	412,567	444,689	474,744	503,511	530,600		48.233	52.006	55.530	58.880	62.041
(7) 1-10 Drought Year Demand									51.127	55.126	58.862	62.413	65.763

Notes:

MGD = million gallons per day

(1) From SWFWMD, *2005 Estimated Water Use Report, Table A-1 (June 2007)*.

(2) Estimated using average 2003-2007 GPCD, as provided in Table A-1 of the District's reports titled *Estimated Water Use, 2003-2007*.

(3) Projected County Population source for years 2010-2030 are utility specific projections based on GIS Associates Population Projection Model, "The Small Area Population Projection Methodology of the Southwest Florida Water Management District," GIS Associates, February 2009.

(4) For utilities with at least 0.1 mgd average annual withdrawal (i.e., the utilities individually listed in the table), year 2003-2007 average estimated per capita water use rates, as provided in Table A-1 of the District's reports titled *Estimated Water Use, 2003-2007* were used to project demands. See footnotes 6 and 8 for descriptions of the per capita used for the Domestic Self-Supply and Small Utility.

(5) Computed as projected population multiplied by 2001-2005 average per capita water use.

(6) County residential per capita rate from the District's reports titled *Estimated Water Use, 2003-2007* was used to calculate average estimated 2003-2007 usage, Table A-2. If a county residential per capita rate was not available, the District's 2003-2007 average residential per capita rate was used.

(7) 1-10 Drought Year Demand is calculated as 1.06 x Projected Future Water Use.

(8) Small Utility population is the "Additional Population" of Table 1, *2005 Estimated Water Use, District (June 2007)*. Small Utility 2005 Population Unit Use (Per Capita) is defined as follows: [the sum of "Estimated Water Use" and "Reported Water Use" on Table 1] divided by [the "Additional Population" from Table 1] of the District's reports titled *Estimated Water Use (2003-2007)*.

(9) Additional Irrigation Demand is defined as water demand from residential irrigation wells utilized by residents that depend upon a centralized system for indoor water needs. See attached table.

Water Supply Assessment
Public Supply Population and Demand Projections
Southwest Florida Water Management District
04/21/2009 DRAFT RWSP Update

TABLE 13. MARION COUNTY POPULATION ESTIMATES AND WATER DEMAND PROJECTIONS

	(1)	(2)	(3)					(4)	(5)				
	ESTIMATED 2005 POP	ESTIMATED 2005 WITHDRAWAL (MGD)	2010	2015	2020	2025	2030	2003-2007 AVG GPCD	2010	2015	2020	2025	2030
(6) Domestic-Self Supply	40,906	5.481	41,678	49,077	57,172	66,761	77,352	134	5.585	6.576	7.661	8.946	10.365
(8) Small Utility	4,925	0.872	6,657	7,776	8,724	9,541	9,973	177	1.178	1.376	1.544	1.689	1.765
Marion County Utilities / Summerglenn (377)	9,248	1.184	16,883	24,142	29,103	34,399	39,787	128	2.161	3.090	3.725	4.403	5.093
On Top of The World Communities Inc (1156)	5,824	1.613	8,443	9,100	9,603	10,023	10,645	277	2.339	2.521	2.660	2.776	2.949
Marion Utilities Inc. (2999)	681	0.127	681	681	681	681	681	187	0.127	0.127	0.127	0.127	0.127
Rainbow Springs Utilities LC (4257)	2,774	0.613	3,013	3,448	3,807	4,107	4,424	221	0.666	0.762	0.841	0.908	0.978
Utilities Inc. of Florida / Golden Hills (5643)	1,785	0.173	1,841	1,945	2,063	2,217	2,449	97	0.179	0.189	0.200	0.215	0.238
Marion County Utilities (6151)	9,093	1.628	12,603	13,718	14,506	15,264	15,870	179	2.256	2.456	2.597	2.732	2.841
Sateke Village Utilities Hoa (6290)	76	0.009	87	87	87	88	88	124	0.011	0.011	0.011	0.011	0.011
Sun Communities Operating LP (6792)	845	0.123	845	845	845	845	845	146	0.123	0.123	0.123	0.123	0.123
Marion Utilities Inc. (7849)	807	0.149	954	1,055	1,109	1,138	1,166	185	0.176	0.195	0.205	0.211	0.216
Century Fairfield Village LTD (8005)	513	0.107	513	513	513	513	513	208	0.107	0.107	0.107	0.107	0.107
Marion Landingd HOA (8020)	1,144	0.180	1,196	1,196	1,196	1,196	1,196	157	0.188	0.188	0.188	0.188	0.188
Marion County Utilities / Quail Meadow (8165)	500	0.109	1,009	1,051	1,107	1,189	1,295	217	0.219	0.228	0.240	0.258	0.281
City of Dunnellon (8339)	2,770	0.346	6,135	7,064	8,166	9,255	10,151	125	0.767	0.883	1.021	1.157	1.269
Marion Utilities Inc. / Spruce Creek (8481)	3,000	0.723	5,533	6,469	6,903	7,100	7,246	241	1.333	1.559	1.664	1.711	1.746
Windstream Utilities Co (9360)	1,440	0.589	2,333	2,518	2,700	2,903	3,152	409	0.954	1.030	1.104	1.187	1.289
Upchurch Marinas / Sweetwater (9425)	249	0.069	452	452	452	452	452	277	0.125	0.125	0.125	0.125	0.125
Marion County Utilities (11752)	80	0.043	1,833	1,886	1,950	2,038	2,149	536	0.982	1.011	1.045	1.092	1.152
Marion County Utilities / Spruce Creek (12218)	1,200	0.584	1,430	1,530	1,662	1,802	1,914	487	0.696	0.745	0.809	0.878	0.932
(9) Additional Irrigation Demand	1,251	0.375	1,624	1,915	2,169	2,441	2,724		0.487	0.575	0.651	0.732	0.817
Total County	87,860	15.098	114,119	134,553	152,349	171,512	191,348		20.661	23.877	26.649	29.577	32.611
(7) 1-10 Drought Year Demand									21.900	25.309	28.248	31.351	34.568

Notes:

MGD = million gallons per day

(1) From SWFWMD, 2005 Estimated Water Use Report, Table A-1 (June 2007).

