



**TO:** All Members of the TRC

**FROM:** Rebeca A. Guerra, AICP, LEED-AP, CPD, Assistant Director of Planning

**RE:** TRC PROJECT NUMBER #20-40000002 (10-YEAR WATER SUPPLY FACILITIES WORK PLAN)

**DATE:** AUGUST 6, 2020

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### **Comprehensive Plan Amendment 10-YEAR WATER SUPPLY FACILITIES WORK PLAN**

Pursuant to Section 163.3177(6)(c)3 Florida Statutes, the City of Fort Pierce is required to update the Comprehensive Plan's Water Supply Facilities Work Plan. To that end, this proposed Comprehensive Plan Text Amendment seeks to revise the City's water demand projections for a planning period of ten (10) years. The attached Work Plan identifies alternative and traditional water supply projects and conservation and reuse activities needed to meet the projected future demands.

Please provide two (2) copies of written comments regarding the above at your easiest convenience. The item will be reviewed at the August 20, 2020, TRC Meeting.

Please do not hesitate to contact me directly should you require any additional information or clarification at (772) 467-3739. Please send all TRC Comments to [rguerra@cityoffortpierce.com](mailto:rguerra@cityoffortpierce.com) by no later than **August 17, 2020**.

Thank You,  
Rebeca A. Guerra, AICP, LEED-AP, CPD  
Assistant Director

# **Ten Year Water Supply Facilities Work Plan**

**Fort Pierce Utilities Authority  
City of Fort Pierce  
St. Lucie County  
Florida**

**January 15, 2020**

## **Table of Contents**

- I. Introduction
- II. Water Supply and Facilities Information
  - A. Service Area
  - B. Water Supply Facility
  - C. Raw Water Wells
  - D. Water Use Permit
- III. Projected Demands
- IV. Conservation Rate Structure
- V. Reclaimed Water
- VI. Capital Improvement Plan

## **Tables**

- 1. FPUA Historical Water Demands
- 2. FPUA Water Demand Forecast
- 3. Five Year Capital Improvement Plan

## **Figures**

- 1. FPUA Water Annual Average Day Flow

## **Appendices**

- 1. Zoning Map
- 2. Service Area & Water System Map

## **I. Introduction**

In anticipation of rapid population growth, increasing water demand and the potential threat of inadequate water supplies to both the economy and the environment, the Legislature amended the Florida Water Resources Act (Chapter 373, Florida Statutes) in 1997. The amendments require the water management districts to initiate regional water supply planning in all areas of the state where anticipated sources of water were deemed inadequate to meet the projected water demands for 2020.

The water supply plans include a list of water source options, which have been identified to meet anticipated demands while sustaining water resources and related natural systems. The South Florida Water Management District Board approved the 2006 Upper East Coast Water Supply Amendment (WSA) of July 12, 2006. Local governments are required to adopt their Comprehensive Plan Amendments in conformance with the District WSA by January 1, 2008.

The 2002 Legislature expanded the local government comprehensive plan requirements to strengthen coordination of water supply planning and local land use planning. One of the most significant new requirements is a 10-year Water Supply Facilities Work Plan. The work plan must, at a minimum:

1. Project the local government's needs for at least a 10-year period;
2. Identify and prioritize the water supply facilities and sources of water that will be needed to meet those needs; and
3. Include in the local government's Five Year Schedule of Capital Improvements the capital improvements identified as needed for the first five years, including financially feasible revenue sources. A current five-year schedule must be maintained and updated annually.

In addition the following supporting data and analysis is to be provided to document the utility's water needs and its plan to meet the identified needs:

1. Description of the existing potable water facilities including the design capacity of the production and treatment facilities, the current demand, the geographic area served, relevant consumptive use permit conditions and conservation and reuse practices.
2. Maps of the major water supply facilities and transmission mains.
3. A water supply service area map.

The following report was provided to the City of Fort Pierce, Planning and Development Department by the Fort Pierce Utilities Authority for inclusion in the City of Fort Pierce's Comprehensive Plan in conformance with the requirements described above.

## **II. Water Supply and Facilities Information**

### **A. Service Area**

The FPUA provides potable water to the incorporated section for the City of Fort Pierce (City) and the surrounding areas of unincorporated St Lucie County, including South Hutchinson Island to the Martin County line. The FPUA also provides bulk water to North Hutchinson Island, northern St. Lucie County, and western St. Lucie County. The FPUA currently serves approximately 17,500 water accounts within the FPUA's service area (excluding bulk customers) with a service area of approximately 61 square miles.

