TOWN OF PALM BEACH

Information for Town Council Meeting on: October 14, 2020

To: Mayor and Town Council

From: Wayne Bergman, Director of Planning, Zoning & Building

Cc: Kirk Blouin, Town Manager

Re: Request to Consider Ordinance No. 11-2020 – Comprehensive Plan Amendment to the Infrastructure Element and 10-Year Water Supply Facility Work Plan

Date: September 23, 2020

STAFF RECOMMENDATION

Staff recommends that the Town Council consider the Comprehensive Plan Amendment to the Infrastructure Element and the 10-Year Water Supply Facility Work Plan and the approval of Ordinance No. 11- 2020. This ordinance approval will allow the transmittal of the Comprehensive Plan Amendment and 10-Year Water Supply Facility Work Plan to the State Land Planning Agency (Florida Department of Economic Opportunity – "DEO") and to other State and County agencies for review. Second Reading will be on or about December 9, 2020, after the Town receives any objections, comments or recommendations from the reviewing agencies.

GENERAL INFORMATION

The purpose of water supply planning is to develop strategies to meet future water demands of urban and agricultural uses, while meeting the needs of the environment. This process identifies areas where historically used sources of water will not be adequate to meet future demands, and evaluates several water source options to meet those demands.

Chapter 163.3177(6)(c) F.S. requires the Town of Palm Beach to revise the 10-Year Water Supply Facility Work Plan (Work Plan) within its comprehensive plan no later than 18 months after the water management district approves a regional water supply plan or its update.

Each regional water supply plan is based on at least a 20-year future planning horizon, and a complete update is required every five years. The South Florida Water Management District (SFWMD) adopted its most recent update to the Lower East Coast Water Supply Plan in November, 2018. This document is titled *The 2018 Lower East Coast Water Supply Plan Update* (2018 "LEC" Plan Update), and has a planning horizon of 2040. The Town is required to update the Work Plan within 18 months of the completion of the 2018 LEC Plan Update, or by May of 2020. The Town technically met this statutory requirement, however due to the

timing of the City of West Palm Beach's (the Town's potable water supplier) adopted Work Plan (comments and recommendations to the first draft of the City's Work Plan were received from the SFWMD and resulted in several months of delay), and the postponement of numerous Town meetings due to the Covid-19 pandemic, the actual adoption of the Town's Work Plan will take a few additional months. This uncontrollable delay was presented to Mr. Ray Eubanks at Florida DEO, who did see any concern or issue with this delay.

In summary, the Town is proposing the following revisions to the Work Plan, all of which are based upon and consistent with the City of West Palm Beach's Work Plan:

- Population estimates and projections are updated to reflect the most recent available data.
- Water demand estimates and projections are revised for consistency with the 2018 LEC Plan update.
- Technical specifications for the Eastern wellfield are updated.
- Revised dates are incorporated in the document to stay consistent with the 2018 LEC Plan Update.
- Capital improvement needs to meet existing and future demands are revised.
- The section on the Town's water conservation efforts, including the Alternative Water Supply Projects/Reuse portion of the Work Plan are updated.
- Planning time frames are updated to reflect the 10-year planning horizon of the Work Plan.
- Other changes to reflect changed conditions and new practices and policies are incorporated.
- Amended the section of the Work Plan dealing with the Water Treatment Plant Process to better reflect current practices.
- Various revisions to the City of West Palm Beach's Work Plan, that were requested by the SFWMD, prior to the City adopting the Work Plan.

The revised Infrastructure Element and Work Plan was provided to the City of West Palm Beach senior staff and to the Palm Beach County Intergovernmental Plan Amendment Review Committee - "IPARC", for their courtesy review. No feedback was received from either group, although the Palm Beach County Water Utility Department did request the full submittal document, which was provided.

This entire matter, although lengthy and at times complex, is really a "housekeeping" matter, a mandatory State requirement that must be addressed. It is important to note that the Comprehensive Plan Amendment and Revised Work Plan do acknowledge the agreement between the City of West Palm Beach and the Town in regards to water supply, but does allow for a change to the agreement if needed or requested.

TOWN OF PALM BEACH

Information for Town Council Meeting on: October 13, 2020

To: Mayor and Town Council

From: Wayne Bergman, Director of Planning, Zoning & Building

Cc: Kirk Blouin, Town Manager

Re: Request to Consider Ordinance No. 11-2020 at Public Hearings Prior to 5:00 p.m.

Date: September 14, 2020

STAFF RECOMMENDATION

Staff recommends the Town Council conduct the public hearings on Ordinance No. 11- 2020 at the Town Council meetings prior to 5:00 p.m. The proposed Ordinance will be heard on First Reading at the October 14, 2020 meeting, and it is anticipated that the Second Reading will be on or about December 9, 2020.

GENERAL INFORMATION

Florida Statute 166.041 requires the Town Council hold at least one of two public hearings to adopt a comprehensive plan amendment (or zoning amendment ordinance that changes the list of permitted, conditional or prohibited uses within a zoning district consisting of parcels of land involving ten acres or more) after 5:00 p.m. However, the Statute provides that the time of hearing can be changed if a majority, plus one, of the local governing body, elects to have a hearing at another time. Staff is requesting that the Town Council elect to conduct the public hearings on Ordinance No. 11-2020 during the course of the normal Council business. The First Reading of the proposed Ordinance will be on October 14, 2020. Second Reading is anticipated to be on or about December 9, 2020. All public hearings may occur before 5:00 p.m.

COMPREHENSIVE PLAN AMENDMENT

20-01ESR

WATER SUPPLY PLAN UPDATE

TEXT AMENDMENT TO THE INFRASTRUCTURE ELEMENT

EXPEDITED REVIEW PROCESS TRANSMITTAL PACKAGE

September 2020

Town of Palm Beach
Planning, Zoning & Building Department
360 S. County Rd.
Palm Beach, FL 33480
(561) 838-5431

TOWN OF PALM BEACH

Planning, Zoning & Building Department

October 15, 2020

Florida Department of Economic Opportunity
Attn: Ray Eubanks, Plan Processing Administrator
State Land Planning Agency
Caldwell Building
107 East Madison – MSC 160
Tallahassee, FL 32399-4120

Re: Proposed Town of Palm Beach Amendment – TOPB 20-01ESR
Water Supply Plan Update -Text amendments to the Infrastructure Element and Updated 10 Year Water Supply Facility Work Plan

Dear Mr. Eubanks:

In accordance with the Community Planning Act and Chapter 163 of the Florida Statues (F.S.), the Town of Palm Beach is pleased to transmit to the State Land Planning Agency, the Department of Economic Opportunity (DEO), a text amendment to the Town of Palm Beach Comprehensive Plan.

Enclosed please find 3 copies (1 hard copy and 2 CDs in PDF) of the following:

a) A Town of Palm Beach Transmittal Report with supporting information, including the staff, local planning agency (Town Council sitting as the LPA) and local governing body (Town Council) recommendations;

b) Copies of the letters of submittal sent to the appropriate review agencies on October 15, 2020;

c) The ordinance approved during the October 14, 2020 LPA meeting's and October 14, 2020 Town Council's transmittal public hearings.

These proposed amendments to the Infrastructure Element of the Comprehensive Plan and update to the 10 Year Water Supply Facility Work Plan are by Section 163.3177(6)(c), Florida Statutes (F.S.).

The proposed amendments are being submitted under the **Expedited State Review Process** and are NOT applicable to any area of critical state concern. The Town of Palm Beach

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Telephone: (561) 838-5430 • Facsimile (561) 835-4621
E-Mail: pzb@townofpalmbeach.com • Website: www.townofpalmbeach.com

anticipates adopting the proposed amendments in December of 2020, depending upon any State comments that are received.

Should you require additional information or have any questions, please do not hesitate to contact me directly.

Sincerely,

Wayne Bergman
Director of Planning, Zoning & Building

TOWN OF PALM BEACH
TRANSMITTAL REPORT

10- Year Water Supply Facilities Work Plan- Infrastructure Element
Comprehensive Plan Amendments TOPB 20-01ESR
ORDINANCE 11-2020

I. REQUEST

A Town-initiated request for the following:

ORDINANCE 11-2020: Proposed amendment to the Infrastructure Element of the Comprehensive Plan and update to the 10-Year Water Supply Facility Work Plan as required by Section 163.3177(6)(c), Florida Statutes (F.S.).

II. STAFF RECOMMENDATION

ORDINANCE 11-2020: APPROVAL – Based on the findings that Ordinance 11-2020 meets Chapter 163, Florida Statutes, and is consistent with other elements of the Town's Comprehensive Plan.

III. INTERJURISDICTIONAL REVIEW & PUBLIC COMMENT

Interlocal Plan Amendment Review Committee (IPARC): Notification of the proposed Comprehensive Plan text amendments was sent to IPARC on April 28, 2020, and to date, the Town has not received any objections or comments.

Town of Palm Beach Local Planning Agency (LPA): The Town Council, sitting as the LPA, recommended approval (5-0) of this proposed amendment after a Public Hearing on October 14, 2020.

Town Council (Transmittal): The Town Council reviewed the proposed amendment during its October 14, 2020 Transmittal Public Hearing, and recommended approval 5-0. Exhibit A of this Transmittal Report contains the transmitted policy revisions as approved by the Town Council.

IV. BACKGROUND & ANALYSIS

The purpose of water supply planning is to develop strategies to meet future water demands of urban and agricultural uses, while meeting the needs of the environment. This process identifies areas where historically used sources of water will not be adequate to meet future demands, and evaluates several water source options to meet those demands.

Chapter 163.3177(6)(c) F.S. requires the Town of Palm Beach to revise the 10-Year Water Supply Facility Work Plan within its comprehensive plan no later than 18 months after the water management district approves a regional water supply plan or its update.

Each regional water supply plan is based on at least a 20-year future planning horizon, and a complete update is required every five years. The South Florida Water Management District (SFWMD) adopted its most recent update to the Lower East Coast Water Supply Plan in November, 2018. This document is titled *The 2018 Lower East Coast Water Supply Plan Update* (2018 LEC Plan Update), and has a planning horizon of 2040. The Town is required to update the Work Plan within 18 months of the completion of the 2018 LEC Plan Update, or by May of 2020. The Town technically met this statutory requirement, however due to the timing of the City of West Palm Beach's (the Town's potable water supplier) adopted Work Plan, and the postponement of numerous Town meetings due to the Covid-19 pandemic, the actual adoption of the Town's Work Plan will require a few more months.

There are several reasons why the Florida Statutes require local governments to update the 10-Year Water Supply Facilities Work Plan (Work Plan):

- Ensure adequate water supply for current and future residents; and
- Strengthen position to compete for funding assistance; and
- Plan for alternative sources that take time to develop and finance; and
- Ensure local needs are considered by regional water suppliers and the South Florida Water Management District (SFWMD).

In summary, the Town is proposing the following revisions to the Work Plan, all of which are based upon and consistent with the City of West Palm Beach's Work Plan:

- Population estimates and projections are updated to reflect the most recent available data.
- Water demand estimates and projections are revised for consistency with the 2018 LEC Plan update.
- Technical specifications for the Eastern wellfield are updated.
- Revised dates are incorporated in the document to stay consistent with the 2018 LEC Plan Update.
- Capital improvement needs to meet existing and future demands are revised.
- The section on the Town's water conservation efforts, including the Alternative Water Supply Projects/Reuse portion of the Work Plan are updated.
- Planning time frames are updated to reflect the 10-year planning horizon of the Work Plan.
- Other changes to reflect changed conditions and new practices and policies are incorporated.
- Amended the section of the Work Plan dealing with the Water Treatment Plant Process to better reflect current practices.
- Various revisions to the City of West Palm Beach's Work Plan, that were requested by the SFWMD, prior to the City adopting the Work Plan.

V. CONCLUSION

Chapter 163.3177(6)(c) of the Florida Statutes requires the Town of Palm Beach and all municipalities in the State to revise the 10 Year Water Supply Facility Work Plan within its

comprehensive plan no later than 18 months after the water management district approves a regional water supply plan or its update. The South Florida Water Management District (SFWMD) adopted its most recent update to the Lower East Coast Water Supply Plan in November, 2018 (2018 LEC Plan Update). This means that the Town is required to update the Work Plan by May of 2020 (see above details regarding the timing of the Work Plan update).

All of the proposed changes are consistent with the requirements of the State Statutes, the 2018 LEC Plan Update and with other elements of the Comprehensive Plan. Therefore, staff is recommending approval of the proposed amendments to the Comprehensive Plan.

Prepared and Respectfully Submitted by:

Wayne Bergman
Director of Planning, Zoning & Building

NOTICE OF PUBLIC HEARING
NOTICE OF PROPOSED COMPREHENSIVE PLAN AMENDMENTS
TOWN OF PALM BEACH, FLORIDA

The Local Planning Agency and the Town Council of the Town of Palm Beach, Florida will review amendments to the Comprehensive Plan - Infrastructure Element and Water Supply Facilities Work Plan.

The Local Planning Agency and the Town Council will hold public hearings regarding the Comprehensive Plan Amendments. The complete amendments to the Comprehensive Plan may be inspected or obtained at Town Hall. The public hearings will be held on October 14, 2020, beginning at 9:30 a.m., or as soon thereafter as the matter may be heard. The hearings will be either virtual or in person. If the hearings are virtual, they will be Zoom Meetings on the web. For Zoom Meeting instructions, please go to the Town's website (www.townofpalmbeach.com) , go to the blue tool bar and click on Meeting Audio, and then click on the meeting instructions to join the October 14, 2020 Town Council hearings. If the hearings are not virtual, they will be held on the second floor in Town Hall, 360 South County Road, Palm Beach, Florida, 33480.

All interested persons are invited to attend and be heard. Written comments may be filed with the Town of Palm Beach for consideration. In accordance with the American with Disabilities Act, a person with disabilities needing any special accommodations to participate in the Town public meetings should contact the Clerk's office at Town Hall at (561) 838-5416.

General Information: Information on the above items are available at the Town of Palm Beach Town Hall, Planning, and Zoning & Building Department, located on the first floor. For further information call (561) 227-6426 or email: wbergman@townofpalmbeach.com

Queenester Nieves, Town Clerk
Publish: October 1, 2020

ORDINANCE NO. 11-2020

AN ORDINANCE OF THE TOWN COUNCIL OF THE TOWN OF PALM BEACH, PALM BEACH COUNTY, FLORIDA, AMENDING THE TOWN OF PALM BEACH'S COMPREHENSIVE PLAN BY AMENDING THE INFRASTRUCTURE ELEMENT, AS WELL AS THE 10-YEAR WATER SUPPLY FACILITY WORK PLAN; PROVIDING FOR INCORPORATION OF RECITALS; PROVIDING FOR SEVERABILITY; PROVIDING FOR REPEAL OF ORDINANCES IN CONFLICT HEREOF; PROVIDING FOR CODIFICATION; PROVIDING AN EFFECTIVE DATE.

WHEREAS, the Town proposes to amend its Comprehensive Plan in accordance with the requirements of the 1993 Local Government Comprehensive Planning and Land Development Regulation Act; and

WHEREAS, the Town created the Town of Palm Beach Comprehensive Plan with the adoption of Ordinance No. 11-89, and last amended the Comprehensive Plan on August 9, 2017 with the adoption of Ordinance No. 9-2017; and

WHEREAS, the Town is amending the Infrastructure Element and the 10-Year Water Supply Facility Work Plan, based on the City of West Palm Beach's recent update to their 10-Year Water Supply Facility Work Plan and Chapter 163.3177(6)(c), Florida Statues; and,

WHEREAS, after public hearing pursuant to notice required by law, the Town Council, acting as the Local Planning Agency (LPA) at its October 14, 2020 meeting, considered all evidence and testimony and recommended that the Town Council approve on first reading the subject Ordinance amending the Town's Comprehensive Plan, and transmit said ordinance to the Florida Department of Economic Opportunity (DEO); and,

WHEREAS, after public hearings on October 14, 2020 and _____, 2020, pursuant to notice as required by law, the Town Council does hereby find, determine, and declare that the public health, safety, morals and general welfare of the citizens of the Town of Palm Beach requires that the aforesaid Comprehensive Plan, be amended as hereinafter set forth, and transmitted to the Florida Department of Economic Opportunity (DEO).

NOW, THEREFORE, BE IT ORDAINED BY THE TOWN COUNCIL OF THE TOWN OF PALM BEACH, PALM BEACH COUNTY, FLORIDA, AS FOLLOWS:

Section 1. Incorporation of Recitals

The above recitals are incorporated as fully set forth herein.

Section 2. **Findings**

The proposed Comprehensive Plan amendments, as more particularly described in Exhibit A, have been determined by the Town Council to promote the public health, safety and welfare, and are consistent with the requirements in Florida Statutes, and all elements of the adopted Comprehensive Plan.

Section 3. **Amendment of the Comprehensive Plan**

The Town of Palm Beach Comprehensive Plan is hereby amended to incorporate those amendments set forth in Exhibit A attached hereto and incorporated herein by reference.

Section 4. **Severability.**

If any provision of this Ordinance or the application thereof is held invalid, such invalidity shall not affect the other provisions or applications of this Ordinance which can be given effect without the invalid provisions or applications, and to this end the provisions of this Ordinance are hereby declared severable.

Section 5. **Repeal of Ordinances in Conflict.**

All other ordinances of the Town of Palm Beach, Florida, or parts thereof which conflict with this or any part of this Ordinance are hereby repealed.

Section 6. **Codification.**

This Ordinance shall be codified and made a part of the official Comprehensive Plan of the Town of Palm Beach.

Section 7. **Effective Date.**

This Ordinance shall take effect thirty-one days after its adoption, as provided by law.

PASSED AND ADOPTED in a regular, adjourned session of the Town Council of the Town of Palm Beach on first reading this 14th day of October, 2020, and for second and final reading on this ____ day of _____, 2020.

Gail L. Coniglio, Mayor

Margaret A. Zeidman, Town Council President

Bobbie Lindsay, Council President Pro Tem

Julie Araskog, Town Council Member

ATTEST:

Lewis S.W. Crampton, Town Council Member

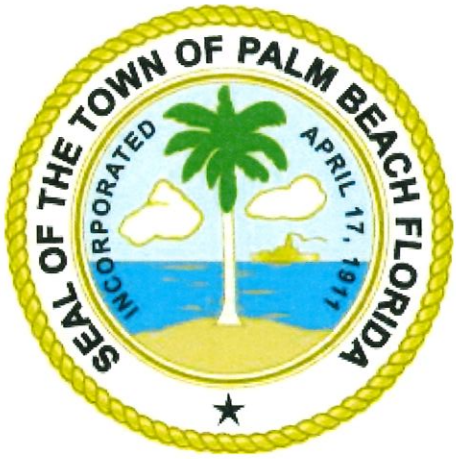
Queenester Nieves, Town Clerk

Danielle H. Moore, Town Council Member

EXHIBIT A

Proposed Comprehensive Plan Amendments
Infrastructure Element

Language **<u>underlined</u>** added, and language ~~**stricken**~~ deleted.



TOWN OF PALM BEACH

COMPREHENSIVE PLAN

~~JULY 28, 2017~~ AUGUST 25, 2020

As Last Amended by Ordinance No. 11-2020

TOWN OF PALM BEACH

PLANNING, ZONING & BUILDING DEPARTMENT

~~07/28/2017~~ August 25, 2020

TOWN OF PALM BEACH, FLORIDA

COMPREHENSIVE PLAN

INFRASTRUCTURE ELEMENT

EXECUTIVE SUMMARY

EXISTING AND FUTURE LAND USES

The geographic area served by the infrastructure facilities is the Town of Palm Beach, an urban, built-up area approaching saturation. These public facilities, providing service in and to the Town of Palm Beach, predominantly serve the following uses in the Town: residential, commercial, public, private group use, recreational and conservation uses. There are no agricultural or industrial uses in the Town. More detailed discussion of the patterns, and extent of land uses and land use maps, are provided in the Future Land Use Element. Because of the very limited amount of vacant land in the Town, the pattern of land uses in the future will remain essentially the same as now existing in the Town.

