WATER SUPPLY FACILITIES WORK PLAN
2009-2025

CITY OF ZEPHYRHILLS

ADOPTED: SEPTEMBER 27, 2010

WATER SUPPLY FACILITIES WORK PLAN, 2009 – 2025
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1. INTRODUCTION

The City of Zephyrhills Water Supply Facilities Work Plan (Work Plan) represents the City's plan to meet current water demands and the anticipated growth in demand within the Zephyrhills Utility Service Area (Utility Service Area) through 2025. The Work Plan is part of the Infrastructure Element of the Zephyrhills Comprehensive Plan and is supported by policies in the Public Facilities, Conservation, Intergovernmental Coordination and Capital Improvements elements of the Comprehensive Plan.

2. WATER DEMAND

Potable Water Demand

Existing Conditions

The Utility Service Area (aka Future Service Area) is comprised of approximately 13,426 acres 5,668 acres in the Zephyrhills incorporated area and 7,738 acres within unincorporated Pasco County (see Map PUB-1 Utility Service Area). Approximately 1,302 acres of the Zephyrhills incorporated area is located in the Pasco County service area.

Statistics
Zephyrhills Utility Service Area

Total Acres:	13,426
-Incorporated Acres:	5,668
-Unincorporated Acres:	7,738
Functional Population:	21,722
Potable Water Demand (GPDC)	126

The Utility Service Area has a *functional* population[1] of 21,722 persons. Based on average daily flows in 2008, potable water demand in the Utility Service Area is 2.658 million gallons per day (MGD), or 126 gallons per day per capita (GPDC). The average daily flow in 2008 was lower than in 2007, when the data showed demand at 2.746 MGD. This reduction is evidence of the effectiveness of the City's conservation efforts (e.g., implementation of an inclining potable water rate structure).

Future Conditions

The projected functional population in the Utility Service Area, ~~is~~ shown in Table 1, is based on historical growth rates for City utility customers rather than availability of land in the Future Service Area. Growth trends in the Utility Service Area since 2000 indicate an average annual growth rate of 1.7 percent. The population projections assume an annual growth rate of 2.0 percent.

Table 1: Projected *Functional* Population, Zephyrhills Utility Service Area

Historic Population		Existing Population	Projected Population[1]				Population Change 2007-2025
2000	2005	2007	2010	2015	2020	2025	
19,419	21,058	21,722	23,052	25,451	28,100	31,024	9,302

Notes:
1. Projections assume an average annual growth rate of 2.0 percent.

[1] Includes residential and non-residential (equivalent residential units) utility customers.

Source: Utilities Department, City of Zephyrhills and Vrana Consulting, Inc., 2008.

The City's utility customer base largely increases as a result of annexation, which have been actively pursued by the City over the time period used to establish the historic growth rate for utility customers. It is anticipated that future annexations and infill development within the existing city boundaries will yield new utility customers at the rate of 2.0 percent per year.

A significant portion of the projected population growth will be generated by approved, unbuilt developments in the Utility Service Area (see Table 2). Based on past performance of completed developments in Pasco County, these developments are anticipated to yield roughly 80 percent of the approved units at build-out, for a total of 4,559 residents.

Table 2: Recently Approved Developments, City of Zephyrhills

Project	Approved Dwelling Units	Projected Resident Population
Valley Oaks	450	1,215
Zephyr Lakes	525	1,417
Links	122	329
Cottages of Silver Oaks	416	1,123
Rucks Governors Landing	444	1,194
Hidden River	325	877
Preserves	200	540
Total	**2,482**	**5,699**

Source: Development Services Department, City of Zephyrhills, 2009.

Projected potable water demand in the Utility Service Area through 2025 is shown in Table 3. Projected demand is based on the population projections in Table 1 and the current per capita potable water demand of 126 GPD.

Table 3: Projected Water Demand and Supply, Zephyrhills Utility Service Area

Year	Demand (MGD)			Supply (MGD)[3]					Surplus / (Deficit)
				Potable		Non-Potable		Total	Potable
	Potable[1]	Non-Potable[2]	Total	Ground[4]	Alterna-tive	Re-claimed	Surface Water		
2008	2.658	0.16	3.058	2.746	0.00	0.40	0.00	3.146	0.088
2010	2.905	0.24	3.145	3.0	0.00	0.60	0.00	3.600	0.455
2015	3.207	0.40	3.607	3.0	0.00	1.00	0.00	4.000	0.393
2020	3.541	0.60	4.141	3.0	0.00	1.50	0.00	4.500	0.359
2025	3.909	0.80	4.709	3.0	0.00	2.00	0.00	5.000	0.291

Notes:
1. Based on 2007~~8~~ potable water consumption rate of 126 gallons per day per capita (GPDC).
2. Indicates portion of non-potable water use that does not offset potable water demand (40% of reclaimed water supply. Source: SWFWMD, 2002).
3. Includes average annual quantities.

4. Based on maximum pumping limits allowed under City's SWFWMD Water Use Permit (WUP) for period 2009 to 2019 and assumes these limits are continued through 2025.

Source: Utilities Department, City of Zephyrhills and Vrana Consulting, Inc., 2009.

Large Quantity Water Users

Table 4 lists the four large quantity water users located in the vicinity of the Zephyrhills Utility Service Area.