As indicated in the FPUA Water & Wastewater Master Plan dated September 2006 and prepared by LBFH, Inc., most of the land inside the City limits is currently zoned and being utilized for residential purposes with the majority specifically zoned as medium density residential. The FPUA's Retail Service Area Boundary was established in the Bulk Water/Wastewater Agreement with St. Lucie County, which also provides for bulk sales of FPUA water and wastewater services to St. Lucie County's retail customers. The predominate medium residential zoning is generally concentrated south of Orange Avenue and north of Midway Road between US 1 and Indian River Drive. The second highest land use category is general commercial. The general commercial zoned areas tend to follow the City's main access roads (i.e. Okeechobee Road, Orange Avenue, and US 1). The vacant land inside the City limits constitutes approximately 16.7% of the total area. Approximately 28% of the area between the City limits and the Retail Service Area Boundary is currently vacant.

In the area between the City limits and the FPUA's Retail Service Area Boundary most of the land is currently zoned as "Agriculture, Residential", "Agricultural", or "Industrial, Light". Agricultural Residential is the largest of the three zoning categories. Based on future land use, the largest category is "Residential" closely followed by "Non-Agricultural Acreage". Areas of Residential lands are located throughout the area between the City limits and the FPUA Retail Service Area Boundary. Large Non-Agricultural Acreage areas are located north and west of the City limits but the largest tracts are concentrated in the northwest corner of the Retail Service Area.

### **B. Water Supply Facility**

The Henry A. Gahn Water Treatment Facility (WTF) treats and supplies potable water to the FPUA service area. The WTF site contains two water treatment plants (WTP's) with two separate treatment processes. The original treatment plant utilizes a lime softening/dual media filtration process which is supplied from a surficial aquifer source. At times Floridan Aquifer water is blended with the shallow surficial wells for treatment in the lime softening WTP. The newer plant constructed in December 2002 uses a reverse osmosis (RO) process to treat water from the Floridan Aquifer.

Treated water from the lime softening and RO WTP's is pumped to three on-site ground storage tanks (GST's). The storage tanks feed four high service pumps (HSP's) that supply the distribution system. There are three re-pump stations located with in the distribution system.

The three ground storage tanks (GST's) at the Henry A. Gahn WTF have capacities of 1.0, 1.5, and 3.0 million gallons (MG) and were constructed in 1959, 1983, and 2000 respectively. The GST's provide water to the main high service pumps as well as the on-site pump station on 25<sup>th</sup> Street. The two older GST's are reportedly in good condition following rehabilitation in 1999 and follow-up tank inspections performed in 2013.

There are three additional storage tanks at the Jaycee Park, South Hutchinson Island, and Savannah Road re-pump stations. These tanks have capacities of 1.0, 1.0, and 1.5 MG respectively. The January 2007 Capacity Analysis Report (CAR) prepared by Global Tech for FPUA's Henry A. Gahn Water Treatment Facility indicates that no additional expansion plans for the treatment facilities are currently required. In May 2018, FPUA rerated the permitted capacity of the Henry A. Gahn Water Treatment Facility from 18.99 MGD to 23.32 MGD under Permit Number 0081062-398-WC. This sets the permitted capacity of the Lime Softening Water Treatment Process to 12.99 MGD that is to remain the same and the Reverse Osmosis Water Treatment Plant Process firm maximum capacity increases from 6.0 MGD to 10.33 MGD. The current FDEP permitted capacity is more than adequate to meet the demand growth projected over the next 10 years.

### **C. Raw Water Wells**

FPUA currently owns and operates a total of 47 groundwater wells, including 36 wells that draw water from the surficial aquifer and 11 wells that draw water from the Floridan Aquifer. The 36 surficial wells are dedicated to the lime softening WTP along with one Floridan Aquifer well. Eight of the Floridan Aquifer wells normally provide water to the RO WTP. One Florida well is dedicated to the lime softening WTP and two of the Floridan wells could also be routed to the lime softening WTP is needed. FPUA has a continuing program to rehabilitate and improve its existing aquifer wells.

### **D. Water Use Permit**

The South Florida Water Management District (SFWMD) issued Water Use Permit 56-00085W to the FPUA on July 11, 2007. The permit grants the FPUA an annual allocation of 7713 MG of which up to 2920 MG can come from the Surficial Aquifer with the remaining 4,793 MG to be supplied from the Floridan aquifer. Monthly restrictions on the surficial and Floridan aquifer systems are 243.20 MG and 467.98 MG, respectively. This permit expires in 2027.