(2) Estimated using average 2003-2007 GPCD, as provided in Table A-1 of the District's reports titled *Estimated Water Use, 2003-2007*.

(3) Projected County Population source for years 2010-2030 are utility specific projections based on GIS Associates Population Projection Model, "The Small Area Population Projection Methodology of the Southwest Florida Water Management District," GIS Associates, February 2009.

(4) For utilities with at least 0.1 mgd average annual withdrawal (i.e., the utilities individually listed in the table), year 2003-2007 average estimated per capita water use rates, as provided in Table A-1 of the District's reports titled *Estimated Water Use, 2003-2007 were used to project demands*. See footnotes 6 and 8 for descriptions of the per capita used for the Domestic Self-Supply and Small Utility.

(5) Computed as projected population multiplied by 2001-2005 average per capita water use.

(6) County residential per capita rate from the District's reports titled *Estimated Water Use, 2003-2007* was used to calculate average estimated 2003-2007 usage, Table A-2. If a county residential per capita rate was not available, the District's 2003-2007 average residential per capita rate was used.

(7) 1-10 Drought Year Demand is calculated as 1.06 x Projected Future Water Use.

(8) Small Utility population is the "Additional Population" of Table 1, *2005 Estimated Water Use, District (June 2007)*. Small Utility 2005 Population Unit Use (Per Capita) is defined as follows: [the sum of "Estimated Water Use" and "Reported Water Use" on Table 1] divided by [the "Additional Population" from Table 1] of the District's reports titled *Estimated Water Use (2003-2007)*.

(9) Additional Irrigation Demand is defined as water demand from residential irrigation wells utilized by residents that depend upon a centralized system for indoor water needs. See attached table.

Water Supply Assessment
Public Supply Population and Demand Projections
Southwest Florida Water Management District
04/21/2009 DRAFT RWSP Update

TABLE 14. PASCO COUNTY POPULATION ESTIMATES AND WATER DEMAND PROJECTIONS

	(1)	(2)	(3)					(4)	(5)				
	ESTIMATED 2005 POP	ESTIMATED 2005 WITHDRAWAL (MGD)	2010	2015	2020	2025	2030	2003-2007 AVG GPD	2010	2015	2020	2025	2030
(6) Domestic-Self Supply	51,015	4.540	54,598	61,765	77,146	95,001	111,418	89	4.859	5.497	6.866	8.455	9.916
(8) Small Utility	32,730	3.600	36,535	40,814	44,772	48,625	52,244	110	4.019	4.490	4.925	5.349	5.747
Aqua Utilities Florida Inc. / Jasmine (279)	3,311	0.268	3,311	3,311	3,311	3,311	3,311	81	0.268	0.268	0.268	0.268	0.268
Holiday Gardens Utilities Inc. (540)	944	0.084	944	944	944	944	944	89	0.084	0.084	0.084	0.084	0.084
Crestridge Utility Corporation (543)	1,226	0.092	1,230	1,230	1,230	1,230	1,230	75	0.092	0.092	0.092	0.092	0.092
Mad Hatter Utilities Inc. (590)	4,973	0.860	4,973	4,973	4,973	4,973	4,973	173	0.860	0.860	0.860	0.860	0.860
C.S. Water Co. Inc / Crystal Springs (964)	848	0.118	891	957	1,042	1,094	1,172	139	0.124	0.133	0.145	0.152	0.163
City of Dade City (1631)	12,090	1.439	17,458	18,555	19,811	21,335	23,120	119	2.078	2.208	2.358	2.539	2.751
Orangewood Lakes Mobile Home (2043)	1,047	0.086	1,047	1,047	1,047	1,047	1,047	82	0.086	0.086	0.086	0.086	0.086
Lindrick Service Corp (2978)	9,279	0.714	9,805	10,317	10,560	10,685	10,736	77	0.755	0.794	0.813	0.823	0.827
Aloha Utilities Inc. / Seven Springs (3182)	31,866	3.282	33,480	36,205	37,736	38,824	39,842	103	3.448	3.729	3.887	3.999	4.104
Utilities Inc. of Florida / Buena Vista (3590)	2,763	0.155	3,102	3,122	3,122	3,122	3,122	56	0.174	0.175	0.175	0.175	0.175
Tierre Verde Utility / Summertree (3668)	2,313	0.164	2,848	3,196	3,353	3,405	3,418	71	0.202	0.227	0.238	0.242	0.243
Floralino Properties Inc. (3677)	2,097	0.099	2,097	2,097	2,097	2,097	2,097	47	0.099	0.099	0.099	0.099	0.099
City of Port Richey (3692)	9,692	0.969	10,707	11,158	11,437	11,725	12,057	100	1.071	1.116	1.144	1.173	1.206
City of San Antonio (4550)	1,000	0.151	1,120	1,274	1,377	1,471	1,566	151	0.169	0.192	0.208	0.222	0.236
Tierre Verde Utilities Inc. (4668)	1,478	0.108	1,678	1,678	1,678	1,678	1,678	73	0.122	0.122	0.122	0.122	0.122
Hudson Water Works Inc (4669)	7,598	0.676	7,643	8,171	8,603	9,116	9,728	89	0.680	0.727	0.766	0.811	0.866
City of New Port Richey (4734)	29,825	2.983	30,539	31,549	32,212	32,625	32,929	100	3.054	3.155	3.221	3.263	3.293
City of Zephyrhills (6040)	21,728	2.586	32,553	34,394	35,799	37,342	39,161	119	3.874	4.093	4.260	4.444	4.660
Labrador Utilities Inc. (6867)	2,245	0.092	4,765	4,826	4,873	4,897	4,912	41	0.195	0.198	0.200	0.201	0.201
Pasco Utilities Inc. / Angus Valley (7999)	1,720	0.151	2,359	2,437	2,490	2,538	2,558	88	0.208	0.214	0.219	0.223	0.225
Aloha Utilities Inc. / Aloha Gardens (8417)	8,230	0.379	8,588	8,568	8,572	8,573	8,574	46	0.395	0.394	0.394	0.394	0.394
Pasco Co. Utilities (11863)	208,060	24.759	242,678	272,847	300,612	325,309	348,268	119	28.879	32.469	35.773	38.712	41.444
(9) Additional Irrigation Demand	11,761	3.528	13,516	14,841	16,242	17,611	18,901		4.055	4.452	4.872	5.283	5.670
Total County	448,078	51.884	514,949	565,435	618,797	670,967	720,105		59.850	65.875	72.075	78.070	83.733
(7) 1-10 Drought Year Demand									63.441	69.828	76.399	82.755	88.757