Table 4: Large Quantity Water Uses, Zephyrhills Utility Service Area

Permittee	Permit #	Permitted Quantity (GPD)[1]	2001 Water Use (GPD)[2]	Quantity Considered in City WUP Modification (GPD)
Valle Oaks Corporation	2007881.001	60,000	50,603	50,603
Gores Dairy Supply, Inc.	2002380.002	97,000	74,285	74,285
Neil & Rita Rucks	2004718.001	99,000	75,826	75,826
Rollins Fruit Company, Inc.	2004212.004	62,100	58,784	58,784
Total		**318,100**	**259,498**	**259,498**

Notes:
1. GPD - Gallons per day.
2. DWRM2 database.

Source: Application for Water Use Permit Modification, City of Zephyrhills, July, 30, 2007.

Non-Potable Water Demand

The City's reclaimed water system, which supplies 0.4 MGD, currently serves only nonresidential uses in the Utility Service Area. These uses include area schools, Zephyr Parks and Zephyrhills Golf Course. Reclaimed water is use for irrigation purposes.

The literature on irrigation demands and offsets confirms that the use of reclaimed water directly correlates to reductions in the use of potable water. The SWFWMD research shown in see Table 5 indicates that the use of reclaimed water in lieu of potable water sources offsets those sources at an average rate of 60 percent. This factor is reflected in the Utility Service Area demand for non-potable water shown in Table 3 on page 2.

Table 5: Reclaimed Water Customer Type and Efficiency (Potable Water Offset)

Offset (MGD)	Offset (MGD)	Comments
Industrial / Power Generation	100%	Normally use the same regardless of source
Agricultural / Recreational / Aesthetic	75%	Normally do not overwater
Public Supply Irrigation	40%	25%-35% for flat rate; 45%-55% for metered
All Customer Types (Average)	60%	¼ Industrial/Power Generation; ¼ Agriculture Recreational/Aesthetic, and ½ Public Supply

Source: Effective Use of Reclaimed Water Demonstrated to Offset Water Demand, Southwest Florida Water Management District, 2002.

3. WATER SUPPLIES

Based on the foregoing demand analysis and the inventory of existing and projected potable and non-potable water resources discussed below, the City's water supply will be adequate to meet projected demand through 2025.

Potable Water Supply

Existing Conditions

The Utility Service Area lies predominantly within the Hillsborough River Groundwater Basin. The northern portion of the Utility Service Area falls within the Withlacoochee River Groundwater Basin. The principal hydrogeologic units in these basins are the surficial, intermediate and Floridan aquifer system. The Upper Floridan aquifer is the principal storage and water conveying component of the basin hydrologic system and is the principal source of potable water for domestic, agricultural and industrial supplies for the City, Pasco County and most of west central Florida. The surficial aquifer, which occurs within sand overlying the Upper Floridan aquifer, is used primarily for lawn irrigation.

Water demand and resource limitations in the Hillsborough River Groundwater Basin, particularly from major urban areas downstream, have prompted the Southwest Florida Water Management District (SWFWMD) to impose pumping restrictions in this basin. The SWFWMD Regional Water Supply Plan (2006) identifies this area as a Priority Water Resource Caution Area—where existing and reasonable anticipated water sources may not be adequate for existing legal uses and anticipated future needs while sustaining water resources and related natural systems through the 2025 planning period.

SWFWMD regulates water withdrawals from the Floridan aquifer system via a Water Use Permit (WUP). A WUP specifies the maximum permitted pumping capacity for the area specified in the permit. The City's WUP (approved July 24, 2009), allows a maximum water withdrawal in the Utility Service Area of 3.0 MGD (average annual) and 3.75 MGD (peak monthly). At 2.658 MGD, the current pumpage in the Utility Service Area is 0.342 MGD below the average annual WUP limit. Additional production allowed under the current WUP will be from two new wells located in the Withlacoochee River Groundwater Basin.

Future Conditions

As demonstrated in Table 3 on page 2, the potable water supply needs of the Utility Service Area can be met through 2014, conditional on expansion of the City's reclaimed water capacity by at least 0.6 MGD. To meet the projected potable water demand during the 2014 to 2025 period, the City will also need to implement reclaimed water projects and additional conservation measures at levels commensurate with demand.

Non-Potable Water Supply

Non-potable water supply in the Utility Service Area consists of reuse water from the City's reclaimed water system. The system currently produces 0.4 MGD which is distributed to nonresidential customers in the Utility Service Area. The City plans to expand the system to increase reclaimed water production to 2.0 MGD by year 2025. Expansion of the reclaimed system will target large-scale water users, picking up residential users in proximity.

WATER SUPPLY FACILITIES

The inventory and analysis of water supply facilities in this section indicates that no facility deficiencies are anticipated through the 2025 planning period.

Facility Inventory

Water Wells

Existing and future wells in the Utility Service Area are shown on Map LU-8 Future Service Area. The Zephyrhills Utilities Department operates a system of nine public supply water wells which draw water from the Floridan Aquifer (see Table 6). The wells are interconnected by a grid of trunk lines which facilitates operation of any combination of wells. The wells vary in depth from 148 feet to 960 feet. Active wells are equipped with well pumps having a total rated capacity of approximately 12.384 MGD. Current permitted withdrawal rates are 3.0 MGD (average daily) and 3.750 MGD (maximum peak month).

The City's WUP, provides for the construction of two new wells for backup use and to accommodate future growth, and the closure of three others. Well closings would not occur until replacement wells are operational. The City intends to construct two of the new wells in 2010.