### III. Projected Water Demands

Fort Pierce is located in an area that has experienced a fast-paced growth rate that has recently slowed due to the impact of two hurricane strikes in recent years and a general economic slow down in the national residential construction market. The 2006 Water and Wastewater System Master Plan used a methodology for determining the future water demands that included the utilization of information on potential development activity within the FPUA Retail Service Area and a geographic information systems (GIS) analysis of land use and build able lands within the Retail Service Area.

In addition to the provision of water supply to its own service area FPUA provides water to the St. Lucie County Utilities Department (SLCUD) distribution network. Based on SLCUD's current plan it is anticipated that water will be provided to its North Hutchinson Island and Indian River Estates indefinitely. Demand growth in other areas of the County which receive bulk service from FPUA will be served through existing and new master meters serving the Northern District and the Western District.

**Table 1**

**Fort Pierce Utilities Authority Historical Water Demands**

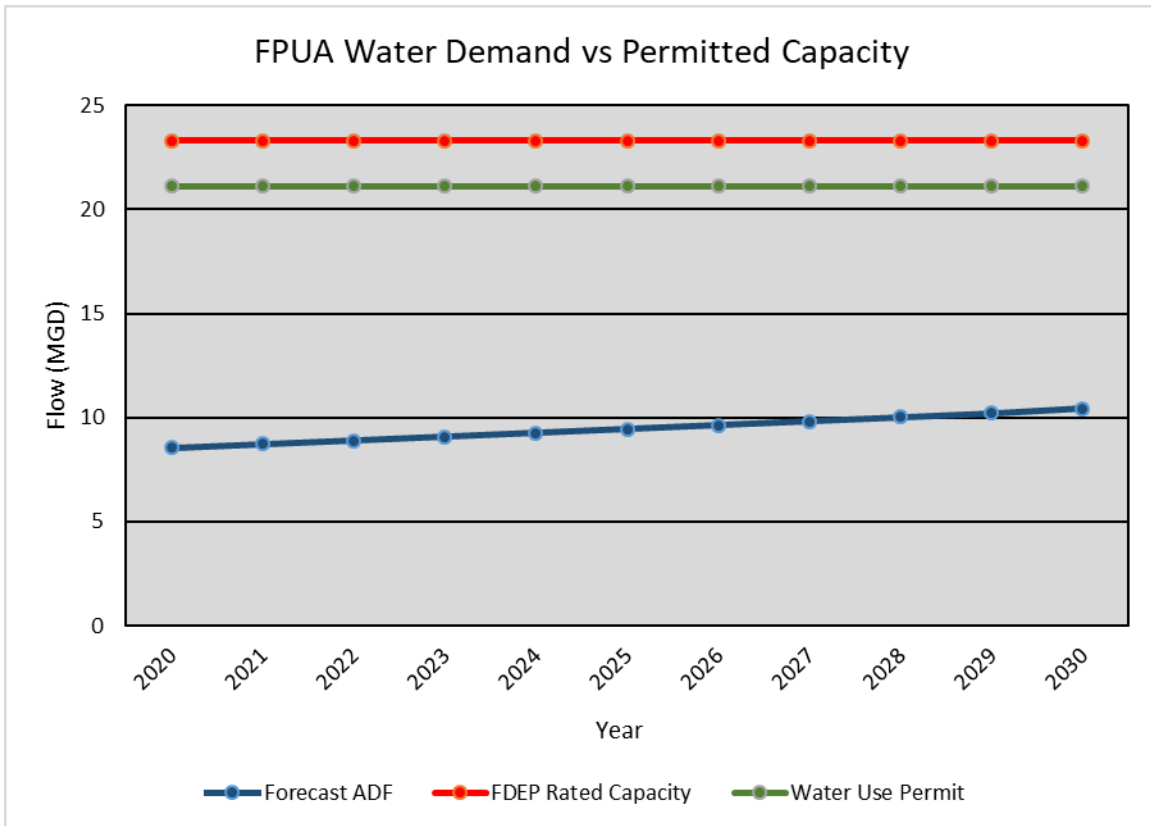
<u>Year</u>	<u>Annual Average Day Flow (mgd)</u>
2010	7.93
2011	8.05
2012	8.12
2013	7.50
2014	7.49
2015	7.54
2016	7.85
2017	8.27
2018	8.79
2019	8.39