Notes:

MGD = million gallons per day

(1) From SWFWMD, 2005 Estimated Water Use Report, Table A-1 (June 2007).

(2) Estimated using average 2003-2007 GPCD, as provided in Table A-1 of the District's reports titled *Estimated Water Use, 2003-2007*.

(3) Projected County Population source for years 2010-2030 are utility specific projections based on GIS Associates Population Projection Model, "The Small Area Population Projection Methodology of the Southwest Florida Water Management District," GIS Associates, February 2009.

(4) For utilities with at least 0.1 mgd average annual withdrawal (i.e., the utilities individually listed in the table), year 2003-2007 average estimated per capita water use rates, as provided in Table A-1 of the District's reports titled *Estimated Water Use, 2003-2007* were used to project demands. See footnotes 6 and 8 for descriptions of the per capita used for the Domestic Self-Supply and Small Utility.

(5) Computed as projected population multiplied by 2001-2005 average per capita water use.

(6) County residential per capita rate from the District's reports titled *Estimated Water Use, 2003-2007* was used to calculate average estimated 2003-2007 usage, Table A-2. If a county residential per capita rate was not available, the District's 2003-2007 average residential per capita rate was used.

(7) 1-10 Drought Year Demand is calculated as 1.06 x Projected Future Water Use.

(8) Small Utility population is the "Additional Population" of Table 1, 2005 *Estimated Water Use, District (June 2007)*. Small Utility 2005 Population Unit Use (Per Capita) is defined as follows: [the sum of "Estimated Water Use" and "Reported Water Use" on Table 1] divided by [the "Additional Population" from Table 1] of the District's reports titled *Estimated Water Use (2003-2007)*.

(9) Additional Irrigation Demand is defined as water demand from residential irrigation wells utilized by residents that depend upon a centralized system for indoor water needs. See attached table.

Water Supply Assessment
Public Supply Population and Demand Projections
Southwest Florida Water Management District
04/21/2009 DRAFT RWSP Update

TABLE 15. PINELLAS COUNTY POPULATION ESTIMATES AND WATER DEMAND PROJECTIONS

	(1)	(2)	(3)					(4)	(5)				
	ESTIMATED 2005 POP	ESTIMATED 2005 WITHDRAWAL (MGD)	2010	2015	2020	2025	2030	2003-2007 AVG GPD	2010	2015	2020	2025	2030
(6) Domestic Self Supply	4,948	0.351	5,474	5,696	5,723	5,741	5,741	71	0.389	0.404	0.406	0.408	0.408
(8) Small Utility	1,423	0.138	1,427	1,452	1,475	1,497	1,518	97	0.138	0.141	0.143	0.145	0.147
City of Tarpon Springs (742)	31,749	3.492	33,105	34,259	35,301	35,826	35,848	110	3.642	3.768	3.883	3.941	3.943
City of Dunedin (2980)	39,141	4.071	39,729	40,227	40,395	40,478	40,488	104	4.132	4.184	4.201	4.210	4.211
City of Clearwater (2981)	146,832	12.481	151,768	153,044	153,790	154,317	154,508	85	12.900	13.009	13.072	13.117	13.133
City of Bellair (7692)	5,172	0.967	5,299	5,377	5,399	5,418	5,432	187	0.991	1.005	1.010	1.013	1.016
Tierre Verde Inc. / Lake Tarpon (10350)	1,285	0.062	1,799	1,799	1,799	1,799	1,799	48	0.086	0.086	0.086	0.086	0.086
City of Gulfport (10795)	14,435	1.126	14,518	14,726	14,763	14,778	14,780	78	1.132	1.149	1.152	1.153	1.153
City of Oldsmar (11218)	18,482	1.589	19,772	21,104	21,819	21,945	21,961	86	1.700	1.815	1.876	1.887	1.889
City of Safety Harbor (11245)	17,750	2.219	17,750	17,750	17,750	17,750	17,750	125	2.219	2.219	2.219	2.219	2.219
City of Pinellas Park (12351)	75,573	4.459	79,925	81,520	81,722	81,843	81,868	59	4.716	4.810	4.822	4.829	4.830
Pinellas County	425,390	45.517	447,138	456,514	471,399	481,568	482,037	107	47.844	48.847	50.440	51.528	51.578
City of St. Petersburg	292,951	27.830	299,090	302,275	302,769	303,100	303,265	95	28.414	28.716	28.763	28.795	28.810
(9) Additional Irrigation Demand	12,273	3.682	12,748	12,965	13,174	13,311	13,321		3.825	3.889	3.952	3.993	3.996
Total County	1,075,131	107.984	1,116,794	1,135,743	1,154,104	1,166,060	1,166,995		112.127	114.042	116.025	117.323	117.419
(7) 1-10 Drought Year Demand									118.855	120.885	122.987	124.362	124.464

Notes:

MGD = million gallons per day

(1) From SWFWMD, 2005 Estimated Water Use Report, Table A-1 (June 2007).