Water Treatment Facilities

The City operates nine water treatment plants, one at each potable water well location. The plants have combined rated capacity of 12.384 MGD. The City plans to construct new water treatment plants at each of the proposed wells discussed in the foregoing.

Water Distribution Facilities

The City's interconnected water distribution system consists of approximately 348 miles of water mains, fire hydrants, meters, valves, backflow prevention devices and miscellaneous appurtenances. The water line distribution system has main loops of two-inch to 12-inch diameter. The mains consist of various materials including: asbestos cement ductile iron, polyvinyl/chloride, high density polyethylene (HDPE) and cast iron, depending upon location and /or design circumstances.

Table 6: Existing and Proposed Potable Water Wells, Zephyrhills Utility Service Area

Well ID#	WUP#[2]	Diameter	Pump Capacity (GPM)[3]	Well Depth	Casing Depth	Maximum Peak Month Withdrawal (MGD)	Average Day Withdrawal (MGD)	Peak Month Withdrawal (MGD)	Status
#1	#206040 (expires 4/10/10) #200060 40.007 (expires 7/24/19)	12"	500	146'	55'	4.125 3.750 (all wells)	0.27	0.284	Active
#2		12"	550	966'	125'		0.188	0.235	Active
#3		16"	1,400	840'	125'		0.442	0.553	Active
#4		16"	1,200	460'	125'		0.708	0.980	Active
#5		16"	1,400	885'	125'		0.516	0.616	Active
#6[4]		16"	800	915'	125'				
#7[4]		4"	80	79'	65'				
#8[4]		6"	125	128'	55'				
#9[4]		8"	250	450'	153'		0.066	0.132	Active
#10		16"	500	300'	150'		0.708	0.980	Standby
#11		16"	1,400	[1]	[1]		0.701	0.876	Active
#12		16"	1,400	[1]	[1]		0.701	0.876	Active
						Total	**4.257**		

Notes:
1. To be determined during design.
2. WUP# – Southwest Florida Water Management District Water Use Permit Number.
3. GPM - Gallons per minute.
4. Wells to be closed when new wells come online.
Source: City of Zephyrhills Water Use Permit 2009.

Water Storage Facilities

The City has an elevated water storage tank located on Dairy Road. The tank's maximum daily flow capacity is 0.75 MGD. The dual tank system allocates 0.25 million gallons for higher elevations and 0.5 million gallons for lower elevations, providing stable water pressure and adequate fire flow throughout the Utility Service Area.

Table 7: Existing Potable Water Facilities Parameters, Zephyrhills Utility Service Area

Water Wells Rated Capacity	Water Treatment Plants Permitted Design Capacity	Water Storage Tank Capacity	Average Annual Daily Flow	Maximum Daily Withdrawal	Capacity Consumed[1]
12.384 MGD	3.750 MGD	0.75 MG	2.746 MGD	3.0 MGD	22.2%

Notes:
1. Based on the rated capacity of water wells minus average daily flow.
Source: Utilities Department, City of Zephyrhills, 2009.

Reclaimed Water Facilities

The Zephyrhills reclaimed water system was brought online in 1997 as a measure to reduce demand for groundwater for irrigation purposes. Presently, 53 percent of residential wastewater generated in the Utility

Service Area (0.4 MGD) is distributed to area schools, Zephyr Park and Zephyrhills Golf Course. The City plans to increase its reclaimed water production to 2.0 MGD by 2025. Several reclaimed water projects are currently programmed in the City's Capital Improvements Plan, including reclaimed water transmission lines for right-of-way landscaping irrigation (see Plan to Meet Water Supply Needs section on page 14).

Facility Condition

The City's water supply facilities perform very well and no problems in maintaining performance are anticipated over the 2025 planning period. The City's nine water treatment plants have consistently operated in compliance with all criteria established by the U.S. Environmental Protection Agency and Florida Department of Environmental Protection for public water supply facilities. The water treatment plants are repaired and upgraded as needed to remain in good operating condition. The quality of water resources in the area is sufficiently good, requiring only chlorination treatment for the public water supply. The City plans and budgets for scheduled maintenance and replacement.

Level of Service

Capacity Analysis

The City's adopted level of service standard for potable water is used for two purposes—to assess the adequacy of the water supply and water facilities to serve new development (concurrency) and to project needs for developing new water supplies and water supply facilities (facility planning).

The City's adopted potable water level of service standard is 126 GPDC which reflects the current rate of water consumption in the Utility Service Area. Table 8 demonstrates that the City's water supply facilities currently meet the potable water level of service standard.

Table 9 shows the projected potable water demand in the Utility Service Area compared to the (FDEP) rated capacity of the City's water treatment plants. The analysis, based on the level of service standard of 126 GPD per capita, indicates that the rated capacity of 12.384 MGD will be adequate throughout the planning 2025 period.

Concurrency Management System

Development proposals are reviewed by the City in accordance with the Zephyrhills Concurrency Management System as set forth in the Comprehensive Plan Capital Improvements Element and Article V. Adequate Public Facilities, Zephyrhills Land Development Code. Prior to the issuance of a level of service determination, it must be demonstrated that the adopted level of service standards will be met at the time of issuance of a final local development order (i.e., site plan approval, record plat approval and Development of Regional Impact Development Order) for a development. Final development orders are conditioned upon authorization and approval of necessary utility services by Zephyrhills Utilities Department Director. Accordingly, committed water quantities are tracked by the Zephyrhills Utilities Department.