SANITARY SEWER SERVICES

Sewage is collected by typical gravity sanitary sewers. Many small pumping and relay stations are required because of flat terrain and the 12-mile length of the Town. Sewage leaves the Town by means of three force mains, one each in the northern, central and southern parts of Town to treatment facilities at the East Central Regional Wastewater Reclamation Facility (ECRWRF) on the mainland.

The northern force main, a 30-inch subaqueous line with a capacity of five million gallons per day (MGD), runs along Tangier Avenue and then under Lake Worth to connect to the regional plant. This force main was the primary effluent route until the new central force main was constructed which is a 24-inch subaqueous line from the Town's master pump station, that transitions to a 24-inch line along Flagler Drive that ties into the existing joint transmission force main there in West Palm Beach. The new central force main system was placed in operation in 2014. The southern main is a 16-inch subaqueous line with a capacity of 0.94 MGD connecting to the City of Lake Worth transmission system, which then connects to the regional plant. As of 2013, that southern force main is no longer used on a daily basis but is only used for emergencies or when it is necessary to bypass flow from the City of West Palm Beach system. When those situations arise, the Town has a short-term capability to send 1.7 MGD (1300 gpm) through the City of Lake Worth system. A new bulk user agreement was signed with the City of Lake Worth for those occasions when it is necessary to send flow through their subregional system.

The East Central Regional Wastewater Reclamation Facility uses secondary treatment involving a complete mix-activated sludge system. Effluent is disposed through deep well injection, and sludge is transported for disposal at the Palm Beach County Solid Waste Authority compost facility. The plant, which is owned in common by the cities of Lake Worth, Riviera Beach, West Palm Beach, Palm Beach County and the Town of Palm Beach, is operated and maintained by the City of West Palm Beach. The Town, and the four other owners of the plant, have "Large User Agreements" for treatment capacity. The Town's agreement calls for a 5 MGD allocation of plant

capacity. The Town's capacity share increased to 6 MGD, based on the reallocation due to flows no longer passing through the City of Lake Worth system.

The plant underwent an expansion which raised capacity from 55 MGD to 64 MGD. The current rated capacity is now 70 MGD. There are no deficiencies in the sanitary sewer treatment plant facilities now serving the Town.

Analysis of Town per capita wastewater flows between 2000 and 2007 indicated that total wastewater flows have decreased due primarily to rehabilitation of the gravity sewer line. With this reduction, the Town will continue to be within its 6 MGD allocation and contract.

Discussions with the Town Public Works Department and representatives of the ECRWRF indicate that at the projected peak seasonal population, the Town will remain within the levels of service for these force mains, and the ECRWRF has the capacity to provide service at the Town's adopted LOS throughout the planning period.

In September of each year the Town obtains a letter from the City of West Palm Beach certifying that the East Central Regional Wastewater Reclamation Facility has the capacity to treat the volume of wastewater projected to be generated in the Town during the peak season at the Town's adopted level of service.

The developer for each individual project is responsible for providing the Town with an estimate of the population for the project and the Town engineer determines the adequacy of available capacity of the force mains to handle the flow generated by the project.

SOLID WASTE

Solid waste pick-up and disposal service, including garbage, trash and vegetative yard trash, is provided by the Town to both residential and commercial areas.

GARBAGE

The Town provides garbage pick-up Monday through Friday. Weekend pick-up is provided to commercial establishments, such as restaurants, upon arrangement with the Town.

Commercial garbage is collected in 20-cubic yard packers, while six- cubic yard packers are used for collecting residential garbage. These wastes are then transferred to 65-cubic yard tractor trailer packers at the Pinewalk Transfer Station. This transfer station is leased to the Town on a year-to-year basis to the year 2050 by Flagler Systems, the developer of the Breaker's PUD. If the Pinewalk area is developed and no longer available, the Town will be faced with the decision of whether to purchase or lease a transfer station on the Island or mainland, or eliminate the need for a transfer station by increasing the packer fleet. However, it is probable that the Pinewalk Station will remain as is, well past the 10-year planning period.

Waste material is taken from the station in tractor trailers to the County's North County Regional Resource Recovery facility (or SWA directed facility), operated by the Palm Beach County Solid Waste Authority (SWA) under a County-wide solid waste plan.

The SWA's North County Regional Resource Recovery Facility (NCRRRF), located on Jog Road, replaced the Dyer Boulevard Landfill in 1989 and handles both sludge, from the East Central Wastewater Treatment Facility, and garbage for separation, recycling and incineration. Aluminum and ferrous materials are separated at the plant. The remaining organic materials are used as fuel for an electricity-producing turbine generator. The plant serves the entire County at a capacity of 3,000 tons per day, six days per week, for an annual capacity of 936,000 tons per year. In 2015, SWA opened a second unit, also at a capacity of 3,000 tons per day. Since the NCRRRF serves the entire County, predominant land uses served include residential, commercial, industrial, recreational, agricultural and public uses. The current inter-local agreement between the Town and SWA for solid waste and recycling has been in effect since 2009.

The Palm Beach Solid Waste Authority, which operates the NCRRRF, does not allocate any particular share of its capacity to individual users or municipalities. However, in 2006, the Town's contribution of garbage to the Jog Road landfill comprised less than 1% of the total garbage generated countywide, and will certainly not exceed this proportion during the planning period.

The NCRRRF site also contains a 350-acre landfill which is estimated to have an expected life to the year 2043 due to the opening of REF#2 in 2015. The Solid Waste Authority performs an annual review and analysis of the remaining capacity of the landfill based on the University of Florida Bureau of Economic and Business Research population projections, current waste generation rates, and the volume of landfill capacity available.

According to the County's Plan, the current Level of Service (LOS) averaged 4.28 pounds per day/capita for garbage, 2.26 for trash, and .59 pounds of recyclables for a total of 7.13 pounds per day per capita in 2006. The 2006 plan is still in place.

Florida Power and Light Company has agreed to purchase electricity produced by the plant, and the remaining ash residue will be placed in an adjacent landfill. The Town, as part of the North County Service Area, transports its garbage directly to the resource recovery plant. The Town's collection and disposal equipment are compatible with the requirements of the plant.

The SWA has implemented a public education program designed to encourage the public to separate garbage prior to pick-up. The Town implemented a separation and recycle program in 1990. Curbside collection may not be possible due to the Town's tradition of backyard pick-up.

The Town of Palm Beach's total projected volumes of garbage for an average day, and the average day during the peak month using the 1990-1994 average figures of 2.09 and 2.89 pounds per day per capita, indicate the Town should have no trouble meeting capacity demands for the duration of

the planning period, and remain within its adopted level of service of 2.55 pounds per day per capita.

Discussion with the Town Public Works Department and representatives of the NCRRRF indicates that at the projected peak seasonal population, the NCRRRF will have adequate capacity to provide service at the Town's adopted level of service throughout the planning period.

In September of each year the Town obtains a letter from the Palm Beach County Solid Waste Authority certifying that the North County Regional Resource Recovery Facility has the capacity to treat the amount of garbage projected to be generated in the Town during the peak season at the Town's adopted level of service.

Also during September, the Town Public Works Department certifies that the Town maintains adequate capacity to dispose of the amount of vegetative trash associated with the projected population. Unless annual determinations identify unexpected capacity problems, it is assumed there is adequate capacity to accommodate vegetative trash disposal associated with new development.

VEGETATIVE YARD TRASH

Vegetative yard trash is collected by the Town using twelve 30-cubic yard scow body trash trucks and three cranes. Trash is hauled directly to the Skees Road or the Okeechobee Boulevard sites in West Palm Beach, and is decomposed naturally. The Town owns and operates both sites, and neither serve any other local government jurisdictions. Predominant types of land uses served by these facilities are the residential, commercial, recreational, public and private group uses located in the Town. Pick-up service is provided once per week on a regular schedule. The Town restricts collection to vegetative matter only. Size and placement of trash on right-of-ways are also regulated. The Skees Road site encompasses about 28 acres and is the main site for disposal of the Town's vegetative refuse. It operates under permit from the Florida Department of Environmental Protection (FDEP). The permit is renewed each December.

The Okeechobee Boulevard site encompasses about 28 acres, but only about nine (9) acres are occasionally used by the Town for the vegetative landfill purpose. This site also operates under an annual permit issued by the FDEP. Because of the rate of decomposition of the organic matter, both sites are expected to have a useful life of between 16 and 25 years. While the Town has not estimated a capacity for each remaining individual site, at the volumes of vegetative trash expected to be generated during the planning period, this would indicate that these two sites have a combined capacity of at least 475,000 cubic yards of vegetative trash. A preliminary study is underway to evaluate the options for volume reduction of existing vegetative debris cells at these landfills to determine if material can be segregated and disposed of off-site (top soil, mulch, etc.) to increase the long term capacity and life span of the landfills.

Seasonal growth conditions, storm events, and development site clearing are the primary factors

affecting vegetative trash production. Site clearing has only a minimal influence as very little undeveloped land remains. Seasonal growth patterns are fairly predictable, coinciding with the warm weather rainy season between May and October. Storm events can occur at any time. Tropical storms and hurricanes usually form between June and November, while northeasters are the product of winter cold fronts.

The current level of vegetative trash generation is 152,000 cubic yards per year, representing a LOS of 0.0416 cubic yards per person per day, or 0.021 cubic yards per peak season person per day. There is a clearly defined upward trend in vegetative trash generation in the Town. July typically represents the peak month during which the total volume generated approximates 1.52 times that of the average month.

There appears to be no relationship between population and the volume of vegetative trash generated in the Town. However, because of the clear 1988 to 1994 trend of increasing vegetative trash generation, a least squares methodology has been used to project future volumes for the planning period, indicating a LOS of .025 cubic yards per peak season person per day generation of vegetative trash at the end of the 10-year planning period. Town collection equipment and crews are capable of meeting the projected demands.

SPECIAL SOLID WASTE

The Town provides pick-up of appliances, discarded furniture, large packing boxes, and similar household goods for a minimum charge.

Special collection services must be scheduled with the Town in advance. These wastes will continue to be taken to the Resource Recovery Plant/Landfill at Jog Road. This service is available Tuesdays and Thursdays all year long.

A truck, with a crew of two, is provided by the Town's Streets Division. The truck's maximum carrying capacity is three tons. During peak demand periods, the truck can carry up to six loads per day, resulting in a maximum capacity of 18 tons/day, 144 tons/month and 1,872 tons/year.

The total yearly capacity of the Special pick-up service has exceeded actual demand for the last five years, although peak monthly demands have historically exceeded capacity. Peak demand generally occurs in the winter.

A review of annual demand for collection of Special Solid Wastes reveals a steady increase since 1990. Population has increased modestly during the same time period, indicating that demand is not directly related to population levels. Although future demand cannot be accurately projected, the Town has the capacity to meet a maximum yearly demand of 1,872 tons, which has proven adequate since 1983. This capability provides the required level of service through the 10-year planning period.

RECYCLING

The Town began its solid waste recycle program in July, 1990 with pickup at single-family residences. In 1992, the program was expanded to multi-family residential pickup, in 1993 to commercial locations, and in 1995 to office locations for paper pickup. Recycling collection is set up to provide pick-up on a weekly basis.

Residential collection encompasses five routes that cover the entire Town from the inlet to 2300 South Ocean Blvd. There are no residential homes south of 2300 South Ocean Boulevard.

Multi-family collection is also set up to provide collection on a weekly basis, with additional pick-ups conducted on an as-needed basis. Multi-family units are serviced on Wednesday, Thursday and Friday. Service days are determined by location of condos or apartments.

Commercial collection and additional multi-family pick-ups are done on Tuesdays. The collection options available for residential, commercial and multi-family units are the same. Material collected is co-mingled glass, aluminum and grades 1 and 2 plastic. Newsprint is also collected but separated.

Participation rate fluctuates because the majority of residents are seasonal, however, heaviest participation occurs between December and May. Process costs and labor factors dictate the method of collection.

The latest three-year average for recycling tonnage totaled 1,650 tons/year using 2014 figures. Public education efforts help to increase awareness of meeting future goals.

DRAINAGE

Prior to development, the Palm Beach coastal barrier was characterized by a high coastal ridge along the Atlantic, and a low, swampy shoreline along Lake Worth. A marshy slough separated the beach ridge and lake hammocks. Surface accumulation either percolated to the surficial aquifer through permeable soils on the ridges, collected in the slough, or ran through poorly drained tidal swamps into Lake Worth.

Extensive shoreline and surface water changes have occurred since 1883. The slough and low lake shorelines have been filled for urban development, and the Atlantic shoreline has receded due to beach erosion. The urbanization of the Town has reduced the amount of water infiltrating to the surficial aquifer, and has increased runoff from impermeable surfaces. The coastal ridge still dominates the island's topography, acting as a seaward barrier to surface drainage. In addition, remnants of slough areas are prone to flooding.

In order to facilitate the removal of stormwater, a system of storm sewers and pumping stations

was created during the early development of the Town. That same system, with major modifications, remains intact today.

The Town's drainage system consists of a combination of pumping stations and gravity outfalls. Pumping stations are necessary because areas of the Town are below Lake Worth's high tide level, causing backflow through stormwater outfalls when above normal tides are experienced in the Lake.

The Town's code supports the South Florida Water Management District's stormwater retention requirements for new development and redevelopment. All new development and redevelopment must provide minimum retention of the first two inches of rainwater prior to discharging into the Town drainage system. Residential development of less than one-half acre is required to route discharge and sheet flow through grassy areas prior to discharge into the Town system.

Consulting engineers have extensively studied the storm drainage situation in the Town. The Town's engineering design criteria are meant to ensure that flooding will not occur during a one-year storm for systems served by pumping stations, or during a three-year storm for systems with gravity outfalls, and the minor flooding associated with a five-year storm would be carried off within sixty minutes. Accumulated runoff from a fifty-year storm would require only ninety minutes for removal. These standards supersede the less restrictive three-year/one-hour design requirements of the Water Management District.

Demand upon drainage systems is related to the area and amount of water to be drained. As the Town is virtually "built-out", the area to be drained will remain essentially constant, with most increases in impervious surfaces being addressed by retention requirements. The amount of water to be drained remains variable, depending upon the actual storm events. Therefore, the demand on the Town's system is primarily based on the intensity and duration of storm events.

The drainage system is generally considered to be in good condition. According to the Public Works Department, the expected service life of the drainage system components exceeds 50 years. The town needs to continue evaluating the drainage system and replace deteriorated and undersized components.

No water quality data is available for areas within the Town, consequently, the quantity, quality and effects of stormwater runoff originating in the Town are unknown. However, it is generally recognized that stormwater may contaminate surface waters with sediments, nutrients, heavy metals, oils, grease and pathogens.

Unfortunately, the Town is limited in its ability to improve discharge quality through stormwater management, because of the following:

1. The water table on the island is very high. Some areas in the Town are below the high tide line of Lake Worth. Retention or detention areas would, therefore, have to be shallow and

wide, requiring large surface areas.

2. There are no large undeveloped land areas which could realistically provide retention or detention of stormwater, and real estate prices for purchase or condemnation of land are prohibitively high.

3. Most soils in the Town are poorly drained, resulting in slow infiltration rates, and complicating the use of exfiltration systems.

4. The Town is almost entirely developed. Therefore, the existing drainage system will not be affected significantly by new stormwater regulations. In addition, the Town's existing drainage system was installed many years ago, prior to the development of best management practices.

The Town recognizes the importance of improved water quality in Lake Worth, but also realizes that any major retrofitting of the system will require study and time. The National Pollutant Discharge Elimination System Permit establishes, on a countywide basis, the best management practices (BMP's) and goals concerning the quality of stormwater runoff.

The Town has been making steady progress toward decreasing the quantity and improving the quality of stormwater runoff by requiring a minimum of one inch of stormwater retention on all new and redeveloped areas of one-half acres or more. All parking lot areas being built or reconstructed are required to provide one inch water quality retention, where water table and soil conditions permit.

In addition to the stormwater management practices, the Town is proposing restoration of native shoreline habitat along Lake Worth which would provide natural water purification. Restoration plans are described in more detail in the Coastal Zone Management/Conservation Element under "Restoration of Native Habitat." The Town has also identified the need for an intergovernmental Lake Worth Management Committee, which would facilitate water quality management on a regional scale.

Previous text and illustrations indicate that the Town's natural drainage features have already experienced the major changes which accompany urban development.

In a continuous pursuit to address infrastructure problems in the Town, from March 2001 to April 2003 the Palm Beach Town Council empowered the Strategic Planning Board to create a long-range (10+ years) Strategic Plan. In their study the Strategic Planning Board studied current drainage problems and the status of stormwater runoff handling and retention systems, improvements and components. The Strategic Planning Board also worked to enhance and improve the runoff collection and retention system as set out below.

During the mid-1970's, the Town commissioned an engineering report to recommend

infrastructure needed to provide better protection against flooding in major rainstorms. The "Smith & Gillespie Long Range Public Works Plan" provided the blueprint for major improvements subsequently constructed during the 1980s and 1990s. Flooding throughout the Town has been greatly reduced by these improvements.

However, some of the residential neighborhoods of the North End experienced severe flooding of homes during heavy rainfalls in 2000 and 2001, and less severe flooding (still resulting in private property damage) on other occasions between the late 1990s and 2001. In response, the Town staff improved its procedures for the field operations involved in preparing for and responding to storms that pose a threat of flooding. The Town also undertook a new study of the drainage system throughout the affected area (five drainage basins covering the area from Wells Road north to the Lake Worth Inlet), and developed an ambitious multi-year plan to increase the capacity of the storm drainage system. The Town's retention design flood protection parameter in the Zoning Code is 2".

On September 10, 2002, the Town Council approved a 10-year, $23.7 million pay-as-you-go program to provide new pump stations, new and larger pipes along the "trunk lines" connecting smaller pipes to the trunk lines, and new and larger pipes along some of the residential side streets.

Permits to implement this program were obtained and the first five years of the program were constructed.

While developing this program for improving the public infrastructure necessary to better protect against flooding, the Town's elected officials, staff, and consultants also developed strategies for reducing the impacts of storm water run-off from private properties into the public drainage system. Town regulations were substantially strengthened in this regard in 2001 and 2002. Additional measures will be considered in the future.

In addition to considering what regulations and storm drainage improvements are needed to prevent future flooding, the Strategic Planning Board considered how system improvements will be made. Specifically, the Strategic Planning Board explored whether or not changes are needed in Town policy governing construction contracts and construction project management to ensure that these major projects are completed successfully.

Engineering analyses have indicated that construction of the foregoing improvements will protect all but the 14 lowest elevation homes (some of which have a first floor elevation almost 3 feet lower than the Town's current flood prevention standard of 7.5 feet above sea level) from being flooded during a storm of such intensity that it is expected to occur once every 100 years. Street flooding and some garage flooding are expected, not only during a "100-year storm" but also during less intense storms.

Starting in 2009 as part of the Accelerated Capital Improvements Program (ACIP) the Town has upgraded multiple stormwater pump stations and replaced, lined or abandoned corrugated metal

pipes. The ACIP is currently ongoing and is expected to be completed by the end of 2018.

Resulting Problems or Opportunities:

While developing this program for improving the public infrastructure is necessary to better protect against flooding, the Town's elected officials, staff, and consultants also have been developing strategies for reducing the impacts of storm water run-off from private properties into the public drainage system. Town regulations were substantially strengthened in this regard in 2001 and 2002. Additional measures are also being considered.