(2) Estimated using average 2003-2007 GPCD, as provided in Table A-1 of the District's reports titled *Estimated Water Use, 2003-2007*.

(3) Projected County Population source for years 2010-2030 are utility specific projections based on GIS Associates Population Projection Model, "The Small Area Population Projection Methodology of the Southwest Florida Water Management District," GIS Associates, February 2009.

(4) For utilities with at least 0.1 mgd average annual withdrawal (i.e., the utilities individually listed in the table), year 2003-2007 average estimated per capita water use rates, as provided in Table A-1 of the District's reports titled *Estimated Water Use, 2003-2007* were used to project demands. See footnotes 6 and 8 for descriptions of the per capita used for the Domestic Self-Supply and Small Utility.

(5) Computed as projected population multiplied by 2001-2005 average per capita water use.

(6) County residential per capita rate from the District's reports titled *Estimated Water Use, 2003-2007* was used to calculate average estimated 2003-2007 usage, Table A-2. If a county residential per capita rate was not available, the District's 2003-2007 average residential per capita rate was used.

(7) 1-10 Drought Year Demand is calculated as 1.06 x Projected Future Water Use.

(8) Small Utility population is the "Additional Population" of Table 1, 2005 Estimated Water Use, District (June 2007). Small Utility 2005 Population Unit Use (Per Capita) is defined as follows: [the sum of "Estimated Water Use" and "Reported Water Use" on Table 1] divided by [the "Additional Population" from Table 1] of the District's reports titled *Estimated Water Use (2003-2007)*.

(9) Additional Irrigation Demand is defined as water demand from residential irrigation wells utilized by residents that depend upon a centralized system for indoor water needs. See attached table.

Water Supply Assessment
Public Supply Population and Demand Projections
Southwest Florida Water Management District
04/21/2009 DRAFT RWSP Update