**Table 2**

**Fort Pierce Utilities Authority Forecast Water Demands  
From SFWMD Water Use Permit (per capita demand 151 gpd)**

<u>Year</u>	<u>Service Population</u>	<u>Demand (mgd)</u>
2020	56,674	8.55
2021	57,807	8.72
2022	58,963	8.90
2023	60,142	9.08
2024	61,345	9.26
2025	62,572	9.44
2026	63,823	9.63
2027	65,099	9.82
2028	66,401	10.02
2029	67,729	10.22
2030	69,084	10.43

**Figure 1**



#### IV. Conservation Rate Structure

The current FPUA water rate structure is a multi-tier conservation rate structure which increases the unit cost as consumption levels increase this rate applies to both residential and commercial customers. The current monthly water usage rate is shown below:

<u>Water Usage</u>	<u>Charge per 1,000 gallons</u>
1-3,000 gallons	\$11.25 flat rate up to 3,000 gals.
3,001 to 10,000 gallons	\$3.75
10,001 to 15,000 gallons	\$4.69
Over 15,000 gallons	\$5.62

As an enhanced conservation measure irrigation customer using in excess of 15,000 gallons per month will be charged \$7.93 per 1000 gallons.

## **V. Reclaimed Water**

FPUA has no existing Reclaimed Water. Reclaimed water will be available when the Mainland Water Reclamation Facility (MWRf) is constructed.

FPUA has entered into an agreement with Florida Municipal Power Agency (FMPA) to provide reclaimed water for use in their cooling towers at their Treasure Coast Energy Center (TCEC). This agreement was executed in October 2005 between FMPA and FPUA. It binds FPUA to guarantee to reserve reclaimed water in the amount of 2.9 mgd for TCEC Unit 1. Under the agreement FMPA will periodically evaluate its reclaimed water needs and notify FPUA of changes in the required quantity of reclaimed water it will need to operate TCEC Unit 1.

The provisions of the agreement between FMPA and FPUA may limit FPUA's ability to enter into additional agreements to provide reclaimed water to other users should FPUA be required to provide the up to 11.6 MGD of reclaimed water capacity FMPA is authorized to reserve and utilize for its future TCEC Units 2, 3 and 4.

FPUA has investigated potential future reclaimed water users at locations that could become large reuse sites within an approximate two mile radius of the MWRf. Sites were identified and owners of the properties contacted to gauge the interest in the use of reuse water. At this time, with the exception of the St. Lucie County Landfill, none of the owners contacted indicated an interest or need for provision of reclaimed water service.

St. Lucie County is planning on constructing a plasma-arc gasification facility at their landfill. The facility was contacted as part of this study and personnel indicated that the water requirements for the facility were still being defined. FPUA will continue to monitor the progress of this project and inquire if it can enter into a reuse supplier agreement with the County for water needed for the new plasma-arc facility.

## **VI. Capital Improvement Plan**

The FPUA prepares an annual capital budget which is reviewed and approved by its Board and the City of Fort Pierce City Commission. As a part of the annual budget preparation process the FPUA updates its Five Year Capital Improvement Plan. Projects included in the plan include both capital improvements which add new system capacity and replacement & rehabilitation (R&R) projects which replace components of the system which are approaching the end of their useful life. A significant portion of new water transmission capacity is constructed by developers and dedicated to FPUA as a part of the development process or through upsizing of existing water mains during the construction of roadway projects as part of City, County or State roadway projects.