POTABLE WATER

The City of West Palm Beach owns and operates the water system providing potable water to the Town of Palm Beach, City of West Palm Beach and Town of South Palm Beach. The City of West Palm Beach Potable Water Utility Service Area exceeds 120,000 residents and covers 61 square miles of area. Since the system serves primarily urbanized areas, the predominant land uses in the service area are residential, commercial, industrial, recreational, and public and semi-public uses. The system consists of a raw water supply, water treatment plant, storage reservoirs and distribution system. A 30-year renewable contract between the Town and the City of West Palm Beach was signed in 1965 and expired in January, 1995. The Town subsequently renegotiated the contract with the City, and a new franchise agreement was signed on June 16, 1999 and is effective until 2029. It should also be noted that the City of West Palm Beach is currently expanding and improving their water infrastructure.

The City of West Palm Beach collects its raw water from Clear Lake, a surface water source. The South Florida Water Management District granted the City a ~~consumptive~~ water use permit on February 14, 2013 for 67 MGD. See the City of West Palm Beach Comprehensive Plan for more information on their consumptive use permit and yearly allocations and sources.

The capacity of the water treatment plant is 47.3 MGD. The plant's pumping system can provide maximum hour demand and fire flow demand pumping capacity throughout the distribution system. West Palm Beach has 18 million gallons of storage capacity in its distribution system and water treatment plant, including a one million gallon ground reservoir located at the Palm Beach Country Club.

The City allocates no specific portion of its treatment capacity to individual users or municipalities. See the City of West Palm Beach Comprehensive Plan for more information on its entire system, historic water use, and projected water use.

Raw water reaches Clear Lake through a system of canals and water catchment areas. Water travels from Lake Okeechobee through the L-8 canal to Canal M-1, and then to a naturally vegetated water catchment area. The catchment area serves as an initial water purifier; wetland plants provide nutrient uptake, and sediments settle out of the water column. After leaving the catchment area,

the water travels to Lake Mangonia and then to Clear Lake. A diking system around Clear Lake, Canal M, and the catchment area prevent degradation of the surface water from stormwater or irrigation runoff. Water quality in Clear Lake has been consistently good.

Raw water is treated by West Palm Beach according to FDEP water quality standards. Potable water emerging from the plant is tested daily for quality. Monthly reports, including tabulations of daily testing, are sent to the FDEP for review. The City prepares an annual Water Quality Report which can be reviewed on the City's website. Potable water quality has been consistently good, winning awards in recent years for its outstanding taste.

According to West Palm Beach sources, water quality is expected to remain good, and no measures for further protection of quality are necessary.

The Palm Beach/South Palm Beach service area is fed by five mains crossing Lake Worth from West Palm Beach, four of which connect directly into the Town. These crossings are located at the Flagler Bridge, Island Road, Southern Boulevard, and Sloan's Curve. The fifth is at Orange Grove Road. In addition, there are water meters, private fire lines, and fire hydrants located in Palm Beach.

The City of West Palm Beach has established ~~272~~ 243.3 gallons~~/day/capita (gpdc)~~ per capita per day (gpcpd), based upon the 2020 Capacity Analysis Report (CAR), submitted in January 2020, as the level~~s~~ of service standard for provision of potable water to the entire Potable Water Utility Service Area which includes the Town of Palm Beach.

In order to reduce potable water consumption, the Town has pursued a water conservation program. The Town supports the City of West Palm Beach, its water provider, in its efforts to conserve water and expand alternative water supply projects and reuse initiatives. See the City of West Palm Beach Comprehensive Plan for more detail on conservation, alternative water supply, and reuse,

AQUIFER RECHARGE

The Town of Palm Beach is underlain by two aquifer systems; the surficial aquifer and the more deeply located Floridan aquifer. These are separated from each other by the Hawthorn Formation which prevents any recharge from reaching the Floridan aquifer. Neither aquifer is used as a source of potable water.

Urban development in the Town, including the placement of poorly drained urban fill, has affected the quantity of recharge to the surficial aquifer. Pomello fine sand and, to a lesser extent, Palm Beach Urban Complex, are probably the most active recharge soils. According to the Palm Beach County Soil Survey, most native sandy soils are located along the beach ridge, and in the north end of Town, directly behind the beach ridge.

The surficial aquifer is not considered a suitable source of potable water, nor as a major source for irrigation because of its high chloride (salt) content.

Fresh water is less molecularly dense than salt water. Therefore it tends to "float" on top of salt water forming a fresh water lens. Often this lens can supply usable water so long as it is sufficiently replenished by infiltration. The extent and quality of the fresh water lens under the Town has not been determined, however, the SFWMD is testing the surficial aquifer in a comparable location in West Palm Beach.

The Biltmore condominium has a consumptive use permit from the South Florida Water Management District (SFWMD) for groundwater to cool its air conditioning system. The Breakers has received SFWMD permitting for use of a non-potable shallow water well for its golf course irrigation system. Small cooling or irrigation wells exist which did not require a SFWMD permit. Such wells, however, do require a permit by the Town. There is no evidence to suggest that the existing limited use of the aquifer has caused, or will cause, degradation of the aquifer.

The Town protects recharge through its storm water retention requirements and its minimum landscaped area requirements, which ensure pervious areas for water percolation to the aquifer. In addition, there are few septic tanks in the Town; no existing or potential identified problems with hazardous waste contamination; and no known sources of aquifer contamination or depletion. In the event that the Town chooses to utilize the surficial aquifer as a non-potable water source for irrigation, measures should be taken, in accordance with rules of the South Florida Water Management District, to protect the aquifer and overlying soils and vegetation from negative consequences of drawdown.

The Town has reduced density in some residential districts over primary recharge areas, and will continue as Town policy to reduce redevelopment densities in the Town as a whole. Existing land uses in primary recharge areas will be maintained, and beaches and dunes will be protected, as described in the "Protection and Restoration of Beaches and Dunes" section of the Coastal Zone Management/Conservation Element of this Plan. The Town will also continue to prohibit industry and hazardous waste storage within its limits.

The Town further improves aquifer recharge by requiring new development and redevelopment in primary aquifer recharge areas to run storm water through vegetated areas prior to discharge into the Town's drainage system. No further programs or regulations are deemed necessary, unless future use of the aquifer necessitates further measures.

UNDERGROUND UTILITIES

The conversion of the overhead utilities to underground locations will be one of the most ambitious infrastructure projects ever undertaken by the Town of Palm Beach. The undergrounding will preserve the historic character of the Town and enhance the aesthetics of the landscape and scenic vistas. The conversion will significantly improve the level of service and reliability of the electric,

telephone, and cable communications to the Town.

Impacts of the Issue

The impacts of the Town-wide underground utilities conversion project include installing underground utilities for all areas of the Town that presently has overhead utilities. There are some areas within the Town that have already converted their utilities to underground. Those areas include: Everglades Island; Via Fontana; Lake Towers; 300 block of Dunbar Road (summer of 2016); and Nightingale and LaPuerta (started summer of 2016). The conversion will include locating most of the utilities in the Town's road right-of-ways wherever possible. The utilities will be located in alley ways in those neighborhoods which have rear access alleys wide enough for truck access.

The construction is anticipated to take 6 to 10 years. The most disruptive construction will take place during the summer months with the actual utility connections to take place during the winter months. The last step of removing poles and equipment primarily from rear yards will take place the following spring. The undergrounding conversion construction will be coordinated with other Capital Improvement Projects as identified in the Capital Improvements Section of the Comprehensive Plan.

Resulting Problems or Opportunities

Problems associated with the underground utilities project include:

- Easements will be required for transformers and other above ground equipment. There is a potential that eminent domain will be required for some easements.
- Disruption to the community, including noise and traffic congestion is anticipated.
- Project cost may exceed the approved referendum amount.
- Removal of equipment from poles has been a challenge in similar communities.

Opportunities include:

- Increased reliability for all utilities.
- Improved aesthetics for the entire community due to removal of wood and concrete poles.
- Potential for improved broadband and wireless services.

Needed Actions to Address the Issue

- Complete Master Plan which includes construction sequencing and project estimate of cost.
  Timeframe: Master Plan for first assessment phase of the Town will be completed in 2017.

GOALS, OBJECTIVES AND POLICIES

GOAL

MAINTAIN ADEQUATE LEVELS OF UTILITY SERVICES FOR EXISTING AND FUTURE POPULATIONS, AND MAXIMIZE UTILIZATION OF EXISTING INVESTMENT AND FACILITIES.

SANITARY SEWER SERVICES

OBJECTIVE 1

The Town shall assure that all existing and future residents, and businesses in the Town, will have access to sanitary sewer facilities; maximize the use of existing collection and treatment facilities; and, meet future needs through continuation of its Sanitary Sewer Rehabilitation Program. The measurement of this objective is whether or not sanitary sewer facilities are available to all users, and the extent to which the following policies are implemented.

POLICY 1.1

The Town shall rehabilitate or replace its sanitary sewer collection lines, as necessary, to reduce infiltration. The Town's goal is to reduce flows by one-half percent per year through the planning period.

POLICY 1.2

Through its concurrency management system, the Town will, on an annual basis, continue to discuss the Town's LOS with the City of West Palm Beach and request confirmation of available capacity.

OBJECTIVE 2

Development orders and permits for new development or redevelopment shall be issued only if sanitary sewer facilities, necessary to meet the Town's adopted level of service standards, are available concurrent with the impacts of the development.

POLICY 2.1

The Town's level of service for sanitary sewer collection and treatment shall be the same as that established in the City of West Palm Beach's Comprehensive Plan:

Waste Water Collection Development Type	**Avg. Daily Water ~~Water~~ Flow**
Single Family	350 gpd/DU
Multifamily	250 gpd/DU
Commercial	0.20 gpd/SF
Industrial	0.15 gpd/Sf
Hotel	100 gpd/room

DU=dwelling unit gpd=gallons per day
SF=Square feet ~~AC=acre~~

Pumping Station Peaking Factor	**Avg. Daily Flow (MGD)**
3.5	0.01 to 0.05
3.0	0.05 to 0.25
2.5	0.25 to 2.0
2.0	>2.0

Peaking factors for other facilities shall be determined using historical flow records

POLICY 2.2

Prior to the issuance of a development order or permit, the Town shall make and record a determination that the East Central Regional Sewage Treatment Plant retains capacity to treat, and the Town's facilities are adequate to collect and transport, or, that the development order or permit is specifically conditioned on the availability of the necessary facilities and services, and that said facilities are authorized at the time the project is authorized.

OBJECTIVE 3

The Town will coordinate with the City of West Palm Beach in the City's efforts to extend, or increase, the capacity of its sanitary sewer treatment facilities to meet future needs. The measurement of this objective is whether or not the Town coordinates with the City in its efforts, and the extent to which the following policy is implemented.

POLICY 3.1

A representative of the Town will meet with representatives of the City of West Palm Beach, upon request, to coordinate and assist the City in its efforts to establish priorities for replacement of, or corrections of deficiencies to, sanitary sewer treatment facilities, as well as provision for future sanitary sewer treatment needs.

OBJECTIVES AND POLICIES NOT INCLUDED

No objective for correcting existing sanitary sewer treatment facility deficiencies is necessary or applicable, since the data and analysis provided in the supporting documentation identify that no such deficiencies exist.

No objectives or policies pertaining to discouraging the proliferation of urban sprawl are necessary or applicable in the Town, because the Town is virtually fully developed and the only areas for potential development are located on "in-fill" parcels.

No objectives or policies are necessary with regard to protecting the functions of natural groundwater recharge areas, since the only such areas are the surficial aquifer, and these areas are developed with single-family homes. Further, no objectives or policies are necessary with regard to protecting natural drainage features, since these have already been largely altered by urban development and the Town has no sanitary sewer treatment facilities, but provides only local collection lines which have no effect upon the area's natural drainage features.

SOLID WASTE DISPOSAL

OBJECTIVE 4

The Town shall maximize utilization of its capital facilities, and work with the County's Solid Waste Authority to maximize utilization of its new resource recovery facility. The measurement of this objective is the extent to which the following policy is implemented.

POLICY 4.1

Prior to any development of the Pinewalk area and loss of use of the Pinewalk Transfer Station, the Town shall locate a mainland or on-island site for a replacement transfer station, increase the size of its packer fleet, or explore possible purchase or other alternatives for continued use of the transfer station with officials at Flagler Systems, Inc.

OBJECTIVE 5

Development orders and permits for new development or redevelopment shall be issued only if the Solid Waste Authority's disposal facilities, necessary to meet the Town's adopted level of service standards, are available concurrent with the impacts of the development.

POLICY 5.1

The Town's level of service for garbage collection and disposal shall be 2.55 pounds/person/day.

POLICY 5.2

Prior to the issuance of a development order or permit, the Town shall make and record a determination that the Town has adequate capacity to collect, and the County's Solid Waste

Authority has adequate capacity to dispose of, garbage generated in the Town, at the average rate of 2.55 pounds per person per day; or, that the development order or permit is specifically conditioned on the availability of the necessary facilities and services, and that said facilities are authorized at the time the project is authorized.

OBJECTIVE 6

The Town will coordinate with the Palm Beach County Solid Waste Authority in its efforts to extend or increase the capacity of its solid waste disposal facilities to meet future needs. The measurement of this objective is whether or not the Town coordinates with the Water and Sewer Authority in its efforts, and the extent to which the following policy is implemented.

POLICY 6.1

A representative of the Town will meet with representatives of the Solid Waste Authority, upon request, to coordinate and assist in its efforts to establish priorities for replacement of, or corrections of deficiencies to, solid waste disposal facilities, as well as provision for future solid waste disposal needs.

OBJECTIVES AND POLICIES NOT INCLUDED

No objectives or policies are necessary with regard to correcting existing solid waste disposal facility deficiencies, since the information contained in the supporting documentation indicates there are no such deficiencies.

No objectives or policies pertaining to discouraging the proliferation of urban sprawl are necessary or applicable in the Town of Palm Beach, because it is virtually fully developed and the only areas for potential development are located on "in-fill" parcels.

No objectives or policies are necessary with regard to protecting the functions of natural groundwater recharge areas, since the only such areas are to the surficial aquifer, and these areas are developed with single-family homes. Further, no objectives or policies are necessary with regard to protecting natural drainage features, since these have already been largely altered by urban development, and the Town has no solid waste disposal facilities, but provides only local collection and transfer which have no effect upon the area's natural drainage features.

DRAINAGE

OBJECTIVE 7

The Town shall maximize its existing drainage facilities by correcting drainage problems in Town and explore methods of improving the quality of stormwater discharge. The measurement of this objective is the extent to which identified drainage problems are corrected, and the degree to which the following policies are implemented.

POLICY 7.1

The Town shall incorporate the funding of drainage improvements in its Capital Improvements Element with first priority to be given to actions that will eliminate identified problem areas or actions that will protect the natural functions of Lake Worth.

POLICY 7.2

The Town shall implement trunk lines and pump stations as set forth in the Town's adopted drainage improvement program.

POLICY 7.3

Following the implementation of Policy 7.2, the Town shall re-evaluate needs, priorities, and financing of future storm drainage improvements on residential side streets.

POLICY 7.4

The Town shall maintain its Long Range Public Works Plan (Storm Drainage Chapter) to continue to comply with the following items and actions:

7.4a The Environmental Protection Agency NPDES Program with respect to methods for instituting water quality analysis of the Town's stormwater discharge into Lake Worth.

7.4b The current FEMA Flood Mapping Data;

7.4c Update existing stormwater system information, as needed.

7.4d Determine "hot spots" where pollutant loadings and water quality problems are severe, if they exist.

7.4e Implement NPDES Permit requirements.

POLICY 7.5

The town shall request, coordinate and follow through with the Florida Department of Transportation to improve drainage collection on State Roads, especially S.R. A.1.A., South County Road.

OBJECTIVE 8

Development orders and permits for new development or redevelopment shall be issued only if the proposed project meets the Town's adopted level of service standards, or if needed expansion of facilities is coordinated with future development.

POLICY 8.1

The Town shall establish the following level of service standards:

1. Flooding will not occur during a one-year storm for systems served by pumping stations, or during a three-year storm for systems with gravity outfalls; and, the minor flooding associated with a five-year storm shall be carried off within sixty minutes.

2. Negative impacts of stormwater discharge upon water quality in Lake Worth are ameliorated by the retention of the first two inches of rainfall prior to discharge into the Town system, or the post-development runoff does not exceed predevelopment runoff for a three-year one-hour storm, whichever is greater.

POLICY 8.2

Prior to the issuance of a development order or permit, the Town shall review drainage plans and calculations for all projects, and shall make and record a determination that:

For all commercial or residential development or redevelopment, where the proposed work falls into one of the following categories:

8.2a The proposed work exceeds 25% of the market value of the property;

8.2b The proposed work includes the construction of a new swimming pool;

8.2c The proposed work includes the redevelopment of more than 20% of landscaped open space, 20% of the impervious area of the site including buildings, patios, etc. or a combination thereof which exceeds 20%;

8.2d The proposed work includes new driveways or parking areas;

8.2e The proposed work includes replacement or reconstruction of parking areas other than parking areas designed for less than three residential units; or

8.2f Other development as may be deemed appropriate by the Town Engineer.

POLICY 8.3

The town shall encourage the installation of upgraded storm drainage systems to meet current or new storm water standards on properties which are not otherwise being redeveloped.

OBJECTIVES AND POLICIES NOT INCLUDED

Other than dunes and coastal wetlands, no natural drainage features remain in the Town. Objectives and policies for protecting dunes and wetlands are included in the Coastal Zone

Management/Conservation Element, specifically, dunes in Objective 5 and Policies 5.1 through 5.8, and wetlands in Objective 2 and Policy 2.7. Further policies relating to restoration of wetlands are described in Policies 2.1 and 2.3.

POTABLE WATER

OBJECTIVE 9

Development orders and permits for new development or redevelopment shall be issued only if potable water capacity is available concurrent with the impacts of the development.

POLICY 9.1

The Town shall establish a potable water level of service standard in accordance with the City of West Palm Beach, the Town's water provider. The City's current Potable Water LOS is ~~272~~ 243.3 ~~gallons/day/capita~~gallons per capita per day (gpcpd), based upon the 2020 CAR submitted in January 2020.

POLICY 9.2

Consultation with the Town's Public Works Department shall be required prior to the issuance of a building permit to ensure that adequate water supply is available to serve new development by the date of issuance of its certificate of occupancy.

OBJECTIVE 10

The Town shall, either on its own initiative or through support of, and participation in, a regional effort, undertake a water conservation program. The Town will also address the following water quality issues:

1. Clean water (smell and taste).

2. Water supply (as related to drought, in addition to conservation measures)

POLICY 10.1

The Town will establish and implement a program of public education to promote water conservation, preferably in conjunction with the City of West Palm Beach and the South Florida Water Management District.

POLICY 10.2

The Town ~~shall~~ has adopted and implemented ~~land development~~ regulations ~~to~~ that includes a water conserving landscape design (Florida Friendly) ordinance applicable to new development and redevelopment.

POLICY 10.3

The Town shall continue to modify its land development regulations and other Town codes to require water saving devices in new construction, such as low volume shower heads and toilets, soil tensiometers, or similar control mechanisms, in all irrigation systems and water saving sink faucets.

POLICY 10.4

The Town shall implement any lawn watering restrictions enacted by the City of West Palm Beach or the South Florida Water Management District.

POLICY 10.5

The Town shall continue to implement and enforce watering restrictions and requires new water sensing devices on new automatic irrigation systems.

OBJECTIVE 11

The Town will coordinate with the City of West Palm Beach in the City's efforts to extend, or increase, the capacity of its potable water facilities or meet future needs. Town shall also ensure that the water quality shall meet all federal, state, and county standards. The measurement of this objective is whether or not the Town coordinates with the City in its efforts, and the extent to which the following policy is implemented.

POLICY 11.1

A representative of the Town will meet with representatives of the City of West Palm Beach on an annual basis to coordinate and assist the City in its efforts to establish priorities for replacement of, or corrections of, deficiencies to potable water quality, facilities, as well as provision for future potable water needs.