TABLE 16. POLK COUNTY POPULATION ESTIMATES AND WATER DEMAND PROJECTIONS

	(1)	(2)	(3)					(4)	(5)				
	ESTIMATED 2005 POP	ESTIMATED 2005 WITHDRAWAL (MGD)	2010	2015	2020	2025	2030	2003-2007 AVG GPCD	2010	2015	2020	2025	2030
(6) Domestic-Self Supply	5,074	0.482	5,795	6,354	6,868	7,322	7,738	95	0.551	0.604	0.652	0.696	0.735
(8) Small Utility	21,025	2.901	23,379	25,629	27,701	29,704	31,578	138	3.226	3.537	3.823	4.099	4.358
Mountain Lake Corporation (143)	312	0.083	320	328	354	382	398	266	0.085	0.087	0.094	0.102	0.106
(10) City of Bartow (341)	20,047	3.208	23,881	32,272	39,901	47,991	57,721	160	3.821	5.164	6.384	7.679	9.235
City of Fort Meade (645)	6,942	0.784	7,841	8,402	8,744	9,113	9,522	113	0.886	0.949	0.988	1.030	1.076
Lake Region Moblie HOA (1616)	1,026	0.068	1,214	1,214	1,214	1,214	1,214	66	0.080	0.080	0.080	0.080	0.080
Four Lakes Golf Club LTD (1625)	1,840	0.350	2,066	2,066	2,066	2,066	2,066	190	0.393	0.393	0.393	0.393	0.393
Town of Lake Hamilton (2332)	1,500	0.218	1,909	2,079	2,186	2,316	2,467	145	0.277	0.301	0.317	0.336	0.358
SweetwaterEast / Lake Henry (2449)	1,019	0.124	1,019	1,019	1,019	1,019	1,019	122	0.124	0.124	0.124	0.124	0.124
Orchid Springs Development Corp. (3415)	700	0.083	851	852	852	852	852	119	0.101	0.101	0.101	0.101	0.101
Park Water Co. / Crooked Lake (4005)	2,012	0.227	2,752	2,846	2,937	3,027	3,113	113	0.311	0.322	0.332	0.342	0.352
(10) City of Winter Haven (4607)	65,766	9.733	85,135	95,000	105,676	116,149	127,660	148	12.600	14.060	15.640	17.190	18.894
City of Lake Wales (4658)	20,140	2.759	24,774	28,016	31,268	33,409	34,811	137	3.394	3.838	4.284	4.577	4.769
City of Lakeland (4912)	166,345	23.122	189,998	208,306	225,167	240,029	253,690	139	26.410	28.955	31.298	33.364	35.263
Grenelefe (5251)	3,140	0.672	3,163	3,224	3,285	3,324	3,342	214	0.677	0.690	0.703	0.711	0.715
(10) Polk County / NERUSA (5471,6509)	57,927	7.762	89,101	104,762	120,423	137,366	156,678	134	11.940	14.038	16.137	18.407	20.995
City of Davenport (5750)	3,978	0.597	5,522	6,280	7,078	8,040	9,187	150	0.828	0.942	1.062	1.206	1.378
(10) City of Frostproof (5870)	2,900	0.363	5,581	12,554	14,632	18,664	23,805	125	0.698	1.569	1.829	2.333	2.976
Town of Dundee(5893)	3,728	0.526	4,636	5,010	5,379	5,804	6,179	141	0.654	0.706	0.758	0.818	0.871
City of Mulberry (6124)	4,878	0.424	5,572	6,108	6,603	7,039	7,439	87	0.485	0.531	0.574	0.612	0.647
Saddlebag Lake Owners Assoc. (6174)	1,361	0.069	1,423	1,444	1,447	1,447	1,447	51	0.073	0.074	0.074	0.074	0.074
Polk County / NWRSA (6505)	23,100	3.026	41,239	46,374	50,392	52,407	53,946	131	5.402	6.075	6.601	6.865	7.067
Polk County / SWRSA (6506)	29,447	3.534	38,100	42,929	47,348	51,234	55,078	120	4.572	5.151	5.682	6.148	6.609
Polk County / CRSA (6507)	12,230	1.480	13,088	14,465	16,146	18,120	20,290	121	1.584	1.750	1.954	2.193	2.455
Polk County / SERSA (6508)	5,900	0.732	6,638	11,567	13,644	14,266	14,915	124	0.823	1.434	1.692	1.769	1.849
City of Lake Alfred (6624)	5,584	0.804	8,262	8,816	9,546	10,289	10,910	144	1.190	1.270	1.375	1.482	1.571
City of Eagle Lake (6920)	2,502	0.268	6,668	7,367	8,176	9,202	10,085	107	0.713	0.788	0.875	0.985	1.079
City of Auburndale (7119)	26,129	4.782	29,634	30,892	32,034	33,371	34,744	183	5.423	5.653	5.862	6.107	6.358
CHC VII Century Realty Fund / Lake Henry (7187)	1,964	0.395	1,964	1,964	1,964	1,964	1,964	201	0.395	0.395	0.395	0.395	0.395
Carefree Country Club (7328)	750	0.125	992	993	993	993	993	166	0.165	0.165	0.165	0.165	0.165
Aqua Utility Florida Inc. / Lake Gibson (7878)	2,023	0.235	2,070	2,073	2,073	2,073	2,073	116	0.240	0.240	0.240	0.240	0.240
Polk County / ERSA (8054)	4,584	0.495	7,774	9,425	10,781	12,384	14,134	108	0.840	1.018	1.164	1.337	1.526
S V Utilities LTD / Swiss Village (8344)	1,564	0.213	1,564	1,564	1,564	1,564	1,564	136	0.213	0.213	0.213	0.213	0.213
City of Polk City (8468)	2,200	0.246	5,984	9,767	10,948	12,289	13,494	112	0.670	1.094	1.226	1.376	1.511
City of Haines City (8522)	22,650	3.601	29,134	33,018	37,657	42,184	44,858	159	4.632	5.250	5.987	6.707	7.132
Plantation Landings Ltd (8753)	911	0.079	911	911	911	911	911	87	0.079	0.079	0.079	0.079	0.079
Sweetwater Community Inc. (8967)	1,028	0.140	1,028	1,028	1,028	1,028	1,028	136	0.140	0.140	0.140	0.140	0.140
Village of Highland Park (9807)	261	0.103	261	261	261	261	261	394	0.103	0.103	0.103	0.103	0.103
Cypress Lakes Utilities Inc. (8472 / 13043)	2,987	0.406	3,631	3,704	3,790	3,902	4,038	136	0.494	0.504	0.515	0.531	0.549
(9) Additional Irrigation Demand	4,893	1.468	6,235	7,109	7,866	8,601	9,352		1.871	2.133	2.360	2.580	2.806
Total County	537,474	76.686	684,874	780,883	864,056	944,719	1,027,212		97.160	110.520	122.276	133.689	145.348
SWUCA	487,865	69.608	621,660	708,807	784,304	857,521	932,400		88.192	100.319	110.990	121.349	131.933
(7) 1-10 Drought Year Demand									102.990	117.152	129.613	141.710	154.069

Notes:

MGD = million gallons per day

(1) From SWFWMD, 2005 Estimated Water Use Report, Table A-1 (June 2007).

(2) Estimated using average 2003-2007 GPCD, as provided in Table A-1 of the District's reports titled *Estimated Water Use, 2003-2007*.

(3) Projected County Population source for years 2010-2030 are utility specific projections based on GIS Associates Population Projection Model, "The Small Area Population Projection Methodology of the Southwest Florida Water Management District," GIS Associates, February 2009.

(4) For utilities with at least 0.1 mgd average annual withdrawal (i.e., the utilities individually listed in the table), year 2003-2007 average estimated per capita water use rates, as provided in Table A-1 of the District's reports titled *Estimated Water Use, 2003-2007* were used to project demands. See footnotes 6 and 8 for descriptions of the per capita used for the Domestic Self-Supply and Small Utility.

(5) Computed as projected population multiplied by 2001-2005 average per capita water use.

(6) County residential per capita rate from the District's reports titled *Estimated Water Use, 2003-2007* was used to calculate average estimated 2003-2007 usage, Table A-2. If a county residential per capita rate was not available, the District's 2003-2007 average residential per capita rate was used.

(7) 1-10 Drought Year Demand is calculated as 1.06 x Projected Future Water Use.

(8) Small Utility population is the "Additional Population" of Table 1, 2005 *Estimated Water Use, District (June 2007)*. Small Utility 2005 Population Unit Use (Per Capita) is defined as follows: [the sum of "Estimated Water Use" and "Reported Water Use" on Table 1] divided by [the "Additional Population" from Table 1] of the District's reports titled *Estimated Water Use (2003-2007)*.

(9) Additional Irrigation Demand is defined as water demand from residential irrigation wells utilized by residents that depend upon a centralized system for indoor water needs. See attached table.

(10) The City of Bartow, City of Winter Haven, City of Frostproof, and Polk County NERUSA supplied acceptable methodology for future demand during the water use permit renewal evaluations and Central Florida Coordination Area Planning evaluations.