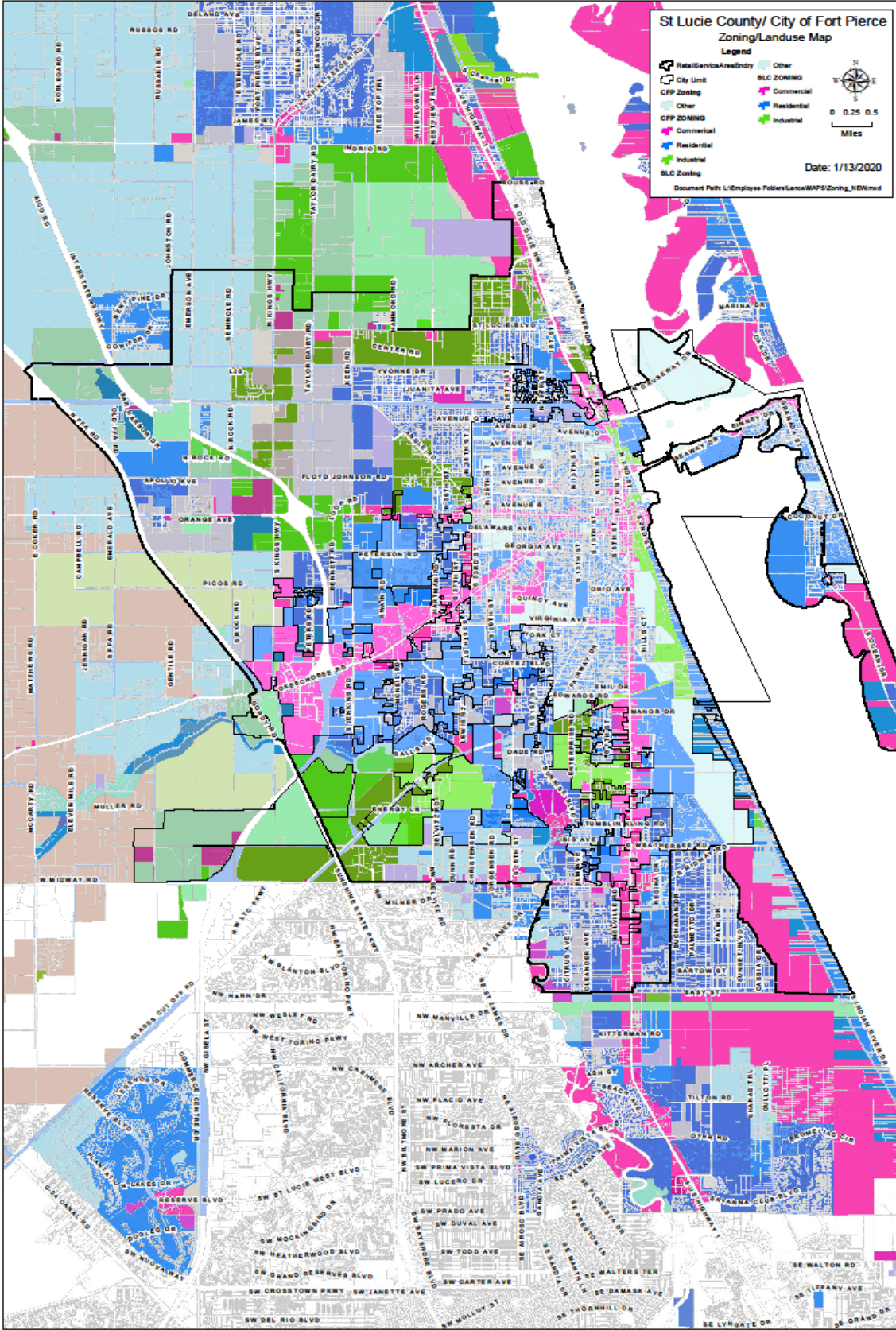
Major plant capital projects include: the ongoing replacement and upgrading of existing surficial wells, the addition of a back up deep injection well for disposal of RO brine

concentrate, the addition of emergency power generators for the Floridan wellfield and the construction of additional emergency power capacity for the RO plant.

**Table 3**  
**FPUA Five Year Water Capital Improvement Program FY 2020 to FY 2024**

<b>Project Title</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>5-Year Total</b>
Surficial Well Replacement	435,000	440,000	445,000	450,000	455,000	2,225,000
Fire Hydrant New Installations	12,360	12,731	13,113	13,506	13,911	65,621
New Construction-Mains	43,360	45,311	47,350	49,481	51,708	237,210
New Construction-Customer	50,000	50,000	50,000	50,000	50,000	250,000
Rehab & Replacement WM	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	5,000,000
Governmental & Other	110,000	110,000	110,000	110,000	110,000	550,000
Water Main Looping	110,000	110,000	110,000	110,000	110,000	550,000
City Roadway Project	300,000	300,000	300,000	300,000	300,000	1,500,000
S.L.C. Roadway Projects	100,000	100,000	100,000	100,000	100,000	500,000
Kings Hwy-Okee Rd to Orange Ave	400,000					400,000
Mura MSBU	450,000					450,000
Miscellaneous MSBU	350,000	350,000	350,000	350,000	350,000	1,750,000
RO Upgrades/Electric Upgrades	315,000					315,000
Floridan Well Field Generator	500,000					500,000
Subaqueous Mains Stabilization	160,000	160,000	160,000	160,000	160,000	800,000
Customer Base Expansion	525,000	525,000	525,000	525,000		2,100,000

**Appendix 1**  
**Zoning Map**



**Appendix 2**  
**Service Area and Water System Map**