POLICY 11.2

The Town, coordinating with SFWMD, originally created a 10-Year Water Supply Facility Work Plan in 2010, and amended it in ~~2017~~ 2020 (incorporated and adopted herein by reference as ~~Exhibit~~ Appendix "A"), that takes into account the 2018 Lower East Coast (LEC) Regional Water Supply Plan. The Town shall send a letter to SFWMD with identified projects for future water supply needs of the Town. Projects must be selected from the LEC Regional Water Supply Plan or must have prior approval by SFWMD. The Town will coordinate with its water supplier, i.e. the City of West Palm Beach, in this regard. The Town shall address future updates by SFWMD within 18 months of adoption by SFWMD of a new LEC Regional Water Supply Plan, by revising the Town's 10-Year Water Supply Facility Work Plan.

POLICY 11.3

The Town may explore future options for water service following the termination or expiration of the current potable water contract with the City of West Palm Beach.

POLICY 11.4

The City of West Palm Beach, the Town's water provider, has: updated their 10 Year Water Supply Facility Work Plan and their Comprehensive Plan to identify and incorporate their alternative water supply projects, either identified in the updated regional water supply plan, or identified and proposed by the City of West Palm Beach under s. 373.709(8)(b) and 373.709(2) (a) F.S.; identified the traditional and alternative water supply projects, bulk sales agreements, and the conservation and reuse programs necessary to meet current and future water use demands within the City of West Palm Beach's water use area; and included a water supply facility work plan for at least a 10-year planning period for constructing any water supply facility identified as necessary to serve existing and new development.

AQUIFER RECHARGE

GOAL

MAINTAIN AND IMPROVE THE NATURAL DRAINAGE FUNCTIONS AND QUALITY OF THE SURFICIAL AQUIFER

OBJECTIVE 12

The Town shall protect, maintain and improve the potential for high recharge, prime recharge and surficial recharge areas within its municipal limits, thereby protecting the remaining natural functions of natural groundwater recharge areas. The measurement of this objective is the degree to which the following policies are implemented.

POLICY 12.1

The Town shall amend its land development regulations to require that any new development, on lands identified in its Comprehensive Plan as overlying a groundwater recharge area, shall run its stormwater over grassy areas prior to discharge into the Town's system.

POLICY 12.2

The Town shall continue to prohibit industry and the storage of hazardous materials.

POLICY 12.3

In the event that the Town utilizes the surficial aquifer as a water source in the future, the

Town shall develop, prior to such uses, additional policies which will protect the aquifer from degradation.

POLICY 12.4

Existing land uses in the aquifer recharge area will remain as indicated on the Future Land Use Map.

POLICY 12.5

The Town shall protect high recharge and prime recharge areas commensurate with their significance to natural systems or status as current or future sources of potable water.

OBJECTIVES AND POLICIES NOT INCLUDED

No objectives or policies pertaining to discouraging the proliferation of urban sprawl are necessary or applicable in the Town of Palm Beach, because it is virtually fully developed and the only areas for potential development are located on "in-fill" parcels.

TOWN OF PALM BEACH, FLORIDA

TOWN OF PALM BEACH
10-YEAR WATER SUPPLY FACILITY WORK PLAN

Prepared For:

Florida Department of ~~Community Affairs~~ Economic Opportunity

Prepared By:

Town of Palm Beach Planning, Zoning & Building Department

~~August, 2017~~ August, 2020

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1.0 INTRODUCTION

The purpose of the Town of Palm Beach Water Supply Facility Work Plan (Work Plan) is to identify and plan for the water supply sources and facilities needed to serve existing and new development within the Town's jurisdiction. Chapter 163, Part II, F.S., requires the Town to prepare and~~,~~ adopt ~~and incorporate~~ a Work Plan into its comprehensive plan within 18 months after the water management district approves a regional water supply plan or its update. The *2018 Lower East Coast Water Supply Plan Update* was approved by the South Florida Water Management District (SFWMD) in November of 2018 ~~2013~~. Completion of the Town's plan was dependent upon the ~~approval~~ completion of the Town's water supplier's (City of West Palm Beach) Work Plan ~~by~~ and the transmittal of the City's Work Plan to the Florida Department of Economic Oppourtunity (DEO)~~, and the final adoption and approval by DCA~~DEO ~~of the Town's Comprehensive Plan EAR Based Amendments (process completed in August 2017)~~.

Residents of the Town of Palm Beach obtain their water directly from the City of West Palm Beach, which is responsible for ensuring that enough capacity is available for existing and future customers.

The Town of Palm Beach Water Supply Facility Work Plan (Work Plan) references the initiatives already identified in City of West Palm Beach's 10-year Work Plan since the Town is a retail buyer. According to state guidelines, the Work Plan and the comprehensive plan amendment must address the development of traditional and alternative water supplies, bulk sales ~~agreements and conservation~~agreements, conservation, and reuse programs that are necessary to serve existing and new development for at least a 10-year planning period. Because of the Town's relationship with the City of West Palm Beach, the Town's Work Plan has the same planning time schedule as the City of West Palm Beach's 10-year Work Plan.

The Town's Work Plan is divided into four sections:

Section 1 – Introduction
Section 2 – Background Information
Section 3 – Data and Analysis
Section 4 – Work Plan Projects/Capital Improvement Element/Schedule

The Town of Palm Beach's goals, objectives and policies that address potable water are found in the "Potable Water" sub-element of the Infrastructure Element of the Town's Comprehensive Plan. Specifically, the policies in Objectives 9, 10, and 11~~, and 12~~ in the Infrastructure Element detail how the Town coordinates with its water provider to guarantee a sufficient water supply for its residents in the most efficient and environmentally friendly way possible. Policy ~~12.3~~11.2 in the Infrastructure

Element references this ~~water supply facility work plan~~ Water Supply Facility Work Plan.

1.1 Statutory History

The Florida Legislature enacted legislation in the 2002, 2004, 2005, 2011, ~~and~~ 2012, 2015 and 2016 sessions to address the state's water supply needs. This legislation, particularly Senate Bills 360 and 444 (2005 legislative session), significantly changed Chapter 163 and 373 Florida Statutes (F.S.) by strengthening the statutory links between the regional water supply plans prepared by the water management districts and the comprehensive plans prepared by local governments. In addition, these bills established the basis for improving coordination between the local land use planning and water supply planning.

1.2 Statutory Requirements

Each local government must comply with the following requirements:

1. Coordinate appropriate aspects of its comprehensive plan with the appropriate water management district's regional water supply plan, [163.3177(4)(a), F.S.]

2. Ensure that its future land use plan is based upon availability of adequate water supplies and public facilities and services [s.163.3177(6)(a), F.S.]. Data and analysis demonstrating that adequate water supplies and associated public facilities will be available to meet projected growth demands must accompany all proposed Future Land Use Map amendments submitted to the Department for review. The submitted package must also include an amendment to the Capital Improvements Element, if necessary, to demonstrate that adequate public facilities will be available to serve the proposed Future Land Use Map modification.

3. Ensure that adequate water supplies and facilities are available to serve new development no later than the date on which the local government anticipates issuing a certificate of occupancy and consult with the applicable water supplier prior to approving building permits, to determine whether adequate water supplies will be available to serve the development by the anticipated issuance date of the certificate of occupancy [s.163.3180 (2), F.S.]. This "water supply concurrency" is now in effect, and local governments should be complying with the requirement for all new development proposals. In addition, local governments should update their comprehensive plans and land development regulations as soon as possible to address these statutory requirements. The latest point at which the comprehensive plan must be

revised to reflect the concurrency requirements is at the time the local government adopts plan amendments to implement the recommendations of the Evaluation and Appraisal Report (EAR).

4. For local governments subject to a regional water supply plan, revise the General Sanitary Sewer, Solid Waste, Drainage, Potable Water, and Natural Groundwater Aquifer Recharge Element (the "Infrastructure Element"), within 18 months after the water management district approves an updated regional water supply plan, to:
    a. Identify and incorporate the alternative water supply project(s) selected by the local government from projects identified in the updated regional water supply plan, or the alternative project proposed by the local government under s. 373.709(8)(b), F.S. [s. 163.3177(6)(c), F.S.];
    b. Identify the traditional and alternative water supply projects, bulk sales agreements, and the conservation and reuse programs necessary to meet current and future water use demands within the local government's jurisdiction [s. 163.3177(6)(c)3, F.S.]; and
    c. Include a water supply facilities work plan for at least a 10-year planning period for constructing the public, private, and regional water supply facilities identified in the element as necessary to serve existing and new development. [s. 163.3177(6)(c), F.S.] Amendments to incorporate the water supply facilities work plan into the comprehensive plan are exempt from the twice-a-year amendment limitation. [s. 163.3177(6)(c)3, F.S.]

5. Revise the Five-Year Schedule of Capital Improvements to include any water supply, reuse, and conservation projects and programs to be implemented during the five-year period [s. 163.3177(3)(a)4, F.S.].

6. To the extent necessary to maintain internal consistency after making changes described in Paragraph 1 through 5 above, revise the Conservation Element to assess projected water needs and sources for at least a 10-year planning period, considering the appropriate regional water supply plan, the applicable District Water Management Plan, as well as applicable consumptive use permit(s). [s.163.3177 (6)(d), F.S.]

    If the established planning period of a comprehensive plan is greater than ten years, the plan must address the water supply sources necessary to meet and achieve the existing and projected water use demand for established planning period, considering the appropriate regional water supply plan. [s.163.3167 (9), F.S.]

7. To the extent necessary to maintain internal consistency after making changes described in Paragraphs 1 through 5 above, revise the Intergovernmental Coordination Element to ensure coordination of the comprehensive plan with applicable regional water supply plans and regional water supply authorities' plans. [s.163.3177(6)(h)1., F.S.]

8. Address in the EAR (if necessary), the extent to which the local government has implemented the 10-year water supply facilities work plan, including the development of alternative water supplies, and determine whether the identified alternative water supply projects, traditional water supply projects, bulk sales agreements, and conservation and reuse programs are meeting local water use demands. [s.163.3191 (3), F.S.]

2.0 BACKGROUND INFORMATION

2.1 Overview

The Town of Palm Beach was_–incorporated in 1911, making it the second municipality established in Palm Beach County. The Town is a 16-mile long barrier island with the Atlantic Ocean to the east and the Intracoastal Waterway to the west, which separates the Town from the Cities of West Palm Beach and Lake Worth.

The Town of Palm Beach is substantially built-out. The Town experienced its greatest growth between 1950 and 1970, when its resident population increased from 3,886 to 9,086. The population increased to 9,676 in 2000; however, ~~S~~since then, population growth has actually declined. ~~The 2009 estimated population for the Town is 9,815, and over the next ten years the Town population is projected to grow to 10,080, which is only a 2.7% increase in population.~~ According to the 2010 US Census, the Town had a population of 8,161, which was a 15.7% decrease from the 2000 US Census figure. The University of Florida, Bureau of Economic and Business Research (BEBR) estimates the ~~2015~~2019 population at ~~8,040~~ 8,321, which is a somewhat minor population ~~decrease~~increase. ~~-~~Any potential population growth is unlikely, and if it were to ~~occur~~occur, it would likely be relatively minor given the fact that the Town is substantially built-out, and there is a scarcity of vacant and developable land. Furthermore, the potential expansion of the Town's current boundaries through annexations is not possible because the Town is not physically connected to any unincorporated areas.

In 2009, an evaluation of existing gross acreage by land uses revealed that 1,614 acres or 78% of the total gross acreage in the Town is dedicated to residential use. The remaining gross acreages are allocated to non-residential uses such as private group use (11%), recreation (5%), commercial (5%); conservation (2%), and public use (0.002%). The private group use includes private clubs, golf and country clubs,

houses of worship, museums and non-commercial recreation-type or cultural uses. ~~In 2008, the Town's building records indicated that 21 permits were issued for new residential construction and only one permit for commercial construction.~~ Many of the ~~21~~ new residential construction permits were in conjunction with a demolition permit, thereby allowing an existing home to be demolished and replaced with a new home. This information furthers the premise that the Town is essentially built-out.

2.2 Relevant Regional Issues

As the state agency responsible for water supply in the Lower East Coast planning area, the SFWMD plays a pivotal role in resource protection, through criteria used for Consumptive Use Permitting. As pressure increased on the Everglades ecosystem resource, the Governing Board initiated rule-making to limit increased allocations dependent on the Everglades system. As a result, the Regional Water Availability Rule was adopted by the Governing Board on February 15, 2007 as part of the SFWMD's water use permit program. This reduced reliance on the regional system for future water supply needs, mandates the development of alternative water supplies, and increasing conservation and reuse.

3. DATA AND ANALYSIS

The Town of Palm Beach does not own or operate its own potable water supply system. Rather, potable water facilities and services are provided by the City of West Palm Beach. In addition to providing potable water to the Town of Palm Beach and its own residents, the City of West Palm Beach also provides potable water to the Town of South Palm Beach.

The City of West Palm Beach's water system includes a raw water supply, water treatment plant, storage reservoirs, and a distribution system. A 30-year renewable contract between the Town and the City was signed in 1965 (Resolution 3-65) and expired in 1995; however, the City continued to provide water to the Town as was required by the previous agreement. The Town subsequently renegotiated the contract with the City, and a new franchise agreement was signed on June 16, 1999 (Resolution 22-99), and is effective until 2029.

3.1 Population Information

The Town's existing and future population figures are derived from the US Census, the Bureau of Economic and Business Research (BEBR), and the Town's Planning, Zoning and Building Department. Between 1950 and 1970, the Town of Palm Beach population grew from 3,886 to 9,086, an increase of 134 percent. After this period, the Town's population growth was far less dramatic with a 2000 US Census figure of

9,676. The 2010 US Census found that the Town's population actually decreased by 15.7% to a figure of 8,161 (17,472 at peak season, which includes residents, seasonal residents, and transient). The Town's population has been estimated to ~~decrease~~ increase slightly in ~~2015~~ 2019 to ~~8,040~~8,321 (17,273 at peak season, which includes residents, seasonal residents, and transient), and by 2025 the Town's population should reach 8,425 (17,956 at peak season, which includes residents, seasonal residents, and transient); however, this is a somewhat minor ~~decrease~~increase, and the population is anticipated to remain somewhat flat. Any potential growth is limited because of the fact that the Town is substantially built-out and there is a scarcity of vacant and developable land.

3.2 Maps of Current and Future Areas Served

The Town's water demand is met by the City of West Palm Beach, therefore the Town falls within the City of West Palm Beach's Utility Service Area, and is shown in the City's Potable Water Supply Service Area map found in the City's Comprehensive Plan Map Series.

3.3 Population and Potable Water Supply Demand Projections

The Town's population figures have been included in the City of West Palm Beach's 10-Year Water Supply Facility Work Plan, which also includes the population figures for the Town of South Palm Beach and the City of West Palm Beach. All of these population figures have been used to project future water demand in the Utility Service Area for the City of West Palm Beach, and are included in the City's 10-Year Water Supply Facility Work Plan in the City's Comprehensive Plan. In summary, the City's permitted allocation of potable water is ~~14,346~~15,038 million gallons per year, while the ~~demand from the Utility Service Area~~total raw water demand with bulk service agreements ~~was~~ is ~~11,216~~12,000 million gallons in ~~2008~~2020, and the ~~projected demand for the Area~~total raw water demand with bulk agreements is ~~12,742~~ 12,989 million gallons in ~~2018~~2030. The water demand is always less than than the water allocation over the next ten (10) years. Therefore, the City of West Palm Beach can more than easily meet the water demands of the Town of Palm Beach for the next ten years.

3.4 Water Supply Provided by the City of West Palm Beach

The City of West Palm Beach's 10-Year Water Supply Facilities Work Plan is attached as Appendix A. The intent of the City's Work Plan is to meet the statutory requirements mentioned in subsection 1.2 of this plan and to coordinate the City of West Palm Beach's water supply initiatives with the SFWMD's 2018 *Lower East Coast Water Supply Plan Update*.

As stated earlier, the City of West Palm Beach's Utility Service Area includes all the land within the City's municipal boundaries, and also those areas within the municipal boundaries of the Town of South Palm Beach and the Town of Palm Beach. The City of West Palm Beach's supply system is detailed in the following subsections.

3.4.1 SFWMD Water Use Permit

The City obtained a 20-year ~~consumptive~~ water use permit (~~C~~WUP) from the South Florida Water Management District (SFWMD) on February 14, 2013. The details of the permit are as follows:

- ~~C~~WUP Number: 50-00615-W

- Raw Water Source:
  1. Ground Water Source: ~~Floridan Aquifer System~~Aquifer Storage and Recovery (ARS) Well for surface water storage / recovery and ~~&~~ Surficial Aquifer System.
  2. Surface Water Source: Clear Lake (via M-Canal and Lake Mangonia from Grassy Waters Preserve and Lake Okeechobee via the L-8 Tieback (SFWMD Canal (L-8) Tieback) through control 2 (67 MGD).

- Raw Water Allocation Information:
  Annual Allocation: ~~14,346~~15,038 Million Gallons (MG)
  Max. Monthly Allocation: ~~1,339~~1,392.32 Million Gallons (MG)

- Annual allocation includes ~~10,291~~15,038 million gallons (MG) from Clear Lake and 24,446 Million Gallon (MG) from SWFWMD Canal (L-8) Tieback as existing surface water withdrawal and from Surficial Aquifer System 1,470 MG from West Wellfield (WWF) and 864 MG from East Wellfield (EWF). All allocations are for the Public Water Supply portion of the permit.

- Specific Source Limitation:
  Clear Lake Annual = ~~14,346~~15,038 MG; Monthly = ~~1,339~~1,392.32 MG
  Surficial Aquifer System West Wellfield (monthly) – 759.50 MG
  Surficial Aquifer System East Wellfield (EWF) (monthly) – 446.4 MG
  SFWMD Canal (1-8) Tieback (monthly) – 2,765.00 MG

- Permit Expiration ~~in 20 years~~: February 14, 2033.

3.4.2 Existing Withdrawal Facility

Source: ~~Floridan Aquifer System~~ ASR Well for surface water storage / recovery

1-24" – X 1200' X 4861 GPM Well Cased to 985 feet

Source: Surficial Aquifer System
1 – X 18" X 152.5' X 2,780 GPM Well Cased to 82.5 feet
1 – X 18" X 153.5' X 2,780 GPM Well Cased to 83.5 feet
1 – X 18" X 154' X 2,780 GPM Well Cased to 84 feet
1 – X 18" X 163' X 2,780 GPM Well Cased to 93.5 feet
1 – X 18" X 166' X 2,780 GPM Well Cased to 96 feet
1 – X 18" X 170' X 2,780 GPM Well Cased to 100 feet
~~1 – X 18" X 150' X 2,78024" X 125' X 1,000 GPM Well Cased to 80~~119 ~~feet~~
4 – X 18" X 150' X 2,780 GPM Well Cased to 80 feet

Ground Water: Surficial Aquifer System – East Wellfield
~~9 – 24" X 150' X 1,000 GPM Wells cased to 120 feet.~~
1-24" x 98'x 1000 GPM Well Cased to 95 feet
1-24" x 186'x 1000 GPM Well Cased to 137 feet
1-24" x 181'x 1000 GPM Well Cased to 131 feet
1-24" x 95'x 1000 GPM Well Cased to 91 feet
1-24" x 101'x 1000 GPM Well Cased to 86 feet
1-24" x 170'x 1000 GPM Well Cased to 132 feet
1-24" x 97'x 1000 GPM Well Cased to 93 feet
1-24" x 125'x 1000 GPM Well Cased to 119 feet
1-24" x 195'x 1000 GPM Well Cased to 145 feet
1-24" x 142'x 1000 GPM Well Cased to 105 feet

Source: Clear Lake-Surface Water
4 – X 14" X 100 HP X 8,400 GPM Turbine Pumps
1 – X 16" X 100 HP X 5,250 GPM Centrifugal Pumps
2 – X 18" X 125 HP X 10,500 GPM Centrifugal Pumps
1 – X 30" X 150 HP X 17,500 GPM Turbine Pumps
3 – 36" X 130 HP X 15,000 GPM Submersible Pumps
4 – 42" X 200 HP X 33,700 GPM Axial Flow Pumps

3.4.3 Alternative Water Supplies

The City's SFWMD ~~consumptive~~ water use permit (~~C~~WUP) requires that the City "use alternative water supplies to account for all increased demands from Clear Lake above the City's historic use." The City has identified these alternatives in their 10-Year Water Supply Facility Work Plan (Section 3.3.4), which will allow the City to meet the water supply demand of its Service Area for the next ten years, including

the water demands of the Town of Palm Beach. The City has approved alternatives, urban stormwater treatment via the Renaissance Project (637 MGY), tidal capture from C-51 canal (up to 54 MGD) via Renaissance treatment process, tidal capture from C-17 canal (up to 72 MGD) and ASR well (stored surface water-up to 8 MGD, though on average have pumped out 2 MGD.