Table 8: Potable Water Level of Service Analysis, Zephyrhills Utility Service Area

Water Supply	
Potable Water Wells (rated capacity)	12.384 MGD

Plant Design Capacity (rated capacity)	3.750 MGD	
Storage Tank Capacity	0.75 MG	
Maximum Daily Flow (WUP Limit)	3.0 MGD	
Water Demand		
Functional Population (residential and nonresidential water customers)	21,722	
Service Connections	17,319	
Average Annual Daily Flow	2.746 MGD	
Water Treatment Plant Capacity Allocation	**Used**	**Unused**
Committed Capacity	2.746 MGD	0.03 MGD
% Committed Capacity	91.5%	0.1%
Total Committed Capacity	2.776 MGD	
% Total Committed Capacity	91.6%	
Remaining Capacity	0.224 MGD	
% Remaining Capacity	8.4%	

Source: Utilities Department, City of Zephyrhills, 2008.

Table 9: Projected Water Treatment Capacity, Zephyrhills Utility Service Area

Year	Utility Service Area Population	Per Capita Potable Water Demand	Total Potable Water Demand	FDEP Rated Treatment Capacity	Used Treatment Capacity	Remaining Treatment Capacity
2007	21,722	126 GPD	2.658 MGD	4.125 MGD	64%	1.47 MGD
2008	21,772	126 GPD	2.746 MGD	12.384 MGD	22.2%	9.64 MGD
2010	23,052	126 GPD	2.905 MGD	12.384 MGD	23.5%	9.48 MGD
2015	25,451	126 GPD	3.207 MGD	12.384 MGD	25.9%	9.18 MGD
2020	28,100	126 GPD	3.541 MGD	12.384 MGD	28.6%	8.84 MGD
2025	31,024	126 GPD	3.909 MGD	12.384 MGD	31.6 %	8.48 MGD

Source: Utilities Department, City of Zephyrhills, 2009.

4. IMPACTS ON NATURAL RESOURCES

Based on the analysis presented in the City's 2007 application for WUP modification, proposed water supply projects in the Utility Service Area are not anticipated to impact the surficial aquifer or on-site and off-site lakes and wetlands. Continued enforcement of the City's wellfield protection regulations will help ensure continued groundwater quality. Furthermore, City conservation programs and reclaimed water system expansions will reduce demand for groundwater resources.

Wetland & Surficial Aquifer Impacts

In the Zephyrhills area the surficial aquifer is moderately well connected to the Upper Floridan aquifer through a leaky semi-confining unit. The result of this leaky confinement is that when pumping from the Upper Floridan aquifer system, water level drawdown can be transmitted from the deeper aquifers up to the surficial aquifer. Beginning in 2000 near the end of an extreme dry period, water levels were measured in the Upper Floridan Aquifer monitor well located at Zephyr Park. The measurements show water levels increasing approximately 20 feet from 2001 through 2004, followed by a decline of approximately 15 feet through the current dry period. Measurements from the surficial aquifer monitoring well at Zephyr Park began in 2002 near the end of an extreme dry period. These records show approximately 18 feet of water level rise from 2002 to 2004 followed by 18 feet of decline from 2004 through the current dry period.

Lake and Wetland Impacts

A long term simulation was performed using average irrigation quantities in proposed City wells. The simulation showed the maximum modeled long term (10 years) estimate of drawdown in the surficial aquifer system, at the site of the proposed wells, is approximately 0.5 feet. The estimated threshold for a median water level that would cause impacts to wetlands is approximately 0.8 feet (SWFWMD 1998). Long term average drawdown at Lake Pasadena and Clear Lake are less than 0.5 feet in the Upper Floridan and surficial aquifer systems. Because the lakes are currently fluctuating above their minimum levels and proposed wells withdrawals would not cause the lake levels to violate their minimum levels, no lake impacts are expected from the proposed wells.

Wellfield Protection

The City adheres to FDEP standards adopted for wellhead protection , including restricting the type of development allowed in the vicinity of a wellhead and requiring a 500-foot protection zone around wellheads. Part 4.03., Zephyrhills Land Development Code, regulates hazardous material transport and storage, well construction, and related aspects of land use and development in the vicinity of potable water supply wells to protect the City's existing and future potable water supply. The City restricts certain uses and materials within the *Cone of Influence* and *Secondary Cone of Influence*, the land area between a well and the 30-day travel time contour and the land area between the 30-day and 210-day travel time contour, respectively. The regulations also provide standards for hazardous materials containment, drainage facilities, monitoring, maintenance/repair, security, emergency equipment and procedures and Wellfield Protection Permits.

5. CONSERVATION POLICIES & PROGRAMS

This section identifies the current conservation-related policies, programs and practices being implemented by the City, as well as new and revised policies proposed as part of the Work Plan-related Comprehensive Plan amendments. Table 10 shows the potential water savings in the Utility Service Area for various water conservation measures identified in the SWFWMD Regional Water Supply Plan.