Water Supply Assessment
Public Supply Population and Demand Projections
Southwest Florida Water Management District
04/21/2009 DRAFT RWSP Update

TABLE 17. SARASOTA COUNTY POPULATION ESTIMATES AND WATER DEMAND PROJECTIONS

	(1)	(2)	(3)					(4)	(5)				
	ESTIMATED 2005 POP	ESTIMATED 2005 WITHDRAWAL (MGD)	2010	2015	2020	2025	2030	2003-2007 AVG GPCD	2010	2015	2020	2025	2030
(6) Domestic-Self Supply	4,667	0.313	5,013	5,479	5,905	6,280	6,623	67	0.336	0.367	0.396	0.421	0.444
(8) Small Utility	3,420	0.287	3,724	4,305	4,358	4,651	4,925	84	0.313	0.362	0.366	0.391	0.414
City of North Port (2923)	36,588	2.488	43,365	53,856	66,247	78,737	85,386	68	2.949	3.662	4.505	5.354	5.806
City of Sarasota (4318)	71,762	7.391	74,869	76,934	77,267	77,616	78,714	103	7.712	7.924	7.959	7.994	8.108
Englewood Water District (4866)	47,472	2.658	51,695	54,395	57,306	60,759	65,539	56	2.895	3.046	3.209	3.403	3.670
City of Venice (5393)	24,666	2.195	28,140	30,011	30,285	30,676	31,204	89	2.504	2.671	2.695	2.730	2.777
Camelot Communities MHP LP (5807)	1,976	0.113	2,542	2,542	2,542	2,542	2,542	57	0.145	0.145	0.145	0.145	0.145
Royalty Resorts / Sun N Fun RV (7448)	2,600	0.117	2,600	2,600	2,600	2,600	2,600	45	0.117	0.117	0.117	0.117	0.117
Sarasota County (8836, 4709)	217,010	18.880	233,079	254,751	274,559	291,998	307,970	87	20.278	22.163	23.887	25.404	26.793
(9) Additional Irrigation Demand	12,163	3.649	13,197	14,379	15,452	16,484	17,363		3.959	4.314	4.636	4.945	5.209
Total County	410,161	38.092	445,027	484,873	521,069	555,859	585,503		41.207	44.771	47.914	50.903	53.483
(7) 1-10 Drought Year Demand									43.680	47.457	50.788	53.958	56.692

Notes:

MGD = million gallons per day

(1) From SWFWMD, 2005 Estimated Water Use Report, Table A-1 (June 2007).

(2) Estimated using average 2003-2007 GPCD, as provided in Table A-1 of the District's reports titled *Estimated Water Use, 2003-2007*.

(3) Projected County Population source for years 2010-2030 are utility specific projections based on GIS Associates Population Projection Model, "The Small Area Population Projection Methodology of the Southwest Florida Water Management District," GIS Associates, February 2009.

(4) For utilities with at least 0.1 mgd average annual withdrawal (i.e., the utilities individually listed in the table), year 2003-2007 average estimated per capita water use rates, as provided in Table A-1 of the District's reports titled *Estimated Water Use, 2003-2007* were used to project demands. See footnotes 6 and 8 for descriptions of the per capita used for the Domestic Self-Supply and Small Utility.

(5) Computed as projected population multiplied by 2001-2005 average per capita water use.

(6) County residential per capita rate from the District's reports titled *Estimated Water Use, 2003-2007* was used to calculate average estimated 2003-2007 usage, Table A-2. If a county residential per capita rate was not available, the District's 2003-2007 average residential per capita rate was used.

(7) 1-10 Drought Year Demand is calculated as 1.06 x Projected Future Water Use.

(8) Small Utility population is the "Additional Population" of Table 1, 2005 Estimated Water Use, District (June 2007). Small Utility 2005 Population Unit Use (Per Capita) is defined as follows: [the sum of "Estimated Water Use" and "Reported Water Use" on Table 1] divided by [the "Additional Population" from Table 1] of the District's reports titled *Estimated Water Use (2003-2007)*.

(9) Additional Irrigation Demand is defined as water demand from residential irrigation wells utilized by residents that depend upon a centralized system for indoor water needs. See attached table.

Water Supply Assessment
Public Supply Population and Demand Projections
Southwest Florida Water Management District
04/21/2009 DRAFT RWSP Update

TABLE 18. SUMTER COUNTY POPULATION ESTIMATES AND WATER DEMAND PROJECTIONS

	(1)	(2)	(3)					(4)	(5)				
	ESTIMATED 2005 POP	ESTIMATED 2005 WITHDRAWAL (MGD)	2010	2015	2020	2025	2030	2003-2007 AVG GPCD	2010	2015	2020	2025	2030
(6) Domestic-Self Supply	22,695	3.291	25,855	28,863	34,125	40,374	57,729	145	3.749	4.185	4.948	5.854	8.371
(8) Small Utility	1,962	0.361	1,997	1,997	1,997	1,997	1,997	184	0.367	0.367	0.367	0.367	0.367
Lake Panasoffkee Water Assoc. Inc. (1368)	4,380	0.337	5,008	5,202	5,770	6,570	6,816	77	0.386	0.401	0.444	0.506	0.525
Continental Country Club RO Inc. (2622)	2,906	0.427	2,906	2,921	2,961	3,122	3,204	147	0.427	0.429	0.435	0.459	0.471
City of Bushnell (6519)	2,119	0.394	4,639	4,790	5,182	6,218	6,828	186	0.863	0.891	0.964	1.157	1.270
City of Webster (7185)	819	0.093	1,364	1,431	1,627	1,702	1,800	114	0.155	0.163	0.185	0.194	0.205
Cedar Acres, Inc. (7799)	637	0.045	649	707	915	1,203	1,293	70	0.045	0.049	0.064	0.084	0.091
City of Wildwood (8135)	12,450	2.079	16,764	21,027	29,781	32,545	33,274	167	2.800	3.512	4.973	5.435	5.557
City of Center Hill (8193)	983	0.069	1,621	1,666	1,816	2,081	2,526	70	0.113	0.117	0.127	0.146	0.177
Sumter WCA / Villages WCA / N Sumter (13005)	33,420	7.252	65,145	75,443	88,069	88,069	88,069	217	14.136	16.371	19.111	19.111	19.111
(9) Additional Irrigation Demand	707	0.212	1,081	1,236	1,478	1,578	1,747		0.324	0.371	0.444	0.473	0.524
Total County	82,371	14.561	125,948	144,047	172,243	183,881	203,536		23.367	26.856	32.064	33.786	36.668
(7) 1-10 Drought Year Demand									24.769	28.468	33.987	35.814	38.868

Notes:

MGD = million gallons per day

(1) From SWFWMD, 2005 *Estimated Water Use Report, Table A-1 (June 2007)*.