3.4.4 Interconnects

The City also maintains interconnections with other public water suppliers including:

1. One interconnection with the Solid Waste Authority for delivery of up to 0.35 MGD of finished water;
2. One interconnection with the Palm Beach County at Bay Hill Estates for delivery of up to ~~0.5~~0.15 MGD of finished water;
3. One emergency interconnection with Lake Worth Utilities (1.0 MGD);
4. Five emergency interconnections with Palm Beach County at SR7 at Okeechobee (3.0 MGD), M-Canal W to Coconut Blvd (0.15 MGD), Haverhill Road (1.5 MGD), Jog Road (3.0 MGD), and Florida Mango Road (1.0 MGD); and
5. Two emergency interconnections with the City of Riviera Beach with one at Military Trail (1.0 MGD) and one at Broadway Avenue (1.0 MGD).

3.5 Conservation

Currently, one of the Town's objectives listed in the Comprehensive Plan is to implement a water conservation program that includes education, requiring water saving devices in construction, requiring new automatic irrigation systems to include water sensors, the use of xeriscaping, and enforcement of SFWMD's irrigation restrictions. Some water conservation programs have been implemented and added to Town code, including native vegetation landscape requirements.

To further the conservation of water, the Town will coordinate future conservation efforts with the City of West Palm Beach and the SFWMD to ensure that proper techniques are applied. In addition, the Town will continue to support and expand existing goals, objectives and policies in the comprehensive plan that promote water conservation in a cost-effective and environmentally sensitive manner. The Town will continue to actively support the SFWMD and the City of West Palm Beach in the implementation of new regulations or programs that are design to conserve water during the dry season.

3.6 Alternative Water Supply Projects & Reuse

State law supports and promotes reuse efforts. For the past several years, Florida's utilities, local governments, and water management districts have led the nation in implementing water reuse programs that increase the quantity of reclaimed water used and public acceptance of reuse programs. Section 373.250(1) F.S. provides that "the encouragement and promotion of water conservation and reuse of reclaimed water, as defined by the department, are state objectives and considered to be in the public interest." In addition, Section 403.064(1), F.S., provides that "reuse is a critical component of meeting the state's existing and future water supply needs while sustaining natural systems."

The Town of Palm Beach supports all water reuse and alternative water supply initiatives by its water provider, including those completed and operational, and those that are being developed. These water reuse and alternative water supply initiatives include the following:

~~The Renaissance Project was completed by the City of West Palm Beach in 2002, which is a stormwater collection and reuse system that collects and treats stormwater normally discharged into a water body, for reuse in the City's potable water supply system. Currently, the Renaissance Project captures, treats, and stores approximately 365 million gallons of water per year (MGY), or one (1) million gallons per day (MGD). This reuse system greatly reduces stormwater that would be passed into a water body, and significantly reduces the need for the City to withdraw additional water from the regional water supply system.~~

~~In 2006, the City of West Palm Beach completed construction on the Wetlands Based Water Reclamation Project (WBWRP), which is another water reuse project that involves the discharge of highly treated effluent to an adjacent wetland area to restore and recharge the wetland and surficial aquifer. The City then has the ability to withdraw this water from the recharged aquifer and put it into its potable water supply system. This reclaimed water, up to 10 million gallons per day (MGD), is available to augment the City's potable water supply system, which reduces the City's dependency on the regional water supply system.~~

~~The City of West Palm Beach also recently completed an 8 million gallon per day (MGD) aquifer storage and recovery (ASR) well at its Water Treatment Plant. This well can store excess treated surface water during a heavy rainfall, then pump it into the upper Floridan Aquifer System, which can then be withdrawn to meet increased demands during dry weather. The City's ASR well is not currently operational, but is being evaluated for future use under 5th cycle testing to determine the recharge and recovery values and also to evaluate water quality of recovered water.~~

~~The existing 10 wells in the Western wellfield can provide 24.5 MGD (operational conditions based on Clear Lake levels and regional water non-availability).~~

~~The City completed construction of Divide Structure Pump station on Clear Lake to withdraw water from deeper areas of Clear Lake allowing additional source water of~~

~~up to 60 MGD (operational conditions based on Clear Lake levels and regional water supply non-availability).~~
~~The City just completed construction of 9 more surficial wells located around M-Canal to capture seepage losses, bringing the total number of wells in the eastern Well field to 10 with a potential 14.4 MGD (operation conditions are based on Clear Lake levels and regional water supply non-availability).~~
~~The City is currently constructing a pump station for capturing water sent to tide from C17 Canal; this pump structure has a potential to capture up to 72 MGD (operational conditions based on water being released to tide and canal levels).~~
• Renaissance Project: Constructed in 2002, the project is an innovative stormwater collection and reuse system that collects and treats stormwater normally discharged to tide. With an initial construction cost of $17,600,000 the project was completed with financial support from the Environmental Protection Agency, South Florida Water Management District, and Palm Beach County. The system captures, treat and stores approximately 637 million gallons per year, (MGY) or one (1.75) million gallons per day (MGD).
• Aquifer Storage and Recovery (ASR) Well: Upon completion of construction, the ASR well was rated at 8 mgd. Located at the Water Treatment Plant it is designed to store excess surface water during periods of heavy rainfall. The excess water is pumped into the upper Floridan Aquifer System and is recovered when the water is withdrawn to meet increased demands during dry weather. Cycle testing continues and in 2019 the well acid cleaned, the injection pump rebuilt, and the effluent valve replaced. The City continues to invest in this alternative water source with plans to restart cycle testing in early 2020.
• C17 Canal Pump Structure: The pump station was constructed to capture water prior to being sent to tide from C17 Canal, this pump structure has the potential to capture up to 72 MGD (operational conditions based on water being released to tide and canal levels).

4.0 CAPITAL IMPROVEMENTS

The following are details of the City of West Palm Beach's treatment process for potable water, and what capital improvements will be necessary over the next ten years to provide potable water to those it serves, including the Town of Palm Beach.

4.1 City of West Palm Beach's Existing Water Treatment Plant Process

~~The City of West Palm Beach's Water Treatment Plant (WTP) was originally constructed in 1921, and later expanded in 19891984, which increased capacity by 47 million gallons per day (MGD). In 1999, the treatment process at the facility was modified to include ferric sulfate-enhanced lime softening treatment. The City is currently evaluating water treatment alternatives, other sources of water, and possible plant locations; any future modifications or changes shall be reflected in this~~

plan as it is amended from time to time.After a series of bacteriological events in the distribution system in 2007, the plant underwent a series of operational and equipment and process improvements in 2008-2012. Improvements included staff training and augmentation, replacement of inoperable valves, mechanical systems and equipment at the end of its useful life, eliminating gaseous chemicals for staff and public safety, dosing chemicals through a mixing and metering header and modifying control and electrical systems to provide automated plant operation and reliable power distribution as well as backup power generation systems for the plant. The conventional treatment process of coagulation, flocculation/sedimentation, filtration through dual-media, biologically active rapid gravity filters and disinfection with chloramine treatment will be enhanced by the addition of Ultraviolet (UV) light disinfection to provide additional pathogen protection and upgraded taste and odor control. The addition of the UV light disinfection process downstream of filters, along with a dedicated Powdered Activated Carbon (PAC) contact chamber and new pumping equipment for high service pumping, will be under construction in 2016. This combination of additional treatment was selected as the most economical, environmentally sensitive, energy efficient and least disruptive option.

Surface water is the primary source for the City's (and therefore the Town's) water supply system. Surface water travels through the City's M-Canal to the City's water supply lakes (Lake Mangonia and Clear Lake), and they come from the City's Grassy Waters Preserve, a 19.3 square-mile aquatic preserve located in western West Palm Beach and from Lake Okeechobee through the L-8 Tieback through the city's control 2 structure (pump station upgraded in 2014).. As mentioned previously, there are other sources of water that feed into the surface water system, including the Renaissance Project, and the Wetlands Based Water Reclamation Project (WBWRP)tidal water capture from C51 and C17 Canals, augmentation from surface water stored and recovered from the ASR well, and Eastern and Western wellfield surficial wells. During extreme drought conditions, Clear Lake Divide structure will help draw water from lower depths in Clear Lake to augment the water supply to the treatment plant. Ultimately, the combined water from Grassy Waters Preserve, the Renaissance Project, and the WBWRP is pumped from Clear Lake into the WTP for treatment.

The following is a description of the water treatment process contained in the City of West Palm Beach's 10-Year Water Supply Facility Work Plan:
First, powdered activated carbon is added to control taste and odor. Next, the water enters two parallel rapid mix coagulation-flocculation-sedimentation treatment trains. Each treatment train operates independently of the other utilizing two different chemical treatment methods. The east train utilizes ferric-sulfate-enhanced lime softening (LS) and the west train utilizes enhanced coagulation using ferric sulfate (EC). Following chemical addition, both trains enter flocculation basins and then sedimentation basins where particles settle and are removed from the water. Water

~~is collected at the end of the sedimentation basins and both trains are combined in a combined effluent channel. After recombining, caustic soda is added to raise the pH prior to filtration. The pH adjusted water is then filtered to remove any remaining particulates before the final process step of chlorination. After chlorination, the water is pumped through three major transmission mains that pump to the east, south and north. Source water from Clear Lake is pumped at the intake of the WTP headworks (PAC is added at the intake to control taste and odor) and rapidly mixed with Lime, Ferric Sulfate and polymer, the water is allowed to coagulate, flocculate and settle in the sedimentation basins. After readjusting pH with Sodium hydroxide, the water is filtered through rapid gravity dual media biological filters and disinfected with chloramination. A corrosion inhibitor and Fluoride are added at the mixing metering header along with final adjustments to pH and chlorine residual. After disinfection, the water is pumped through high service pumps to three major transmission mains that pump to the east, south and north.~~

The West Palm Beach Water Treatment Plant (WTP) is owned and operated by the City of West Palm Beach (City). The WTP and associated distribution system provides potable water to the residents, visitors and business of West Palm Beach and the towns of Palm Beach and South Palm Beach. The WTP is located in Palm Beach County, Florida at 1009 Banyan Boulevard, West Palm Beach, Florida.

The City was founded in 1894 and has been the seat of Palm Beach County government since 1909. The initial urbanized portion of the City was approximately eight miles long and 3 miles wide. A coastal ridge lies several blocks to the west and runs parallel to the Intracoastal Waterway for the entire length of the City. The original City site now constitutes the central business district. The development and maintenance of the utility infrastructure system continues to provide an acceptable level of service and an essential component in the City's growth.

From the first water supply system developed in the late 1800s, the City's utility system has grown from a service population of approximately 500 people in 1900 to its current estimated service population of approximately 125,000 residents covering 61 square miles. The utility system provides water for both indoor and outdoor use for about 34,334 residential and commercial customers accounts.

The City's potable water system includes a raw water supply system, WTP, re-pump stations, storage tanks, the distribution system and various interconnections with neighboring utilities.

The City's facilities including the source water supply, water treatment system, re-pump stations, available interconnection and the existing distribution system. Since the 2015 there have been several changes that include:

• Modification of Raw Water Pump #27;

- Construction of the 50.0 mgd Powered Activated Carbon (PAC) Basin;
- Filter Media Replacement;
- Abandonment of the 1 MG Clearwell/Storage Tank at the WTP;
- Construction and Operation of the 50 mgd Ultra-Violet Light (UV) Disinfection System;
- Construction of a direct suction header to the West Pump House;
- Installation of 4 new high service pumps in the West Pump House;
- Remote re-pump station switches from gaseous chlorine to sodium hypochlorite;
- Pre and post disinfectant injection at the Ibis Re-Pump Station; and
- Six Sigma project to address distribution system flushing volumes.

These projects total more than 25 million dollars ($25,000,000) invested in the PWS since 2015. The City continues to be committed to the proper operation and maintenance of its PWS to ensure public health and safety.

The WTP is a surface water treatment facility operating on a source water supply that is collected, stored and transported by various catchment areas including urban rain cropping, wetlands, lakes and canals to meet the water supply needs.

The source water supply includes facilities owned and operated by the City along with facilities within the Regional Systems operated by the South Florida Water Management District and the United States Army Corps of Engineers.

The existing source water supply system dates to 1894 with the construction of a single steam driven pump and an 8-inch pipe to move water from Clear Lake to Henry Flager's Royal Poinciana Hotel. Over the years the source water supply has been expanded. The history of the supply includes the following milestones:

1894 Clear Lake tapped as Water Supply.
1920's Clear Lake is connected to Lake Mangonia.
1930's M-Canal excavated to wetlands (Grassy Waters Preserve) west of the lakes.
1950's Grassy Waters Preserve (19.3 Square Miles) purchased.
1960's M-Canal Extension westward to the L-8 Canal and Lake Okeechobee.
1980's Western Wellfield constructed.
1990's Aquifer Storage and Recovery Well constructed.
2000's Renaissance Project construction and the Okeechobee Divide Structure constructed.
2010's Eastern Wellfield constructed, Australian Avenue Gates and Pumps constructed, and the C-17 Pump House constructed.

The Clear Lake WTP, originally completed in 1921, underwent an expansion in 1989 and as of 2020 is in the final steps of a major renovation including the addition of the

PAC basins, the UV Treatment System and upgrades to the West Pump House's high service pumps and Raw Water Pump 27.

The WTP has a maximum permitted capacity of 47.3 mgd. The treatment process includes the following:

- Hypochlorite Pretreatment - Turbidity Control (Optional);
- Powered Activated Carbon - Taste and Odor Control (Optional);
- Cationic Polymer - Turbidity Control;
- Ferric Sulfate - Turbidity Control;
- Lime – Softening, Turbidity and TOC Removal;
- Recarbonation - pH Adjustment;
- Filter Aid - Turbidity Control (Optional);
- Conventional/Biologically Active Filters – Turbidity Control, Taste and Odor Control;
- UV Disinfection - Bacteriological Control;
- Chlorine/Chloramines - Bacteriological Control;
- pH Adjustment (Sodium Hydroxide) - Lead and Copper Control;
- Orthophosphate (Corrosion Inhibitor) - Lead and Copper Control; and
- Fluoride - Dental Health.

The WTP uses conventional lime softening, filtration and chemical disinfection to comply with the federal and state safe drinking water regulations. The UV System, commissioned in February 2019, provides an additional barrier for public health purposes. The PAC Basin, expected to be fully operational in early 2020, will be used on an as needed basis to improve the taste and odor characteristic of the finished water.

The primary source of the City's water supply is surface water. Surface water travels through the City's M-Canal to the City's water supply lakes, Lake Mangonia and Clear Lake, from the City's Grassy Waters Preserve, a 19.3 square mile aquatic preserve located in western West Palm Beach and from Lake Okeechobee through the L-8 Tieback through the City's control 2 structure.

Alternative sources of water that feed into this above-ground water supply system include the City's Renaissance Project, tidal water capture from C51 and C17 Canals, augmentation from surface water stored and recovered from the ASR well,

The Eastern and Western wellfield surficial wells are available to the City during periods of drought conditions.

4.2 Capital Improvements Element/Schedule

The City of West Palm Beach's ~~Five-Year~~ Capital Improvements Schedule, which is adopted annually, details the capital improvements necessary to provide the various adopted levels of service (LOS) established by the City and those that they serve, including the Town of Palm Beach. The City's Utilities Department is currently assessing the condition of the water treatment plant, as well as distribution system assets. Following the assessment, the City will prioritize infrastructure projects, including above ground and underground utilities. Based on the assessment and prioritization, the Utilities Department plans on borrowing money through a bond to address water treatment and distribution needs.

~~After the City of West Palm Beach reviewed current and projected water demands, permitted allocation, and its water supply options, along with instituting drought proofing measures, the City determined that no new infrastructure for potable water will be needed within the ten-year planning period of this water supply facility work plan. However, the City is committed to continue to explore current technology and options in order to secure a safe water supply to meet the anticipated future demands from those who receive water from the City, including the Town of Palm Beach.~~

2022: East High Service Building Motor Control Center. Project includes the installation of Variable Frequency Drives on 2 of the 3 existing high service pumps. Project will increase energy efficiency within the plant and provide better control over distribution system pressures.

2023: Recarbonation System Upgrades. Project includes replacement of the existing liquid carbon dioxide storage tanks and associated equipment. Project will decrease the plant's potable water demand freeing up capacity for customers and reduce liquid carbon dioxide consumption with an improved process.

2025: Kaye Street Re-Pump Station Motor Control Center. Project includes the installation of Variable Frequency Drives on the booster pumps. Project will increase energy efficiency within the plant and provide better control over distribution system pressures.

2025: Lime Storage / Slaker Additions. Project includes the addition of a new lime silo and slaker. Project will increase lime storage capacity for storm events and slaker capacity for system reliability.

2030: Valley Forge Re-Pump Station Storage Tank Upgrade. Project includes the rehabilitation or replacement of the existing 3-million gallon storage tank. Project will maintain the City's storage capacity.

2030: Valley forge Re-Pump Station Motor Control Center. Project includes the installation of Variable Frequency Drives on the booster pumps. Project will increase energy efficiency within the plant and provide better control over distribution system pressures.

5.0 COORDINATION WITH WATER PROVIDER

A representative from the Town of Palm Beach meets on a regular basis with a representative from the City of West Palm Beach to "assist the City in its efforts to establish priorities for replacement of, or corrections of, deficiencies to potable water quality, facilities, as well as provision for future potable water needs." (Infrastructure Element Policy 11.1). The Town has also created the Town of Palm Beach Water Committee that regularly meets to discuss water supply problems and issues, and possible solutions. Representatives from the City of West Palm often address this Committee, and this Committee is in constant coordination with the City to ensure that the Town's potable water needs are met.

The Town will amend this work plan to address any changes to the water provider, or if the Town assumes the responsibility of water provider.

Appendix A

The City of West Palm Beach
10 Year Water Supply Facility Work Plan

develop water quality models to more accurately assess the impacts of proposed land use activities.

Objective 1.2: The City shall actively pursue acquisition of lands adjacent to the Water Catchment Area and the voluntary dedication of preserves areas in adjacent developed land to maximize natural buffer areas around the perimeter of the Water Catchment Area.

Policy 1.2.1: The City shall protect this vital groundwater recharge area and closely regulate development surrounding the Water Catchment Area by allowing only those land uses, site designs, and on-site stormwater drainage systems that are of a benign or beneficial influence to the recharge area.

Objective 1.3: The City shall continue to implement a program of public education and information to promote understanding of the Water Catchment Area and the importance of environmental preservation to the quality of the City's water supply.

Policy 1.3.1: The City shall continue to develop and utilize the Nature Center facilities and relationships with environmental groups and educational centers to provide an educational program that allows acceptable, passive recreational use of the Water Catchment Area to promote an appreciation of the fragile and unique environment that is the source of the City's water.

Objective 1.4: The City shall continue to implement existing and identify additional programs to augment and enhance groundwater recharge.