Table 10: *Potential* Water Conservation Savings, Zephyrhills Utility Service Area

Water Conservation Measure	Water Savings Rate (Gallons Per Measure Per Day)	Water Savings (MGD)			
		2010	2015	2020	2025
Plumbing Retrofit Kit Distribution[1]	20.3 (Single Family) 20.3 (Multi-family)	0.015 0.002	0.074 0.009	0.074 0.009	0.074 0.009
Ultra Low Volume (ULV) Toilet Rebates	26.3 (Single Family) 20.3 (Multi-family) 26 (Nonresidential)	0.019 0.005 0.001	0.095 0.023 0.006	0.095 0.023 0.006	0.095 0.023 0.006
Industrial Commercial Institutional Spray Valve Replacement	270 (Nonresidential)	0.001	0.004	0.004	0.004
Water Efficient Landscape & Irrigation System Rebates	140 (Single Family) 143 (Multi-family) 978 (Nonresidential)	0.032 0.000 0.003	0.161 0.002 0.015	0.161 0.002 0.015	0.161 0.002 0.015
Industrial Commercial Institutional Surveys	2,308 (Nonresidential)	0.002	0.012	0.012	0.012
Large Landscape Surveys	428 (Nonresidential)	0.001	0.004	0.004	0.004
Rain Sensor Shut-off Devices	103 (Single Family) 103 (Multi-family) 103 (Nonresidential)	0.024 0.000 0.000	0.118 0.002 0.002	0.118 0.002 0.002	0.118 0.002 0.002
Water Budgeting	78 (Single Family) 192 (Multi-family) 578 (Nonresidential)	0.254 0.007 0.202	0.254 0.007 0.202	0.254 0.007 0.202	0.254 0.007 0.202
Total Potential Water Savings		**0.568**	**0.709**	**0.849**	**0.990**

Source: Southwest Florida Water Management District Regional Water Supply Plan, 2006.

If the City were to implement a rebate program for the replacement of old, inefficient toilets with ultra low volume toilets, the data in Table 10 indicates a potential water savings of 1.24 MGD in the Utility Service Area. Table 11 demonstrates the potential water savings of all of the conservation measures quantified in Table 10.

Table 11: Potential Impact of Water Conservation on Water Demand, Zephyrhills Utility Service Area

Year	Demand (MGD)[1]			Supply (MGD)					Potable Water Surplus / (Deficit) (MGD)	
				Potable		Non-Potable		Total	w/o Conser-vation[2]	w/ Conser-vation[3]
	Potable[1]	Non-Potable	Total	Ground	Alterna-tive	Re-claimed	Surface Water			
2010	2.337	0.424	2.761	3.0	0.00	0.6	0.00	3.600	0.455	1.023
2015	2.498	0.468	2.966	3.0	0.00	1.0	0.00	4.000	0.393	1.102
2020	2.832	0.517	3.349	3.0	0.00	1.5	0.00	4.500	0.359	1.208
2025	2.919	0.571	3.490	3.0	0.00	2.0	0.00	5.000	0.291	1.281

Notes:
1. Based on demand projections in Table 3 minus water savings from all conservation measures quantified in Table 9.
2. Potable water surplus/deficit reported in Table 3.
3. Includes water savings from all conservation measures quantified in Table 9.

Source: Utilities Department, City of Zephyrhills and Vrana Consulting, Inc., 2009.

Zephyrhills Land Development Code

The Zephyrhills Land Development Code currently includes the following conservation-related regulations:

- Water Restrictions: The City requires compliance with Pasco County's water use rules which prohibit watering between the hours of 8:00 a.m. to 6:00 p.m. and no more than once a week.
- High Efficiency Plumbing Fixtures: The City requires compliance with the Florida Building Code standards for low volume fixtures in all new development.
- Conservation Rate Structure: The City has adopted a tiered water rate structure that incentivizes water customers to conserve water. The "In-City" residential rates structure is: 0 to 10,000 gallons - $1.34; 10,001 to 15,000 gallons - $1.68; 15,001 to 20,000 gallons - $2.01; and 20,000+ gallons - $2.68. "Out of City" rates are similarly tiered but are higher. Master metered commercial uses are charged a flat rate of $1.34 (In-City). Metered irrigation "In-City" is rated: 0 to 15,000 gallons - $1.34; 15,001 to 20,000 gallons - $2.01; and 20,000+ gallons - $2.68.
- Reclaimed Water Policies & Regulations: The City's reclaimed water program is promoted via distribution of informational materials to water customers. The reclaimed water regulations include connection, interconnection and discharge restrictions, including requirement that new development install a reclaimed or other non-potable water distribution system. Reclaimed water customers are individually metered and charged a flat rate. The City requires new development to provide infrastructure to connect private wells to reclaimed water lines to supplement irrigation water.

Zephyrhills 2010 Comprehensive Plan

Conservation Element

- GOAL CON-2: To protect and conserve water resources which are vital to community sustainability.
- OBJ CON-2-2: Protect, conserve, and appropriately use potable water sources in order to meet the needs of the existing and future population of the Zephyrhills Utility Service Area.
- CON-2-2-1: The City shall protect and conserve the natural functions of existing lakes, floodplains and wetlands.
- CON-2-2-2: Encourage water conservation through education, awareness and incentive, regulation and incentive programs oriented to residential and commercial water customers. Such programs may include:

  a. Rebates for installation of low-flow plumbing fixtures
  b. Water conservation information on the City's web site
  c. Water conservation displays and printed information at community focal points (e.g., library, recreation centers, City Hall).
  d. Community awards or demonstration projects for water efficient landscapes.
  e. Staff involvement in "Drop Savers" and "Project WET" programs conducted in public schools.
  f. Requirement for installation of soil moisture sensors, rainfall sensors or other water-saving irrigation technologies
  g. Requirement for installation of water efficient landscaping in new developments and redevelopment.
  h. Requirement for facilities that support stormwater reuse as a source for supplemental irrigation when feasible.