(2) Estimated using average 2003-2007 GPCD, as provided in Table A-1 of the District's reports titled *Estimated Water Use, 2003-2007*.

(3) Projected County Population source for years 2010-2030 are utility specific projections based on GIS Associates Population Projection Model, "The Small Area Population Projection Methodology of the Southwest Florida Water Management District," GIS Associates, February 2009.

(4) For utilities with at least 0.1 mgd average annual withdrawal (i.e., the utilities individually listed in the table), year 2003-2007 average estimated per capita water use rates, as provided in Table A-1 of the District's reports titled *Estimated Water Use, 2003-2007* were used to project demands. See footnotes 6 and 8 for descriptions of the per capita used for the Domestic Self-Supply and Small Utility.

(5) Computed as projected population multiplied by 2001-2005 average per capita water use.

(6) County residential per capita rate from the District's reports titled *Estimated Water Use, 2003-2007* was used to calculate average estimated 2003-2007 usage, Table A-2. If a county residential per capita rate was not available, the District's 2003-2007 average residential per capita rate was used.

(7) 1-10 Drought Year Demand is calculated as 1.06 x Projected Future Water Use.

(8) Small Utility population is the "Additional Population" of Table 1, *2005 Estimated Water Use, District (June 2007)*. Small Utility 2005 Population Unit Use (Per Capita) is defined as follows: [the sum of "Estimated Water Use" and "Reported Water Use" on Table 1] divided by [the "Additional Population" from Table 1] of the District's reports titled *Estimated Water Use (2003-2007)*.

(9) Additional Irrigation Demand is defined as water demand from residential irrigation wells utilized by residents that depend upon a centralized system for indoor water needs. See attached table.

Water Supply Assessment
Public Supply Population and Demand Projections
Southwest Florida Water Management District
04/21/2009 DRAFT RWSP Update

TABLE 19. DISTRICT TOTAL POPULATION ESTIMATES AND WATER DEMAND PROJECTIONS

	(1)	(2)	(3)					(4)	(5)				
	ESTIMATED 2005 POP	ESTIMATED 2005 WITHDRAWAL (MGD)	2010	2015	2020	2025	2030	2003-2007 GPCD	2010	2015	2020	2025	2030
Domestic-Self Supply	276,735	29.068	321,768	359,482	409,386	505,628	625,396	104	33.403	37.246	42.553	51.586	63.169
Small Utility	101,417	12.791	112,411	123,650	133,275	142,730	151,263	126	14.219	15.627	16.842	18.019	19.065
Large Utility	4,443,115	507.426	5,039,672	5,411,357	5,748,330	6,030,474	6,277,770	116	584.298	630.839	673.578	708.265	738.932
(6) Additional Irrigation Demand	80,395	24.118	91,276	98,291	104,902	111,369	117,633		27.383	29.487	31.471	33.411	35.290
Total District	4,821,267	573.403	5,473,851	5,894,489	6,290,991	6,678,832	7,054,429	120	659.303	713.200	764.444	811.281	856.455
1-10 Drought Year Demand									698.862	755.992	810.311	859.958	907.842

Notes:

MGD = million gallons per day

(1) Sum of County Populations from Tables 4-22A through 4-37A

(2) Sum of County Withdrawals from Tables 4-22A through 4-37A

(3) Sum of County Projected Populations from Tables 4-22A through 4-37A

(4) Calculated as the average per capita use rate from the sum of all County population, by category, and that category's associated use. For example, the 2010 District-wide Domestic Self Supply projected use of 33.404 mgd divided by the associated population of 321,780 yields a per capita rate of 104 gpcd. Rounding errors account for nominal discrepancies.

(5) Sum of County Projected Future Water Use from Tables 4-22A through 4-37A

(6) Additional Irrigation Demand is defined as water demand from residential irrigation wells utilized by residents that depend upon a centralized system for indoor water needs. See attached table.

Water Supply Assessment
Public Supply Population and Demand Projections
Southwest Florida Water Management District
04/21/2009 DRAFT RWSP Update