Policy 1.4.1: The City shall continue to implement an aquifer storage and recovery program that will allow the storage of excess water underground which could then be released during low-flow or drought periods to augment surface waters and water supply requirements.

Policy 1.4.2: The City shall continue to implement a water reuse program utilizing reclaimed waste water to recharge surficial wetlands and shallow aquifer systems.

10 YEAR WATER SUPPLY FACILITY WORK PLAN SUBELEMENT

1.0 INTRODUCTION

1.1 Purpose and Objectives

The purpose of the City of West Palm Beach Water Supply Facility Work Plan (hereinafter the Work Plan) is to identify and plan for the water supply sources and facilities needed to serve existing and new development within the local government's jurisdiction. ~~Chapter 163, Part II, F.S., requires local governments to prepare and adopt Work Plans into their comprehensive plans within 18 months after the water management district approves a regional water supply plan or~~

~~its update. The 2013 Lower East Coast Water Supply Plan (LECWSP) Update was approved by the South Florida Water Management District.~~

The work plan reflects the assessments completed as part of the City's 2020 Capacity Analysis Report update that is submitted to the Florida Department of Health in Palm Beach County. The development and submittal requirements for both are based on the following:

- Chapter 403, Part VI, F.S., requiring public water systems to provide for the timely planning, design, permitting, and construction of necessary public water system source, treatment, or storage facilities. Under Chapter 62-555.348, F.A.C., the City is required to prepare and submit an updated Capacity Analysis Report every five years. The 2020 Capacity Analysis Report Update was submitted to the Florida Department of Health in January 2020.

- Chapter 163[1], Part II, F.S., requires local governments to prepare and adopt Work Plans into their comprehensive plans within 18 months after the water management district approves a regional water supply plan or its update. The 2018 Lower East Coast Water Supply Plan (LECWSP) Update was approved by the South Florida Water Management District in November 2018.

~~Chapter 163, Part II, F.S., requires local governments to prepare and adopt Work Plans into their comprehensive plans within 18 months after the water management district approves a regional water supply plan or its update. The 2013 Lower East Coast Water Supply Plan (LECWSP) Update was approved by the South Florida Water Management District.~~

Residents of the City buy their water directly from the City of West Palm Beach Public Utilities Department (PUD). Under this arrangement, the City's PUD ensures that enough capacity is available for existing and future customers and that supporting infrastructure, such as the water lines, are adequately maintained.

According to state guidelines, the Work Plan and the comprehensive plan amendment must address the development of traditional and alternative water supplies, bulk sales agreements and conservation and reuse programs that are necessary to serve existing and new development for at least a 10-year planning period.

The City's Work Plan is divided into the following four sections:

Section 1 – Introduction
Section 2 – Background Information
Section 3 – Data and Analysis
Section 4 – Work Plan Projects/Capital Improvement Element/Schedule

[1] Section 163.3177 (1)e), F.S., When a federal, state, or regional agency has implemented a regulatory program, a local government is not required to duplicate or exceed that regulatory program in its local comprehensive plan.

1.2 Statutory History

The Florida Legislature has enacted bills in the 2002, 2004, 2005, 2011, ~~and~~ 2012, 2015 and 2016 sessions to address the state's water supply needs. These bills, especially Senate Bills 360 and 444 (2005 legislative session), significantly changed Chapter 163 and 373 Florida Statutes (F.S.) by strengthening the statutory links between the regional water supply plans prepared by the water management districts and the comprehensive plans prepared by local governments. In addition, these bills established the basis for improving coordination between the local land use planning and water supply planning.

1.3 Statutory Requirements

The following highlights the statutory requirements:

1. Coordinate appropriate aspects of its comprehensive plan with the appropriate water management district's regional water supply plan.

2. Ensure that its future land use plan is based upon availability of adequate water supplies and public facilities and services. Data and analysis demonstrating that adequate water supplies and associated public facilities will be available to meet projected growth demands must accompany all proposed Future Land Use Map amendments submitted to the Planning Division for review. The submitted package must also include an amendment to the Capital Improvements Element, if necessary, to demonstrate that adequate public facilities will be available to serve the proposed Future Land Use Map modification.

3. Ensure that adequate water supplies and facilities are available to serve new development no later than the date on which the local government anticipates issuing a certificate of occupancy and consult with the applicable water supplier prior to approving building permit, to determine whether adequate water supplies will be available to serve the development by the anticipated issuance date of the certificate of occupancy. This "water supply concurrency" is now in effect, and local governments should be complying with the requirement for all new development proposals. In addition, local governments should update their comprehensive plans and land development regulations as soon as possible to address these statutory requirements. The latest point at which the comprehensive plan must be revised to reflect the concurrency requirements is at the time the local government adopts plan amendments to implement the recommendations of the Evaluation and Appraisal Report (EAR).

4. For local governments subject to a regional water supply plan, revise the General Sanitary Sewer, Solid Waste, Drainage, Potable Water, and Natural Groundwater Aquifer Recharge Element (the "Infrastructure Element"), within 18 months after the water management district approves an updated regional water supply plan, to:

a. Identify and incorporate the alternative water supply project(s) selected by the local government from projects identified in the updated regional water supply plan, or the alternative project proposed by the local government under s. 373.709(8)(b) and 373.709(2) (a) F.S.;

b. Identify the traditional and alternative water supply projects, bulk sales agreements, and the conservation and reuse programs necessary to meet current and future water use demands within the local government's jurisdiction; and

c. Include a water supply facility work plan for at least a 10-year planning period for constructing the public, private, and regional water supply facility identified in the Element as necessary to serve existing and new development. Amendments to incorporate the water supply facility work plan into the comprehensive plan are exempt from the twice-a-year amendment limitation.

5. Revise the Schedule of Capital Improvements to include any water supply, reuse, and conservation projects and programs to be implemented during the planning period.

6. To the extent necessary to maintain internal consistency after making changes described in Paragraph 1 through 5 above, revise the Conservation Element to assess projected water needs and sources for at least a 10-year planning period, considering the appropriate regional water supply plan, the applicable District Water Management Plan, as well as applicable consumptive use permit(s).

   If the established planning period of a comprehensive plan is greater than ten years, the plan must address the water supply sources necessary to meet and achieve the existing and projected water use demand for established planning period, considering the appropriate regional water supply plan.

7. To the extent necessary to maintain internal consistency after making changes described in Paragraphs 1 through 5 above, revise the Intergovernmental Coordination Element to ensure coordination of the comprehensive plan with applicable regional water supply plans and regional water supply authorities' plans.

8. Address in the EAR, the extent to which the local government has implemented the 10-year water supply facility work plan, including the development of alternative water supplies, and determine whether the identified alternative water supply projects, traditional water supply projects, bulk sales agreements, and conservation and reuse programs are meeting local water use demands.

2.0 BACKGROUND INFORMATION

2.1 Overview of the City of West Palm Beach

The City, established in 1894, is the largest municipality within Palm Beach County and serves as the County seat. The City boundaries encompass approximately fifty-eight (58) square miles and are bounded by the Intracoastal Waterway to the east, the South Florida Water Management District C-51 canal to the south, the City's 19.3 square mile Water Catchment Area (WCA) to the west, and the Beeline Highway and 59th Street to the north. Located adjacent to the City are several municipalities including, the Town of Palm Beach, City of Lake Worth, Town of Mangonia Park, and City of Riviera Beach.

Although the City is substantially built-out, approximately 98%, the City population grew from ~~82,103 in 2000 to 106,525~~ 106,893 in 2015 to 115,176 in 2019, an increase of ~~approximately thirty~~ less than eight percent. This population growth is reflective of the fact that the City continues to experience infill and redevelopment within its limits. For future planning purposes, 2020 has been set as the base year for the ten-year and twenty-year planning horizons.

In 2007, an evaluation of existing gross acreage by land uses revealed that 28.2% of the total gross acreage in the City is dedicated to residential use. The remaining gross acreages are allocated to non-residential such as recreation/open space (50%); commercial (5.4%); industrial (2.9%); and undeveloped (2%). The City does not anticipate substantial increases in land area in the near future, however population projections indicate a continued modest growth for the City of approximately 25% for the next 20 years to a projected population of 133,502 in the year 2035.

2.2 Relevant Regional Issues

As the state agency responsible for water supply in the Lower East Coast planning area, the South Florida Water Management District (SFWMD) plays a pivotal role in resource protection, through criteria used for Consumptive Use Permitting. As pressure increased on the Everglades ecosystem resource, the Governing Board initiated rulemaking to limit increased allocations dependent on the Everglades system. As a result, the Regional Water Availability Rule was adopted by the Governing Board on February 15, 2007 as part of the SFWMD's Consumptive Use Permit Program. This reduced reliance on the regional system for future water supply needs, mandates the

1) Recognizing that surface water and ground water is limited, the City has invested in alternative water supplies including Aquifer Storage and Recovery (ASR) well, pump structure at C17 canal and gates at Stub canal and pumps at Renaissance structure for capturing storm water drainage and C51 canal water otherwise lost to tide.
2) The City's water supply permit allocation at Control 2 limits withdrawal based on annual allocation in the permit thus only withdrawing allocated quantity from regional sources.
3) Recognizing that additional storage system may be needed to capture wet season flow volumes, the City constructed an ASR well which is used to pump and capture Clear

Lake water during the wet season and stored for use as source water during the dry season.

4) The City's, East Central Regional Water Reclamation Facility and Palm Beach County entered into an interlocal agreement to construct a reclaimed water facility located on the ECRWRF property and operated by the City of West Palm Beach. Currently the City and Palm Beach County have an interlocal agreement to provide reclaimed water to the Fit Team Ball Park of the Palm Beaches for the sole purpose of providing irrigation for the property which is located in the City of West Palm Beach service area.
5) The City at present doesn't use brackish groundwater as source water, however, the City is assessing the possible need for brackish groundwater in the future.

The intent of the City's Water Supply Facilities Work Plan is to meet the statutory requirements mentioned in subsection 1.2 of this plan and to coordinate the City's water supply initiatives with the ~~2013~~2018 Lower East Coast Water Supply Plan (LECWSP) Update, prepared by the South Florida Water Management District.

This Water Supply Facilities Work Plan details the facilities and proposed alternative water supply (AWS) projects that are planned or completed recently and included in the LECWSP in order to assist the City in meeting the service area water demands through 2032. These projects are expected to be completed in increments consistent with the projected growth set forth in the Plan. The AWS projects are included in the City's Capital Improvement Element.

The City's watershed, Grassy Waters Preserve, provides flows to Loxahatchee River (one of the two Florida rivers designated as a National Wild and Scenic river) to meet its Minimum Flows and Minimum Water Levels through G161 structure.

3.0 DATA AND ANALYSIS

3.1 Service Area - Population Information

The City of West Palm Beach Potable Water Supply Service Area (Utility Service Area) includes the City of West Palm Beach, Town of Palm Beach and Town of South Palm Beach. The existing and future population figures for the Utility Service Area were developed based on the information obtained from the U.S. Census Bureau, Bureau of Economic and Business Research (BEBR), and data presented in the 2018 Lower East Coast Water Supply Plan Update (LECWSP). Specifically: ~~are derived from Palm Beach County Planning, Zoning and Building Department and the University of Florida Bureau of Economic and Business Research (BEBR). Between 1990 and 2000, the Utility Service Area grew from 78,937 to 93,310, an increase of approximately eighteen (18%) percent. In 2008 the City's Utility Service Area population was estimated at 114,982. By 2015, the City's Utility Service Area population increased to 116,250; and in 2035 it is expected to increase to 144,150. This population growth is reflective of the fact that the City continues to experience redevelopment and infill projects within its limits~~.

- Historical population (2010 through 2018) obtained from the U.S. Census Bureau;

- Population data for years 2010 and 2019 obtained from BEBR website; and
- Population target data for 2040 was obtained from LECWSP.

The population projections are based on the Florida Department of Environmental Protection's "Guidelines for the Preparation of Source/Treatment/Storage Capacity Analysis Reports for Public Water Systems" using the decreasing rate of growth formulas.

The information from the LECWSP's 2040 population for the City's utility service area was used to determine the saturation value (Z) through trial and error until the predicted 2040 population was within 0.2 percent of the LECWS Plan value.

Between 2000 (82,103) and 2015 (116,897) the City experienced a population growth rate of more than forty percent in the City's service area. Between 2015 and 2019 (124,945) the population growth rate in the City's service area dropped to less than eight percent. The continued population growth, although slower, is reflective of the fact that the City's service area continues to experience infill and redevelopment within its limits.

The City does not anticipate substantial increases in land area in the near future, however population projections indicate a continued growth for the City's service area of approximately fifteen percent for the next 20 years to a projected population of 144,525 in the year 2040.

The City's bulk service agreements account for a demand of up to 0.50 mgd and include the Solid Waste Authority and Bayhill Estates. The City anticipates that these agreements will remain in place during the 10-year planning horizon.

3.2 Service Area Map

The City Utility Service Area includes the City of West Palm Beach, Town of Palm Beach and Town of South Palm Beach. A copy of the City's Potable Water Supply Service Area map is provided in the Comprehensive Plan Map Series.

A trailer park on Community Drive located in Palm Beach County, but within the City's service area gets water from wells, and currently there is no plan to provide water to this area.

3.3 Population and Potable Water Supply Demand Projections

This section provides historical population projections from ~~2008 to 2012~~2010 to 2019 and projected population projections through ~~2022~~ 2020 and 2040 for the City Utility Service Area. ~~Population projections for the City and its Utility Service Area are provided by the Palm Beach County Planning Division and are based on the City's Capacity Analysis Report submitted to Department of Health Palm Beach County in January 2020. The Palm Beach County Planning Division establishes municipal projection figures by disaggregating county-level forecasts produced by the Bureau of Economic and Business Research (BEBR) analysis of the University~~

~~of Florida. Palm Beach County projections are prepared in 5 year increments. The City assumed a constant annual growth for each interim year based on the five annual projections and extrapolated population projections~~.
The total population estimates for the City, Town of Palm Beach and Town of South Palm Beach were based on the information obtained from the sources noted in Section 3.1 of the Work Plan.

Use of the FDEP Guidelines to estimate future populations ensures consistency for reporting information to the public and regulatory agencies.

3.3.1 Historical Population Projections for the Service Area

Historical populations for the City Utility Service Area are as shown below in Table 1. These figures are based on the U.S. Census data with the exception of the 2019 values which corresponds to the BEBR data. ~~annual reports prepared by BEBR. The only exception is the 2010(*) number which corresponds to the Census count.~~

Table 1 – Historical Population for City of West Palm Beach Water Utility Service Area

~~Year~~	~~2008~~	~~2009~~	~~2010~~	~~2011~~	~~2012~~
~~*City of West Palm Beach Population*~~	~~103,663~~	~~103,150~~	~~100,343*~~	~~100,801~~	~~101,668~~
~~*Town of Palm Beach Population*~~	~~9,797~~	~~9,650~~	~~8,348~~	~~8,350~~	~~8,358~~
~~*Town of South Palm Beach Population*~~	~~1,522~~	~~1,523~~	~~1,171~~	~~1,174~~	~~1,212~~
~~**Total Service Area Population**~~	~~**114,982**~~	~~**114,323**~~	~~**109,862**~~	~~**110,325**~~	~~**111,238**~~

Year	2015	2016	2017	2018	2019
City of West Palm Beach Population	106,893	108,790	110,345	111,398	115,176
Town of Palm Beach Population	8,585	8,690	8,746	8,802	8,321
Town of South Palm Beach Population	1,419	1,433	1,440	1,471	1,448
Total Service Area Population	**116,897**	**118,913**	**120,531**	**121,671**	**124,945**

3.3.2 Future Population Projections for the Service Area

Future population projections for the City Water Utility Service Area are as shown below in Table 2 and are ~~based on~~ extracted from the City's Capacity Analysis Report submitted to the Department of Health Palm Beach County in January 2020.

Table 2 – Future Population Projections for City of West Palm Beach Water Utility Service Area

~~Year~~	~~2013~~	~~2014~~	~~2015~~	~~2020~~	~~2025~~	~~2030~~	~~2035~~
~~*City of West Palm Beach Population*~~	~~103,038~~	~~104,630~~	~~106,525~~	~~114,718~~	~~121,381~~	~~127,401~~	~~133,502~~
~~*Town of Palm Beach Population*~~	~~8,168~~	~~8,170~~	~~8,041~~	~~8,234~~	~~8,425~~	~~8,753~~	~~9,138~~
~~*Town of South Palm Beach Population*~~	~~1,362~~	~~1,362~~	~~1,366~~	~~1,372~~	~~1,399~~	~~1,450~~	~~1,510~~
~~***Total Service Area Population***~~	~~**112,568**~~	~~**114,162**~~	~~**115,932**~~	~~**124,324**~~	~~**131,205**~~	~~**137,604**~~	~~**144,150**~~

Year	2020	~~2025~~ 2030	~~2030~~ 2040
Total Service Area Population	126,305	~~132,330~~ 137,245	~~137,245~~ 144,525

3.3.3 Historical Water Use

The City's Water Treatment Plant historic water production figures are provided ~~below~~ in Table 3 for years ~~2008 through 2012~~2015 through 2019.

Table 3 – Service Area Historic Water Production and Demand

Year	Annual Finished Water Produced at WPB WTP (MGY)	Daily Finished Water Produced at WPB WTP (MGD)	Service Area Population	Per Capita Demand (GPCPD)
~~2008~~	~~9,610~~	~~26.32~~	~~114,982~~	~~229~~
~~2009~~	~~9,960~~	~~27.28~~	~~114,323~~	~~239~~
~~2010~~	~~9,934~~	~~27.21~~	~~109,862~~	~~248~~
~~2011~~	~~9,637~~	~~26.40~~	~~110,325~~	~~239~~

Year	Annual Finished Water Produced at WPB WTP (MGY)	Daily Finished Water Produced at WPB WTP (MGD)	Service Area Population	Per Capita Demand (GPCPD)
~~2012~~	~~9,225~~	~~25.27~~	~~111,283~~	~~227~~
2015	10,331	28.30	116,897	242.1
2016	10,589	28.93	118,913	243.3
2017	10,669	29.23	120,531	242.5
2018	10,692	29.29	121,671	240.8
2019	10,586	29.00	124,945	232.1

3.3.4 Future Water Demand Projections

Future water demand projections ~~were calculated~~ are estimated using the City's service area population projections multiplied by ~~its projected~~ the per capita factor of 243.3 gallons per capita per day (gpcpd) ~~demands~~. The per capita factor selected was based on the highest rate over the past five years, consistent with that presented in the LECWSP and was used in the 2020 CAR update. Historically, a baseline per capita factor of 272 gpcpd was used based on the City's Consumptive Use Permit (CUP). ~~The projected per capita demands are listed as identified in the City's Water Use Permit. Table 4 below provides the projected finished water demand for the year 2013 through 20232020 through 2030. The City's permitted allocation of 15,038 million gallons per year (this includes 4,055 million gallons per year of water produced from alternative water supply sources)~~

Table 4 below provides the projected finished water demand for the years ~~2013 through 2023~~ 2020 through 2030.