- CON-2-2-3: Enforce provisions of the Southwest Florida Water Management District Water Shortage Plan, Chapter 40D-21, Florida Administrative Code.
- CON-2-2-4: Investigate the feasibility of a wet-weather storage option as a water source to augment reclaimed water flows.
- CON-2-2-5: Coordinate with the Southwest Florida Water Management District, including consideration of the Regional Water Supply Plan, to ensure that water supplies are adequate to meet the City's current and projected potable water needs and to reduce dependence upon the Floridan aquifer to meet potable water demand.
- CON-2-2-6: Implement traditional and alternative water supply projects and conservation and reuse programs deemed necessary to meet the water needs identified in the Zephyrhills Water Supply Facilities Work Plan (2008-2025).
- CON-2-3-1: Coordinate with the Southwest Florida Water Management District and Florida Department of Environmental Protection to develop a plan to improve the water quality of Lake Zephyr. At minimum, the plan should address consistent water elevations and improvements to the littoral zones of Zephyr Lake and the overall

drainage basin.

- GOAL CON-4: To maintain the high quality of groundwater resources in the Zephyrhills Utility Service Area.

- OBJ CON-4-1: Monitor and protect ground water quality/quantity and location of development/appropriate uses in recharge areas.

- CON-4-1-1: The Land Development Code shall restrict land uses known to adversely affect water quality and quantity within natural groundwater recharge areas, wellhead protection areas and surface waters used as a source of public water.

- CON-4-1-2: Develop a water protection ordinance that will provide the City with a mechanism to review and regulate large water consumers and/or businesses that resell water.

Public Facilities Element

- PUB-1-1-1: The City will continue to encourage of the lowest quality water available and suitable to a given purpose. Programs shall be developed that provide for water reuse alternatives in lieu of wastewater and stormwater disposal to surface water bodies.

- PUB-1-1-2: The City will implement construction codes which require state-of-the-art water conservation techniques for new construction.

- PUB-1-1-3: The City will continue to enforce provisions of the Southwest Florida Water Management District Water Shortage Plan, Chapter 40D-21, Florida Administrative Code.

- PUB-1-1-4: The City shall maintain the Zephyrhills Water Supply Facilities Work Plan pursuant to Section 163.3177(6)(c), FS. The Work Plan shall incorporate traditional and alternative water supply projects and conservation and reuse programs deemed necessary to meet the City's water supply needs over the comprehensive planning period.

- OBJ PUB-5-3: Reduce demand for groundwater resources and the need for potable water system expansion by promoting and practicing water conservation and expanding access to alternative water supplies.

- PUB-5-3-1: The City shall continue to expand the reclaimed water system to provide alternatives to groundwater withdrawals for irrigation and other nonpotable water uses and to reduce the need for wastewater and stormwater disposal to surface water bodies.

- PUB-5-3-2: The City shall prohibit use of potable water for irrigation in the Zephyrhills Future Service Area where reclaimed water is available.

- PUB-5-3-3: The City shall develop partnerships with community groups, developers and agencies, such as the Southwest Florida Water Management District and University of Florida / IFAS (Florida Yards & Neighborhoods Program), to promote awareness of water conservation needs and practices, and distribute water conservation information in

one or more of the following ways: website, newsletters, brochures, speakers bureau presentations and displays at community events.

Future Land Use Element

- LU-1-7-3: Consider in land use planning and regulation, the impact of land use on water quality and quantity; the availability of land water and other natural resources to meet demands; and the potential for flooding.

Conservation-Related Practices & Programs

The City currently administers the following conservation-related programs and practices:

- Water Use Accounting
  - Supply well pumpage (monthly)
  - Water entering distribution system (daily)
  - Connections served and meter installations (monthly)
  - Meter replacements (monthly)
  - Fire Department water use (daily records tabulated monthly)
  - Hydrant flushing (daily records tabulated monthly)
  - Water break repairs (daily records tabulated monthly)
  - Other water uses (e.g., street cleaning)
- Leak Detection
  - Periodic leak detection program
  - Monitoring of accounted for water
  - Billing software to reduce discrepancies in reported gallons billed versus gallons pumped
  - Meter replacement program for meters with unaccounted water loss
- Education/Awareness
  - Promotion of water efficient landscape and irrigation practices through regulations and education
  - Provide customers with indoor/outdoor water audit information

6. PLAN TO MEET WATER SUPPLY NEEDS

The foregoing analysis indicates that there will be adequate water supplies in the Utility Service Area through 2025, conditional on City implementation of programmed reclaimed water projects. Additionally, robust conservation measures must play an important role in reducing per capita demand in the Utility Service Area.

A schedule of the City's planned and programmed water supply facilities projects and conservation programs is shown in tables 12 , along with the projected funding sources. Projects and programs identified in the first five years of the schedule are adopted as part of the City's Capital Improvements Program (CIP) As new water supply facilities projects are identified and approved by the City, the CIP will be amended to include the projects.

Over the Work Plan period, the City will continue to implement water conservation programs and develop water reuse strategies including expansion of the reclaimed water system. Additionally, the City will continue to coordinate with SWFWMD and other East Pasco local governments on common water supply issues and collaborative solutions.

Water Supply Facilities Projects

The projects listed below have been identified by the City and SWFWMD for potential application in the Utility Service Area. The SWFMWD projects, from the SWFWMD Regional Water Supply Plan, have been considered by the City and are not being pursued at this time.