TABLE 20. DISTRICT TOTAL WATER DEMAND PROJECTIONS BY REGION

Water Use by Planning Region	2005		2010		2015		2020		2025		2030		Change in Demand		% Change	
	Avg	1-in-10	Avg	1-in-10	Avg	1-10										
SWUCA	212.376	225.119	249.611	264.587	275.033	291.535	298.387	316.291	322.114	341.441	343.705	364.327	131.329	139.208	62%	62%
Northern Tampa Bay (NTB) Area	271.539	287.832	294.339	311.999	308.531	327.043	321.502	340.792	333.580	353.595	344.954	365.652	73.415	77.820	27%	27%
Southern 10 Counties (Previous RWSP Planning Region)	490.994	520.453	552.917	586.092	593.765	629.391	631.176	669.046	668.034	708.116	702.075	744.199	211.081	223.746	43%	43%
2010 RWSP Northern Planning Region	82.410	87.354	106.387	112.770	119.434	126.600	133.269	141.265	143.248	151.843	154.380	163.643	71.971	76.289	87%	87%
2010 RWSP Tampa Bay Planning Region	299.179	317.129	325.332	344.851	342.733	363.297	359.349	380.910	376.134	398.702	390.667	414.107	91.488	96.978	31%	31%
2010 RWSP Heartland Planning Region	91.589	97.084	114.441	121.308	128.799	136.527	141.412	149.897	153.723	162.947	166.185	176.156	74.596	79.072	81%	81%
2010 RWSP Southern Planning Region	100.226	106.239	113.144	119.933	122.234	129.568	130.415	138.240	138.176	146.466	145.223	153.936	44.997	47.697	45%	45%
16-County District Total	573.403	607.808	659.303	698.862	713.200	755.992	764.444	810.311	811.281	859.958	856.455	907.842	283.052	300.035	49%	49%

Hillsborough County SWUCA Water Use Calculation:

Year 2005 SWUCA water use is 19.84% of total county water use; 2005 EWU Report, Table A-1, Permittees in the SWUCA
Assumes 100% of those utilities' service areas in SWUCA (includes south-central)
2025 & 2030 36% total county, based on TBW Long-Term Demand Forecasting Model, June 2004; 2005 - 2025 increased by 20% of 2025 growth per five year increment

Polk County SWUCA Water Use Calculation:

Year 2005 SWUCA water use is 90.77% of total county water use; 2005 EWU Report, Table A-1, Permittees in the SWUCA
This percentage is assumed to remain constant through the planning horizon

NTB Area = Hillsborough minus portion in SWUCA, 100% Pinellas, and 100% Pasco

Southern 10 Counties = Charlotte, DeSoto, Hardee, Highlands, Hillsborough, Manatee, Pasco, Pinellas, Polk, Sarasota

2010 RWSP Planning Regions

Northern Planning Region = Citrus, Hernando, Lake, Levy, Marion, Sumter

Tampa Bay Planning Region = Hillsborough, Pasco, Pinellas

Heartland Planning Region = Hardee, Highlands, Polk

Southern Planning Region = Charlotte, DeSoto, Manatee, Sarasota

Water Supply Assessment
 Public Supply Population and Demand Projections
 Southwest Florida Water Management District
 04/21/2009 DRAFT RWSP Update

TABLE 21. RESIDENTIAL IRRIGATION WELL DATA AND CALCULATIONS

	Functional Population (1)		2005 - 2010 Annual Exponential Pop. Growth Rate (2)	2002 Irrigation Wells (3)		2005 Irrigation Well Estimates (4)	
	2005	2010		# Wells	Withdrawal (mgd)	# Wells	Withdrawal (mgd)
Charlotte	162,671	175,816	0.01554	3,912	1.17	4,099	1.23
Citrus	132,265	164,429	0.04353	2,409	0.72	2,745	0.82
DeSoto	31,638	37,490	0.03394	565	0.17	626	0.19
Hardee	26,311	31,314	0.03482	538	0.16	597	0.18
Hernando	154,953	176,258	0.02577	8,640	2.59	9,334	2.80
Highlands	86,412	98,650	0.02649	8,403	2.52	9,098	2.73
Hillsborough	1,213,686	1,348,606	0.02108	6,113	1.83	6,512	1.95
Lake	658	720	0.01801	15	0.00	16	0.00
Levy	21,368	26,290	0.04146	107	0.03	121	0.04
Manatee	350,230	412,567	0.03276	3,806	1.14	4,199	1.26
Marion	87,860	114,119	0.05230	1,069	0.32	1,251	0.38
Pasco	448,078	514,949	0.02782	10,819	3.25	11,761	3.53
Pinellas	1,075,131	1,116,794	0.00760	11,996	3.60	12,273	3.68
Polk	537,474	684,874	0.04847	4,231	1.27	4,893	1.47
Sarasota	410,161	445,027	0.01632	11,582	3.47	12,163	3.65
Sumter	82,371	125,948	0.08493	548	0.16	707	0.21

General Note: Residential irrigation well data was developed by a consultant (*Southwest Florida Water Management District Irrigation Well Inventory*, August 12, 2004, D.L. Smith and Associates). The results of the study included the estimated number of residential irrigation wells and associated withdrawal within the District as of 2002. To develop an estimate of the number of residential irrigation wells in 2005, it was assumed that the number of irrigation wells and associated withdrawal is increasing proportionally with county population from the 2005 to 2010 time frame. Calculations are presented in this table.

(1) From Table 4-21A of this Technical Memorandum

(2) Growth Rates calculations are based on the assumption that county 2005 - 2010 county population growth patterns are growing exponentially and consistently with a pattern described by the exponential growth rate expression as follows:

$N = N_0 e^{rt}$, where:

N = Final Population

N_0 = Initial Population

e = the exponential (2.71828....)

r = growth rate

t = length of time

This column solves for the county growth rates (r) by defining variables as follows: N = 2010 county population, N_0 = 2005 county population, t = 5 years; r = 2005 - 2010 Annual Exponential Population Growth Rate, in years, = $[\ln(N/N_0)] / [t \ln(e)]$

(3) From *Southwest Florida Water Management District Irrigation Well Inventory*, August 12, 2004, D.L. Smith and Associates, Table 4.

(4) The # wells in 2005 is calculated by inserting the annual exponential growth rate calculated for population growth between 2005 and 2010 and the # irrigation wells into the exponential growth rate expression and solving for # wells in 2005, as follow:

$N_0 = N * (e^{-rt})$, where:

N_0 = # irrigation wells in 2005

N = # irrigation wells in 2002

e = the exponential (2.71828....)

r = growth rate (calculated in column "2005 - 2010 Annual Exponential Pop. Growth Rate")

t = 3 years