Table 4 – Utility Service Area Water Demand Projections

Year	Projected Population	Per Capita Demand (GPCPD)	Projected Annual Finished Water Demand (MGY)	~~Permitted Annual Allocation (MGY)~~
~~2013~~	~~112,568~~	~~237~~	~~9,720~~	~~15,038~~
~~2014~~	~~114,166~~	~~272~~	~~9,587~~	~~15,038~~
~~2015~~	~~116,250~~	~~272~~	~~10,333~~	~~15,038~~
~~2016~~	~~117,864~~	~~272~~	~~10,592~~	~~15,038~~
~~2017~~	~~119,478~~	~~272~~	~~11,862~~	~~15,038~~
~~2018~~	~~121,092~~	~~272~~	~~12,022~~	~~15,038~~
~~2019~~	~~122,707~~	~~272~~	~~12,182~~	~~15,038~~

Year	Projected Population	Per Capita Demand (GPCPD)	Projected Annual Finished Water Demand (MGY)	~~Permitted Annual Allocation (MGY)~~
2020	~~124,324~~ 126,305	~~272~~ 243.3	~~12,343~~ ~~12,539~~ 11,247	~~15,038~~
2021	~~125,662~~ 127,610	~~272~~ 243.3	~~12,476~~ ~~12,669.1~~ 11,333	~~15,038~~
2022	~~127,002~~ 128,863	~~272~~ 243.3	~~12,609~~ ~~2,794~~ 11,444	~~15,038~~
2023	~~128,342~~ 130,066	~~272~~ 243.3	~~12,742~~ ~~12,913~~ 11,551	~~15,038~~
2024	131,221	~~272~~ 243.3	~~13,027.6~~ 11,685	~~15,038~~
2025	132,330	~~272~~ 243.3	~~13,137.7~~ 11,752	~~15,038~~
2026	133,395	~~272~~ 243.3	~~13,243.5~~ 11,846	~~15,038~~
2027	134,417	~~272~~ 243.3	~~13,344.9~~ 11,937	~~15,038~~
2028	135,398	~~272~~ 243.3	~~13,442.3~~ 12,057	~~15,038~~
2029	136,340	~~272~~ 243.3	~~13,535.8~~ 12,108	~~15,038~~
2030	137,245	~~272~~ 243.3	~~13,625.7~~ 12,188	~~15,038~~

~~Permitted annual allocation shown in Table 4 is permitted withdrawal from Clear Lake. Projected population is extrapolated assuming constant annual growth and using the BEBR five year projections.~~ ~~For past years (2013-2016), actual annual demand (MGY) was used to calculate the per capita demand (GPCPD). For past years (2013-2016), actual annual demand (MGY) was used to calculate the per capita demand (GPCPD). For future years (2017-2023~~2020-2030) ~~the average projected per capita demand of 272 gallons per capita per day was used for calculating projected annual demand (MGY).~~

~~The City's projected annual demand ranges from 9,720~~12,539.6 ~~million gallons per year in 2013~~2020 ~~to 12,742~~13,625.7 ~~million gallons per year in 2023~~2030.

Table 5 below summarizes the City's Bulk Service Agreements with local service providers and municipalities. The City has an additional interconnect agreement with Palm Beach County, which is not included as a capacity reservation as this is, by definition, on an emergency basis or subject to system capacity capability at the time of request.

Table 5 – Bulk Service Agreements Capacity Reservation

Utility/Agency Served	Quantity of Water (mgd)										
	~~2012~~ 2020	~~2013~~ 2021	~~2014~~ 2022	~~2015~~ 2023	~~2016~~ 2024	~~2017~~ 2025	~~2018~~ 2026	~~2019~~ 2027	~~2020~~ 2028	~~2021~~ 2029	~~2022~~ 2030
Solid Waste Authority	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
Palm Beach County-Bayhills	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Total	**0.50**	**0.50**	**0.50**	**0.50**	**0.50**	**0.50**	**0.50**	**0.50**	**0.50**	**0.50**	**0.50**

The total quantity of water allocated through the bulk service agreements is combined with the City's projected annual demand and compared to the City's permitted annual allocation ~~(based on permitted withdrawal~~ from Clear Lake ~~(this includes 4,055 million gallons per year of water produced from alternative water supply sources)) below~~ in ₹Table 6 based on a treatment process loss factor of 5 percent.

Table 6 – Total Service Area and Bulk Service Agreement Demand Projection

Year	Bulk Service Agreements (MGY)	Projected Service Area Finished Water Annual Demand (MGY)	Total Service Area Finished Water Demand with Bulk Service (MGY)	Total Raw Water Demand* with Bulk Service (MGY)	Permitted Maximum Allocation of Raw Water (MGY)	Surplus or (Deficit) of Permitted Allocation (MGY)
~~2013~~	~~182.5~~	~~9,720~~	~~9,902.50~~		~~15,038~~	~~5,135.50~~
~~2014~~	~~182.5~~	~~9,587~~	~~9,769.50~~		~~15,038~~	~~5,268.50~~
~~2015~~	~~182.5~~	~~10,333~~	~~10,515.50~~		~~15,038~~	~~4,522.50~~
~~2016~~	~~182.5~~	~~10,592~~	~~10,774.50~~		~~15,038~~	~~4,263.50~~
~~2017~~	~~182.5~~	~~11,862~~	~~12,044.50~~		~~15,038~~	~~2,993.50~~
~~2018~~	~~182.5~~	~~12,022~~	~~12,204.50~~		~~15,038~~	~~2,833.50~~
~~2019~~	~~182.5~~	~~12,182~~	~~12.364.50~~		~~15,038~~	~~2,673.50~~
2020	~~183.0~~182.5	~~12,343~~ ~~12,539.6~~11,247	~~12,525.50~~ ~~12,722.1~~11,429.5	12,000	15,038	~~2,512.50~~ ~~2,315.9~~3038.0
2021	182.5	~~12,476~~ ~~12,669.1~~11,333	~~12,658.50~~ ~~12,851.6~~11,515.5	12,091	15,038	~~2,379.50~~ ~~2,186.4~~2947.0
2022	182.5	~~12,609~~ ~~12,793.5~~11,444	~~12,791.50~~ ~~12,976.0~~11,626.5	12,208	15,038	~~2,246.50~~ ~~2,062.0~~2830.0
2023	182.5	~~12,742~~ ~~12,913.0~~11,551	~~12,924.50~~ ~~13,095.5~~11,733.5	12,320	15,038	~~2,113.50~~ ~~1,942.5~~2718.0
2024	~~183.0~~182.5	~~13,027.6~~11,685	~~13,210.1~~11,867.5	12,461	15,038	~~1,827.9~~2577.0
2025	182.5	~~13,137.7~~11,752	~~13,320.2~~11,934.5	12,531	15,038	~~1,717.8~~2507.0
2026	182.5	~~13,243.5~~11,846	~~13,426.0~~12,028.5	12,630	15,038	~~1,612.0~~2408.0
2027	182.5	~~13,344.9~~11,937	~~13,527.4~~12,119.5	12,725	15,038	~~1,510.6~~2313.0
2028	~~183.0~~182.5	~~13,442.3~~12,057	~~13,624.8~~12,239.5	12,852	15,038	~~1,413.2~~2186.0
2029	182.5	~~13,535.8~~12,108	~~13,718.3~~12,290.5	12,905	15,038	~~1,319.7~~2133.0
2030	182.5	~~13,625.7~~12,188	~~13,808.2~~12,370.5	12,989	15,038	~~1,229.8~~2049.0

*Raw water demand is based on a 5% loss factor during the treatment process and is calculated by taking 5% of finished water demand and adding it to finished water demand to get the raw water demand.

Table 7 below identifies Alternative Water Supply Sources (AWS) that can be utilized to meet the City's projected annual service area demand and bulk service agreement reservation.

Permitted maximum allocation of 15,038 MGY is based on City's permitted allocation for withdrawal from Clear Lake. For the AWS, C51 canal tidal capture (54 MGD), C17 canal tidal capture (72 MGD) and ASR (2 MGD) each source is assumed to provide water for 20 days based on availability and meeting the water use permit specified canal levels and the requirement of water being discharged to tide. The AWS is not part of the Consumptive Use Permit allocation.

Table 7–Service Area Raw Water Demand Projections and Alternative Water Supply Sources

Year	WUP Clear Lake Allocation (MGY)	Alternative Water Supplies				Projection Raw Water Demand* (MGY)	Surplus WUP + AWS – Projection (MGY)
		Renaissance Project (MGY)	C-51 Tidal Capture (MGY)	C-17 Tidal Capture (MGY)	ASR Well Recovery (MGY)		
2020	15,038.00	637	1,080	1,440	180	12,002	6,373
2021	15,038.00	637	1,080	1,440	180	12,091	6,284
2022	15,038.00	637	1,080	1,440	180	12,208	6,167
2023	15,038.00	637	1,080	1,440	180	12,320	6,055
2024	15,038.00	637	1,080	1,440	180	12,461	5,914
2025	15,038.00	637	1,080	1,440	180	12,531	5,844
2026	15,038.00	637	1,080	1,440	180	12,630	5,745
2027	15,038.00	637	1,080	1,440	180	12,725	5,650
2028	15,038.00	637	1,080	1,440	180	12,852	5,523
2029	15,038.00	637	1,080	1,440	180	12,905	5,470
2030	15,038.00	637	1,080	1,440	180	12,989	5,386

*Raw water demand is based on a 5% loss factor during the treatment process and is calculated by taking 5% of finished water demand and adding it to finished water demand to get the raw water demand.

~~Table 7–Service Area Water Demand Projections and Alternative Water Supply Sources~~

~~Year~~	~~Clear Lake Allocation (MGY)~~	~~Renaissance AWS (MGY)~~	~~Wetlands Based Water Reclamation~~	~~Total Service Area Demand with Bulk Service (MGY)~~	~~Permitted Maximum Allocation (MGY)~~	~~Surplus or (Deficit) of Permitted Allocation (MGY)~~
~~2013~~	~~15,038.00~~	~~637~~	~~1,386.00~~	~~9,902.50~~	~~15,038.00~~	~~5,135.50~~
~~2014~~	~~15,038.00~~	~~637~~	~~1,386.00~~	~~9,769.50~~	~~15,038.00~~	~~5,268.50~~
~~2015~~	~~15,038.00~~	~~637~~	~~1,386.00~~	~~10,515.50~~	~~15,038.00~~	~~4,522.50~~
~~2016~~	~~15,038.00~~	~~637~~	~~1,386.00~~	~~10,774.50~~	~~15,038.00~~	~~4,263.50~~
~~2017~~	~~15,038.00~~	~~637~~	~~1,386.00~~	~~12,044.50~~	~~15,038.00~~	~~2,993.50~~
~~2018~~	~~15,038.00~~	~~637~~	~~1,386.00~~	~~12,204.50~~	~~15,038.00~~	~~2,833.50~~
~~2019~~	~~15,038.00~~	~~637~~	~~1,386.00~~	~~12.364.50~~	~~15,038.00~~	~~2,673.50~~
~~2020~~	~~15,038.00~~	~~637~~	~~1,386.00~~	~~12,525.50~~ ~~12,539.6~~	~~15,038.00~~	~~2,512.50~~ ~~2,315.9~~
~~2021~~	~~15,038.00~~	~~637~~	~~1,386.00~~	~~12,658.50~~ ~~12,669.1~~	~~15,038.00~~	~~2,379.50~~ ~~2,186.4~~
~~2022~~	~~15,038.00~~	~~637~~	~~1,386.00~~	~~12,791.50~~ ~~12,793.5~~	~~15,038.00~~	~~2,246.50~~ ~~2,062.0~~
~~2023~~	~~15,038.00~~	~~637~~	~~1,386.00~~	~~12,924.50~~ ~~12,913.0~~	~~15,038.00~~	~~2,113.50~~ ~~1,942.5~~
~~2024~~	~~15,038.00~~	~~637~~	~~1,386.00~~	~~13,027.6~~	~~15,038.00~~	~~1,827.9~~
~~2025~~	~~15,038.00~~	~~637~~	~~1,386.00~~	~~13,137.7~~	~~15,038.00~~	~~1,717.8~~
~~2026~~	~~15,038.00~~	~~637~~	~~1,386.00~~	~~13,243.5~~	~~15,038.00~~	~~1,612.0~~
~~2027~~	~~15,038.00~~	~~637~~	~~1,386.00~~	~~13,344.9~~	~~15,038.00~~	~~1,510.6~~
~~2028~~	~~15,038.00~~	~~637~~	~~1,386.00~~	~~13,442.3~~	~~15,038.00~~	~~1,413.2~~
~~2029~~	~~15,038.00~~	~~637~~	~~1,386.00~~	~~13,535.8~~	~~15,038.00~~	~~1,319.7~~
~~2030~~	~~15,038.00~~	~~637~~	~~1,386.00~~	~~14,023.7~~	~~15,038.00~~	~~1,229.8~~

~~*AWS Sources C51 (capture of water otherwise released to tide), C17 (capture of water otherwise released to tide) and ASR (Aquifer Storage recovery) are only assumed to be used for 90 days in the year for available water listed. The Wetlands based reclamation AWS (Advanced Wastewater Treatment-AWT) is no longer operational and has been removed from the ECRWRF (East Central Regional Water Reclamation Facility) permit.~~

3.4 Potable Water Supply System

3.4.1 SFWMD Water Use Permit

The City received a twenty-year water use permit from the South Florida Water Management District on February 14, 2013. Permit information is as follows:

- WUP Number: 50-00615-W
- Raw Water Source:

  Ground Water from: ~~Floridian Aquifer System~~ ASR well for surface water storage/recovery and Surficial Aquifer System.

  Surface Water from: Clear Lake via M-Canal and Lake Mangonia from Grassy Waters Preserve and Lake Okeechobee via L-8 Tieback through control 2 (67 MGD).

- Raw Water Allocation Information:

  Annual Allocation: 15,038.00 Million Gallons (MG)

  Maximum Monthly Allocation: 1,392.32 Million Gallons (MG)

  Annual allocation includes 15,038.00 Million Gallons (MG) from Clear Lake and 24,446 Million Gallons (MG) from SWFMD Canal (L-8) Tieback as existing surface water withdrawal and from Surficial Aquifer System 1,470 MG from West Wellfield (WWF) and 864 MG from East Wellfield (EWF). All allocations are for the Public Water Supply portion of the permit.

- Specific Source Limitation:

  Clear Lake Annual = 15,038.00 MG; Monthly = 1,392.32 MG
  Surficial Aquifer System West Wellfield (monthly)– 759.50 MG
  Surficial Aquifer System East Wellfield (EWF) (monthly)– 446.4 MG
  SFWMD Canal (l-8) Tieback (monthly)– 2,765.00 MG

- Permit Expiration: February 14, 2033.

3.4.2 Existing Withdrawal ~~Facility~~ Facilities

Source: ~~Floridian Aquifer System Recovery of surface water from Clear Lake stored in the ASR well~~ ASR well for surface water storage/recovery

1-24" x 1200' x 4861 GPM Well Cased to 985 feet

Source: Surficial Aquifer System-Western Wellfield

1-18" x 152.5'x 2,780 GPM Well Cased to 82.5 feet
1-18" x 153.5'x 2,780 GPM Well Cased to 83.5 feet
1-18" x 154'x 2,780 GPM Well Cased to 84 feet
1-18" x 163'x 2,780 GPM Well Cased to 93.5 feet
1-18" x 166'x 2,780 GPM Well Cased to 96 feet
1-18" x 170'x 2,780 GPM Well Cased to 100 feet
~~1-24" x 125' x 1000 GPM Well Cased to 119 feet~~
4-18" x 150'x 2,780 GPM Well Cased to 80 feet

Ground Water: Surficial Aquifer System -Eastern Wellfield

~~9-24"x150'x1000 GPM Wells cased to 120 feet.~~
1-24" x 98'x 1000 GPM Well Cased to 95 feet
1-24" x 186'x 1000 GPM Well Cased to 137 feet
1-24" x 181'x 1000 GPM Well Cased to 131 feet
1-24" x 95'x 1000 GPM Well Cased to 91 feet
1-24" x 101'x 1000 GPM Well Cased to 86 feet
1-24" x 170'x 1000 GPM Well Cased to 132 feet
1-24" x 97'x 1000 GPM Well Cased to 93 feet
1-24" x 125'x 1000 GPM Well Cased to 119 feet
1-24" x 195'x 1000 GPM Well Cased to 145 feet
1-24" x 142'x 1000 GPM Well Cased to 105 feet

Source: Clear Lake-Surface Water

4-14" x 100 HP x 8,400 GPM turbine pumps
1-16" x 100 HP x 5,250 GPM centrifugal pumps
2-18" x 125 HP x 10,500 GPM centrifugal pumps
1-30" x 150 HP x 17,500 GPM turbine pump
3-36" x 130 HP x 15000 GPM submersible pumps
4-42" x 200 HP x 33700 GPM axial flow pumps

3.4.3 Alternative Water Supplies

The City's Water Use Permit requires the City to "use alternative water supplies to account for all increased demands from Clear Lake above the City's historic use. The City has approved alternatives, urban stormwater treatment via the Renaissance Project (~~365~~637 MGY), tidal capture from C-51 canal (up to 54 MGD) via Renaissance treatment process, tidal capture from C-17 canal (up to 72 MGD) and ASR well (stored surface water-up to 8 MGD, though on average have pumped out 2 MGD). ~~Eastern Wellfield (14.4 MGD), Western Wellfield (24.5 MGD) and Clear Lake Pump station and Divide structure (up to 60 MGD).~~ A discussion of the City's alternative water supply projects can be found in Section 3.6 of this report.

3.4.4 Interconnects

The City maintains interconnections with other public water suppliers as follows:

1. One interconnection with the Solid Waste Authority for delivery of up to 0.35 MGD of finished water;

2. One interconnection with the Palm Beach County at Bay Hill Estates for delivery of up to ~~0.5~~ 0.15 MGD of finished water;

3. One emergency interconnection with Lake Worth Utilities (1.0 MGD);

4. Five emergency interconnections with Palm Beach County at SR7 at Okeechobee (3.0 MGD), -M-Canal W to Coconut Blvd (0.15 MGD), Haverhill Road (1.5MGD), and Jog Road (3.0 MGD), Florida Mango Rd (1.0 MGD); and

5. Two emergency interconnections with the City of Riviera Beach with one at Military Trail (1.0 MGD) and one at Broadway Avenue (1.0 MGD).

3.5 Conservation

The City developed and adopted a Water Conservation Plan in July 2005. The Water Conservation Plan elements include an aggressive approach to the development and implementation of several alternative water supply projects, water conservation based water rate structures, leak detection programs, an irrigation limitation ordinance, native vegetation landscaping requirements, ultra-low volume plumbing fixture construction code, rain sensor override requirement ordinance, and extensive public education programs. The City will coordinate future water conservation efforts with SFWMD to ensure that proper techniques are applied. In addition, the City will continue to support and expand existing goals, objectives and policies in the comprehensive plan that promote water conservation in a cost-effective and environmentally sensitive manner. The City will continue to actively support the SFWMD in the implementation of new regulations or programs that are design to conserve water during the dry season.

The City's Water Conservation Programs strive to reduce the demand for water in a phased manner that will not only reduce water consumption but reduce utility bills and help to orient people's behavior in a way to conserve resources. The programs address Water and Resource Conservation goals within the City's Sustainability Action Plan through increasing education and awareness within the community. Conservation programs within the WPB Public Utilities service area include:

- High Efficiency Toilet Vouchers: for both residential and commercial customers, with ~~over 2000~~3,422 distributed within the 2012 to ~~2016~~2019 period. In ~~2017~~2019 vouchers allow a purchase of up to $125 per voucher and the program is funded for the period of 2020-2022.

- Rain Barrel Workshops: average 100 free rain barrels with installation/use trainings per year as of ~~2016~~2019.

- ~~WaterSmart: on line and print customer engagement tool that allows you to track your water usage comparing it to similar households use; reduce your water consumption through timely tips customized to fit your individual profile; save on your monthly water bill while taking advantage of incentives and free offers and learn about utility advancements and Office of Sustainability programs and goals. In 2016, the City launched the pilot program "WPB WaterSmart",15,000 residential pilot participants received Home Water Reports, all utility customers have access to their water consumption information online. The City will be expanding the pilot program to include about 1,500 commercial and multi-family residents in 2017.~~

- SFWMD WaterCHAMP: a free public education program that helps hotels and motels save water, improve energy efficiency and reduce operating costs using conservation educational placards and high efficiency faucet aerators. West Palm Beach has successfully implemented this program and over 50% of WPB hotels/motels are participating as of ~~2017~~2019.