City of Zephyrhills Projects

- Elevated Water Storage Tank 2008-2010 ($500,000/250,000 gallons) (*Zephyrhills CIP*)
- New Wells (2) 2010-2012 ($800,000) (*Zephyrhills CIP*)
- Facility Upgrades/Extensions (*Zephyrhills CIP*)
  - Water Mains 2008-2013 ($3.45M)
  - Radio Read Meters 2008-2013 ($1.85M)
  - Valve replacement 2012 ($200,000)
- Wastewater Treatment Plant Expansion 2008 ($21M) (*Zephyrhills CIP*)
- Reclaimed Water Line Expansion 2008-2013 ($1.2M) (*Zephyrhills CIP*)
- Reclaimed Water Project for Street ROW Irrigation, 0.006 MGD Offset, 2008-2011 ($120,000) (*SWFMWD Cooperative Funding, 2008*)
- 6" Water Project, 1.5 MGD Offset, 2010-2012 ($3M)

SWFWMD Regional Water Supply Plan

- Zephyr Creek Stormwater Detention & ASR/2, Tampa Bay Water & City of Zephyrhills, 2011-2025 ($19,696/MGD)
- Plant City to Zephyrhills Interconnect (Reuse Project), 1.2 MGD Offset, 2011-2025 ($6.46M)
- Reuse Expansion Zephyrhills Wastewater Treatment Plant, City of Zephyrhills, 2011-2025 ($5.65M)

Water Conservation Policies & Programs

Proposed Comprehensive Plan policies to support water conservation efforts are listed beginning on page 12. Supplemental water conservation-related regulations and programs to be pursued by the City are listed below.

Zephyrhills Land Development Code Revisions

- Require installation of soil moisture sensors, rainfall sensors or other water-saving irrigation technologies
- Require installation of water efficient landscaping in new developments and redevelopment
- Require facilities that support stormwater reuse as a source for supplemental irrigation when feasible

New Water Conservation Programs

- Develop partnerships to increase awareness of water conservation needs and practices
  - University of Florida/IFAS Florida Yards & Neighborhoods
  - Developers / community groups
- Distribute water conservation information
  - City newsletter / website /brochures
  - Community events
  - Speakers bureau presentations
- Distribute free high-efficiency plumbing fixture retro-fit kits
- Staff involvement in public school programs - "Drop Savers" and "Project WET"

Regional Coordination for Water Supply Planning & Project Development

The City is a participant in the newly organized East Pasco Water Coalition (EPWC). Other participants in EPWC include the municipalities of Dade City, St. Leo and San Antonio, Pasco County, SWFWMD, landowners and other interested parties. The EPWC's mission and goals address two broad areas: "Policy/Programs" (land use policy/conservation programs) and "Pipes" (water supply development projects).

Unlike the other EPWC local governments on the Coalition, Zephyrhills lies predominantly within a SWFWMD designated Water Use Caution Area. Pasco County, which also operates a utility service area in the restricted Hillsborough River Groundwater Basin, has access to water supplies for use in this basin through membership on Tampa Bay Water, a regional water supply authority. As such, the City is concerned that the participating local governments on the EPWC will not have the same level of interest and sense of urgency in resolving the City's immediate water supply issues.

[Insert revised Table 12 here]

Table 13
Potable & Reclaimed Water Supply Projects
City of Zephyrhills Five-Year Capital Improvements Plan (FY 2010-2014)

Project Description	Cost by Fiscal Year ($)						Revenue Source
	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	Total	
Potable Water Projects							
Well No. 6, 7 & 8: Decommissioning & Plugging, SWFWMD Required	25,000					25,000	Utility Fund & Connection Fees
Well No. 11: Hydro, Engineering & Permitting	80,000					80,000	Utility Fund & Connection Fees
Well No. 11: Construction	500,000					500,000	Utility Fund & Connection Fees
Well No. 12, Hydro, Engineering and Permitting	80,000					80,000	Utility Fund & Connection Fees
Well No. 12: Construction	500,000					500,000	Utility Fund & Connection Fees
8" Water Main Extension (Pretty Pond to Forbes Rd): Engineering		25,000				25,000	Utility Fund & Connection Fees
12" Water Main Extension & Connecting New Wells (23rd St to the Highlands): Engineering & Permitting		10,000				10,000	Utility Fund & Connection Fees
Well Rehabilitation/Security Enhancement Program: Phase 1 of 6		500,000				500,000	Utility Fund & Connection Fees
8" Water Main Extension (Pretty Pond Rd to Forbes Rd): Construction			200,000			200,000	Utility Fund & Connection Fees
12" Water Main Extension & Connecting New Wells (23rd St to the Highlands): Construction			100,000			100,000	Utility Fund & Connection Fees
Well Rehabilitation/Security Enhancement Program: Phase 2 of 6			500,000			500,000	Utility Fund & Connection Fees
8" Water Main Extension (Simmons Rd): Engineering & Permitting			16,000			16,000	Utility Fund & Connection Fees
8" Water Main Extension (Otis Allen to Forbes Rd): Engineering & Permitting				35,000		35,000	Utility Fund & Connection Fees

Table 13
Potable & Reclaimed Water Supply Projects
City of Zephyrhills Five-Year Capital Improvements Plan (FY 2010-2014)

Project Description	Cost by Fiscal Year ($)						Revenue Source
	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	Total	
Well Rehabilitation/Security Enhancement Program: Phase 3 or 6				500,000		500,000	Utility Fund & Connection Fees
8" Water Main Extension (20th St to Clay St): Engineering & Permitting				10,000		10,000	Utility Fund & Connection Fees
8" Water Main Extension, Simmons Rd, Construction				160,000		160,000	Utility Fund & Connection Fees
8" Water Main Ext, Otis Allen to Forbes Rd, Construction phase					350,000	350,000	Utility Fund & Connection Fees
12" Water Main Extension (US 301 N to the Highlands): Engineering & Permitting					60,000	60,000	Utility Fund & Connection Fees
Well Rehabilitation/Security Enhancement Program: Phase 4 or 6					500,000	500,000	Utility Fund & Connection Fees
8" Water Main Extension (20th St to Clay St): Construction					80,000	80,000	Utility Fund & Connection Fees
Meter Replacement Program (Manual Reads to Radio Reads)	200,000	200,000	200,000	200,000	200,000	1,000,000	Utility Fund & Connection Fees
Inventory	130,000	130,000	130,000	130,000	130,000	650,000	Utility Fund & Connection Fees
Total	**1,410,000**	**865,000**	**1,146,000**	**1,035,000**	**1,320,000**	**5,776,000**	
Sanitary Sewer Projects							
12" Reclaimed Water Main Extension (17th St to Zephyr Park along South Ave): Engineering & Permitting	30,000					30,000	Utility Fund & Connection Fees
8" Gravity Sewer Line Extension (Court St / Waverly Ave): Engineering & Permitting	20,000					20,000	Utility Fund & Connection Fees
Lift Station No. 5 Replacement (12th Ave & 4th St): Property Acquisition	100,000					100,000	Utility Fund & Connection Fees
8" Reclaimed Water Main		30,000				30,000	Utility Fund & Connection Fees

Table 13
Potable & Reclaimed Water Supply Projects
City of Zephyrhills Five-Year Capital Improvements Plan (FY 2010-2014)

Project Description	Cost by Fiscal Year ($)						Revenue Source
	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	Total	
Extension (12th St along Henry Dr to Woodlawn Elementary / Police Station): Engineering & Permitting							
8" Reclaimed Water Main Extension (17th St to Veteran's Park): Engineering & Permitting		20,000				20,000	Utility Fund & Connection Fees
12" Reclaimed Water Main Extension (17th St to Zephyr Park along South Ave): Construction		120,000				120,000	Utility Fund & Connection Fees
8" Gravity Sewer Line Extension (Court St / Waverly Ave): Construction		140,000				140,000	Utility Fund & Connection Fees
Lift Station No. 5 Replacement (12th Ave & 4th St): Engineering & Permitting		50,000				50,000	Utility Fund & Connection Fees
12" Reclaimed Water Main Extension (South Ave N to16th Ave along 6th St, including spurs to City Cemetery and West Elementary): Engineering & Permitting			60,000			60,000	Utility Fund & Connection Fees
8" Reclaimed Water Main Extension (12th St along Henry Drive to Woodlawn Elementary/ Police Station): Construction			250,000			250,000	Utility Fund & Connection Fees
8" Reclaimed Water Main Extension (17th St to Veteran's Park): Construction			100,000			100,000	Utility Fund & Connection Fees
Lift Station No. 5 Replacement, (12th Ave & 4th St): Construction			500,000			500,000	Utility Fund & Connection Fees
8" Reclaimed Water Main Extension (7th Ave along 7th St to North Ave): Engineering & Permitting				30,000		30,000	Utility Fund & Connection Fees

Table 13
Potable & Reclaimed Water Supply Projects
City of Zephyrhills Five-Year Capital Improvements Plan (FY 2010-2014)

Project Description	Cost by Fiscal Year ($)						Revenue Source
	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	Total	
12" Reclaimed Water Main Extension (South Ave N to 16th Ave along 6th St) including Spurs to City Cemetery and West Elementary: Construction				250,000		250,000	Utility Fund & Connection Fees
8" Reclaimed Water Main Extension (West Elementary to the YMCA, including Wedgewood): Engineering & Permitting					60,000	60,000	Utility Fund & Connection Fees
8" Reclaimed Water Main Extension (7th Ave along 7th St to North Ave): Engineering & Permitting					250,000	250,000	Utility Fund & Connection Fees
Lift Station Rehabilitation Projects (3 Lift Stations Per Year)	300,000	300,000	300,000	300,000	300,000	1,500,000	Utility Fund & Connection Fees
Inventory	50,000	50,000	50,000	50,000	50,000	250,000	Utility Fund & Connection Fees
WWTP Rehabilitation of No. 1 & No. 2 Effluent Pumps: Design	30,000					30,000	
WWTP Rapid Infiltration Basins: Engineering & Permitting	150,000					150,000	
WWTP Misc. Valve Replacement Project: Engineering	33,000					33,000	
WWTP Rapid Infiltration Basins: Construction		3,500,000				3,500,000	
WWTP Rehabilitation of No. 1 & No. 2 Effluent Pumps: Construction		130,000				130,000	
WWTP Misc. Valve Replacement Project: Construction		330,000				330,000	
WWTP Inventory	50,000	50,000	50,000	50,000	50,000	250,000	
Total	**763,000**	**4,720,000**	**1,310,000**	**680,000**	**710,000**	**8,183,000**	

Source: City of Zephyrhills Capital Improvements Plan, 2010.