- Wyland's Mayors Water Challenge: the City has participated annually in this national water conservation education and awareness program. In 2013, West Palm Beach was a winner for cities of our size.

- Sustainability outreach: The Office of Sustainability participates and implements multiple educational conservation programs annually, including E4 Home, E4 Life, E4 Climate, E4 Business/ Green Business Challenge, Imagine a Day without Water, DOE Better Buildings Challenge Water Pilot, Landlord–; Sustainability distributes over 500 water conservation kits per year at events throughout the year which include shower timers, high efficiency shower heads, faucet aerators, and other products.

- The City plans to track monthly water use in City buildings for the U.S. Department of Energy Better Buildings Challenge.

- The City's PACE (Property Assessed Clean Energy) programs include, whenever possible, water and energy savings.

- The City plans to continue following implementation of the district's mandatory year-around landscape irrigation conservation measures as detailed in chapter 40E-24 FAC by informing customers through press releases and social media and, if needed, by enforcement through violation fines.

3.6 Alternative Water Supply Projects/Reuse

~~The City is committed to developing and implementing alternative water supply projects involving reuse. In 2002, the City completed the construction of the Renaissance Project, an innovative stormwater collection and reuse system that collects and treats stormwater normally discharged to tide, for reuse by the City in its potable water supply system. The Renaissance Project, a $17,600,000 project was completed with financial support from the Environmental Protection Agency, South Florida Water Management District, and Palm Beach County. The Renaissance Project became operational in September 2002 and it is estimated that between September 2003 and January 2004, over 340 million gallons of stormwater were pumped and treated through the Renaissance Pump Station. The Renaissance Project captures, treat and stores approximately 365 million gallons per year, (MGY) or one (1) million gallons per day (MGD). The Renaissance Project is intended to capture, treat and store stormwater that would normally be lost to tide and reduce the City's dependency on the regional water supply system.~~

~~The City has also completed construction of an 8 mgd aquifer storage and recovery (ASR) well at its Water Treatment Plant. The City's ASR well is designed to store excess treated surface water during period of heavy rainfall. The excess water is pumped into the upper Floridan Aquifer System and is recovered when the water is withdrawn to meet increased demands during dry weather. The City's ASR well is under 5th cycle testing to determine the recharge and recovery values and also to evaluate water quality of recovered water.~~

~~The existing 10 wells in the Western wellfield can provide 24.5 MGD (operational conditions based on Clear Lake levels and regional water non-availability).~~

~~The City completed construction of Divide Structure Pump station on Clear Lake to withdraw water from deeper areas of Clear Lake allowing additional source water of up to 60 MGD (operational conditions based on Clear Lake levels and regional water supply non-availability).~~

~~The City just completed construction of 9 more surficial wells located around M-Canal to capture seepage losses, bringing the total number of wells in the eastern Well field to 10 with a potential 14.4 MGD (operational conditions are based on Clear Lake levels and regional water supply non-availability).~~

~~The City is in currently constructing a pump station for capturing water sent to tide from C17 Canal, this pump structure has a potential to capture up to 72 MGD (operational conditions based on water being released to tide and canal levels).~~

The City is committed to developing and implementing alternative water supply projects, including reuse, to the extent possible. The City's AWS activities include:

- Renaissance Project: Constructed in 2002, the project is an innovative stormwater collection and reuse system that collects and treats stormwater normally discharged to tide. With an initial construction cost of $17,600,000 the project was completed with

financial support from the Environmental Protection Agency, South Florida Water Management District, and Palm Beach County. The system captures, treat and stores approximately 637 million gallons per year, (MGY) or one (1.75) million gallons per day (MGD).

- Aquifer Storage and Recovery (ASR) Well: Upon completion of construction, the ASR well was rated at 8 mgd. Located at the Water Treatment Plant it is designed to store excess surface water during periods of heavy rainfall. The excess water is pumped into the upper Floridan Aquifer System and is recovered when the water is withdrawn to meet increased demands during dry weather. Cycle testing continues and in 2019 the well acid cleaned, the injection pump rebuilt, and the effluent valve replaced. The City continues to invest in this alternative water source with plans to restart cycle testing in ~~early~~ 2020.

- ~~Western Wellfield: The existing 10 wells in the Western wellfield can provide 24.5 MGD (operational conditions based on Clear Lake levels and regional water non-availability).~~

- ~~The City completed construction of Divide Structure Pump station on Clear Lake to withdraw water from deeper areas of Clear Lake allowing additional source water of up to 60 MGD (operational conditions based on Clear Lake levels and regional water supply non-availability).~~

- ~~Eastern Well Field: The existing 10 surficial wells located around M-Canal to capture seepage losses, bringing a potential 14.4 MGD (operational conditions are based on Clear Lake levels and regional water supply non-availability).~~
  ~~Not alternative watersupply/reuse projects. Consider describing these projects as backup/drought water supply sources, as described by the qualifier in parenthesis for these three sources.~~
- C17 Canal Pump Structure: The ~~constructed a new~~ pump station was constructed to ~~for~~ capture~~ing~~ water prior to being sent to tide from C17 Canal, this pump structure has the potential to capture up to 72 MGD (operational conditions based on water being released to tide and canal levels).

4.0 WORK PLAN PROJECTS/CAPITAL IMPROVEMENT ELEMENT/SCHEDULE

4.1 Existing Water Treatment Plant Process

~~The City's Water Treatment Plant (WTP) was originally constructed in 1921. In 1894, the WTP was expanded to increase the facility design capacity to 47 million gallons per day (mgd) and in 1999 the City modified their treatment processes to include a ferric sulfate-enhanced lime softening treatment methodology. After a series of bacteriological events in the distribution system in 2007, the plant underwent a series of operational and equipment and process improvements in 2008-2012. Improvements included staff training and augmentation, replacement of inoperable valves, mechanical systems and equipment at the end of its useful life, eliminating gaseous chemicals for staff and public safety, dosing chemicals through a mixing and metering header and modifying control and electrical systems to provide automated plant~~

~~operation and reliable power distribution as well as backup power generation systems for the plant. The conventional treatment process of coagulation, flocculation/sedimentation, filtration through dual media, biologically active rapid gravity filters and disinfection with chloramine treatment will be enhanced by the addition of Ultraviolet (UV) light disinfection to provide additional pathogen protection and upgraded taste and odor control. The addition of UV light disinfection process downstream of filters along with a dedicated Powdered Activated Carbon (PAC) contact chamber and new pumping equipment for high service pumping will be under construction in 2016 and this combination of additional treatment was selected as the most economical, environmentally sensitive, energy efficient and least disruptive option.~~

~~The primary source of the City's water supply is surface water. Surface water travels through the City's M-Canal to the City's water supply lakes, Lake Mangonia and Clear Lake, from the City's Grassy Waters Preserve, a 19.3 square mile aquatic preserve located in western West Palm Beach and from Lake Okeechobee through the L-8 Tieback through the City's control 2 structure (pump station upgraded in 2014). Alternative sources of water that feed into this above ground water supply system include the City's Renaissance Project, tidal water capture from C51 and C17 Canals, augmentation from surface water stored and recovered from the ASR well, Eastern and Western wellfield surficial wells. During extreme drought conditions Clear Lake Divide structure will help draw water from lower depths in Clear Lake to augment the water supply to the treatment plant.~~

~~Source water from Clear Lake is pumped at the intake to the WTP headworks (PAC is added at the intake to control taste and odor) and rapidly mixed with Lime, Ferric Sulfate and polymer, the water is allowed to coagulate, floculate and settle in the sedimentation basins. After readjusting pH with Sodium hydroxide the water is filtered through rapid gravity dual media biological filters and disinfected with chloramination. A corrosion inhibitor and Fluoride is added at the mixing metering header along with final adjustments to pH and chlorine residual. After disinfection, the water is pumped through high service pumps to three major transmission mains that pump to the east, south and north in the City.~~

~~The City does not have any self served areas and doesn't plan on extending service to self supply customers. The City's Utilities has a dedicated staff in the Sustainability Initiatives division. The Sustainability division runs a number of water conservation programs, including rain barrels, high efficiency toilet voucher program as well as many education programs (details on City's conservation, sustainability and resiliency programs can be found in the conservation section of this document).~~

The West Palm Beach Water Treatment Plant (WTP) is owned and operated by the City of West Palm Beach (City). The WTP and associated distribution system provides potable water to the residents, visitors and business of West Palm Beach and the towns of Palm Beach and South Palm Beach. The WTP is located in Palm Beach County, Florida at 1009 Banyan Boulevard, West Palm Beach, Florida.

The City was founded in 1894 and has been the seat of Palm Beach County government since 1909. The initial urbanized portion of the City was approximately eight miles long and 3 miles

wide. A coastal ridge lies several blocks to the west and runs parallel to the Intercoastal Waterway for the entire length of the City. The original City site now constitutes the central business district. The development and maintenance of the utility infrastructure system continues to provide an acceptable level of service and an essential component in the City's growth.

From the first water supply system developed in the late 1800s, the City's utility system has grown from a service population of approximately 500 people in 1900 to its current estimated service population of approximately 125,000 residents covering 61 square miles. The utility system provides water for both indoor and outdoor use for about 34,334 residential and commercial customers accounts.

The City's potable water system includes a raw water supply system, WTP, repump stations, storage tanks, the distribution system and various interconnections with neighboring utilities.

The City's facilities including the source water supply, water treatment system, re-pump stations, available interconnection and the existing distribution system. Since the 2015 there have been several changes that include:

- Modification of Raw Water Pump #27;
- Construction of the 50.0 mgd Powered Activated Carbon (PAC) Basin;
- Filter Media Replacement;
- Abandonment of the 1 MG Clearwell/Storage Tank at the WTP;
- Construction and Operation of the 50 mgd Ultra-Violet Light (UV) Disinfection System;
- Construction of a direct suction header to the West Pump House;
- Installation of 4 new high service pumps in the West Pump House;
- Remote re-pump station switches from gaseous chlorine to sodium hypochlorite;
- Pre and post disinfectant injection at the Ibis Re-Pump Station; and
- Six Sigma project to address distribution system flushing volumes.

These projects total more than 25 million dollars ($25,000,000) invested in the PWS since 2015. The City continues to be committed to the proper operation and maintenance of its PWS to ensure public health and safety.

The WTP is a surface water treatment facility operating on a source water supply that is collected, stored and transported by various catchment areas including urban rain cropping, wetlands, lakes and canals to meet the water supply needs.

The source water supply includes facilities owned and operated by the City along with facilities within the Regional Systems operated by the South Florida Water Management District and the United States Army Corps of Engineers.

The existing source water supply system dates to 1894 with the construction of a single steam driven pump and an 8-inch pipe to move water from Clear Lake to Henry Flager's Royal

Poinciana Hotel. Over the years the source water supply has been expanded. The history of the supply includes the following milestones:

1894	Clear Lake tapped as Water Supply.
1920's	Clear Lake is connected to Lake Mangonia.
1930's	M-Canal excavated to wetlands (Grassy Waters Preserve) west of the lakes.
1950's	Grassy Waters Preserve (19.3 Square Miles) purchased.
1960's	M-Canal Extension westward to the L-8 Canal and Lake Okeechobee.
1980's	Western Wellfield constructed.
1990's	Aquifer Storage and Recovery Well constructed.
2000's	Renaissance Project construction and the Okeechobee Divide Structure constructed.
2010's	Eastern Wellfield constructed, Australian Avenue Gates and Pumps constructed, and the C-17 Pump House constructed.

The Clear Lake WTP, originally completed in 1921, underwent an expansion in 1989 and as of 2020 is in the final steps of a major renovation including the addition of the PAC basins, the UV Treatment System and upgrades to the West Pump House's high service pumps and Raw Water Pump 27.

The WTP has a maximum permitted capacity of 47.3 mgd. The treatment process includes the following:

- Hypochlorite Pretreatment - Turbidity Control (Optional);
- Powered Activated Carbon - Taste and Odor Control (Optional);
- Cationic Polymer - Turbidity Control;
- Ferric Sulfate - Turbidity Control;
- Lime – Softening, Turbidity and TOC Removal;
- Recarbonation - pH Adjustment;
- Filter Aid - Turbidity Control (Optional);
- Conventional/Biologically Active Filters – Turbidity Control, Taste and Odor Control;
- UV Disinfection - Bacteriological Control;
- Chlorine/Chloramines - Bacteriological Control;
- pH Adjustment (Sodium Hydroxide) - Lead and Copper Control;
- Orthophosphate (Corrosion Inhibitor) - Lead and Copper Control; and
- Fluoride - Dental Health.

The WTP uses conventional lime softening, filtration and chemical disinfection to comply with the federal and state safe drinking water regulations. The UV System, commissioned in February 2019, provides an additional barrier for public health purposes. The PAC Basin, expected to be fully operational in early 2020, will be used on an as needed basis to improve the taste and odor characteristic of the finished water.

The primary source of the City's water supply is surface water. Surface water travels through the City's M-Canal to the City's water supply lakes, Lake Mangonia and Clear Lake, from the City's

Grassy Waters Preserve, a 19.3 square mile aquatic preserve located in western West Palm Beach and from Lake Okeechobee through the L-8 Tieback through the City's control 2 structure.

Alternative sources of water that feed into this above-ground water supply system include the City's Renaissance Project, tidal water capture from C51 and C17 Canals, augmentation from surface water stored and recovered from the ASR well.

The Eastern and Western wellfield surficial wells ~~During extreme drought conditions~~ and the Clear Lake Divide structure ~~will help draw water from lower depths in Clear Lake to augment the water supply to the treatment plant.~~ are available to the City during periods of drought conditions.

4.2 Capital Improvements Element/Schedule

The City's financially feasible Capital Improvements Schedule, adopted annually, includes capital improvement projects necessary to maintain levels of service and provide for improved operational facility (See the Capital Improvements Element). The Utilities Department is currently performing/evaluating a condition assessment of the water treatment plant as well as distribution system assets and is in the process of prioritization of infrastructure projects including above ground and underground utilities. Based on the assessment and prioritization, the Utilities Department plans on borrowing money through a bond to address water treatment and distribution system needs.

- 2022: East High Service Building Motor Control Center. Project includes installation of Variable Frequency Drives on 2 of the 3 existing high service pumps. Project will increase energy efficiency within the plant and provide better control over distribution system pressures.
- 2023: Recarbonation System Upgrades. Project includes replacement of the existing liquid carbon dioxide storage tanks and associated equipment. Project will decrease the plant's potable water demand freeing up capacity for customers and reduce liquid carbon dioxide consumption with an improved process.
- 2025: Kaye Street Re-Pump Station Motor Control Center: Project includes installation of Variable Frequency Drives on the booster pumps. Project will increase energy efficiency within the plant and provide better control over distribution system pressures.
- 2025: Lime Storage/Slaker Additions: Project includes the addition of a new lime silo and slaker. Project will increase lime storage capacity for storm events and slaker capacity for system reliability.
- 2030: Valley Forge Re-Pump Station Storage Tank Upgrade: Project includes the rehabilitation or replacement of the existing 3-million-gallon storage tank. Project will maintain the City's existing storage capacity.

- 2030: Valley Forge Repump Station Motor Control Center: Project includes installation of Variable Frequency Drives on the booster pumps. Project will increase energy efficiency within the plant and provide better control over distribution system pressures.

Upon reviewing the City's projected water demands, permitted allocation and alternative water supply projects, and after extensive long-term water supply evaluation and drought proofing measures the City does not anticipate the necessity of additional capacity within the 10-year planning horizon. Nevertheless, the City will continue to explore current technology and options to secure safe water supply to meet anticipated future demands.

EXECUTIVE SUMMARY FOR COMPREHENSIVE PLAN AMENDMENTS

DATE: **11 September, 2020**

Reference #:_____

General Information

Initiating Local Government: Town of Palm Beach_____
Contact Person: Wayne Bergman, Director of Planning, Zoning & Building_____
Address: 360 S. County Road, Palm Beach, FL 33480_____
Telephone/Fax: (561) 227-6426_____

Applicant/Agent:_____
Telephone/Fax:_____

REVISION

Proposed Comprehensive Plan Textual Amendments

General Summary of Amendments:

_____ amendments relating to traffic circulation or the roadway networks
_____ amendments relating to affordable housing
Amendments related to the following elements:
_____ land use
_____ traffic circulation
_____ mass transit
_____ ports and aviation
_____ housing
__X_ infrastructure & 10 Year Water Supply Facility Work Plan sub-elements
_____ coastal management
_____ conservation
_____ recreation and open space
_____ intergovernmental coordination
_____ capital improvements
_____ other_____

Summary of addition (s) to adopted comprehensive plan: Revised and updated Infrastructure Element and 10 Year Water Supply Facility Work Plan to match revisions and changes implemented by the Town's water supplier, the City of West Palm Beach._____

Summary of proposed change (s) to adopted comprehensive plan: Revised and updated Infrastructure Element and 10 Year Water Supply Facility Work Plan to match revisions and changes implemented by the Town's water supplier, the City of West Palm Beach.

Proposed Amendments to the Future Land Use Map

Location of proposed map amendment (include a location map) N/A

Size of Area Proposed for Change (acres) N/A

Present Future Land Use Plan Designation (include a density/intensity definition) N/A

Proposed Future Land Use Designation (include a density/intensity definition) N/A

Present Zoning of Site (include a density/intensity definition) N/A

Proposed Zoning of Site (include a density/intensity definition) N/A

Present Development of Site N/A

Proposed Development of the Site, if known (Number of Dwelling Units; Commercial Square Footage; Industrial Square Footage; Other Proposed usage and intensity):
N/A

Is proposed change a Development of Regional Impact? No

Comprehensive Plan Change Processing

Date/Time/Location Scheduled for Local Planning Agency Public Hearing
October 14, 2020, 9:30 am. Town Hall Second Floor, 360 S. County Road, Palm Beach, FL 33480

Date/Time/Location Scheduled for Governing Body Public Hearing
October 14, 2020, 9:30 am. Town Hall Second Floor, 360 S. County Road, Palm Beach, FL 33480

Scheduled Date for Transmittal to DCA October 15, 2020

REVISION

EXECUTIVE SUMMARY FOR COMPREHENSIVE PLAN AMENDMENTS

DATE: **28 April, 2020**

Reference #:_____

General Information

Initiating Local Government: **Town of Palm Beach**_____
Contact Person: **Wayne Bergman, Acting Director of PZB**_____
Address: **360 S. County Road, Palm Beach, FL 33480**_____
Telephone/Fax: **(561) 227-6426**_____

Applicant/Agent:_____
Telephone/Fax:_____

Proposed Comprehensive Plan Textual Amendments

General Summary of Amendments:

____ amendments relating to traffic circulation or the roadway networks
____ amendments relating to affordable housing
Amendments related to the following elements:
____ land use
____ traffic circulation
____ mass transit
____ ports and aviation
____ housing
_X_ **infrastructure & 10 Year Water Supply Facility Work Plan sub-elements**
____ coastal management
____ conservation
____ recreation and open space
____ intergovernmental coordination
____ capital improvements
____ other_____

Summary of addition (s) to adopted comprehensive plan: **Updated Infrastructure Element and 10 Year Water Supply Facility Work Plan to match the changes implemented by the Town's water supplier, the City of West Palm Beach.**

Summary of proposed change (s) to adopted comprehensive plan: **Updated Infrastructure Element and 10 Year Water Supply Facility Work Plan to match the changes implemented by the Town's water supplier, the City of West Palm Beach.**

Proposed Amendments to the Future Land Use Map

Location of proposed map amendment (include a location map) **N/A**

Size of Area Proposed for Change (acres) **N/A**

Present Future Land Use Plan Designation (include a density/intensity definition) **N/A**

Proposed Future Land Use Designation (include a density/intensity definition) **N/A**

Present Zoning of Site (include a density/intensity definition) **N/A**

Proposed Zoning of Site (include a density/intensity definition) **N/A**

Present Development of Site **N/A**

Proposed Development of the Site, if known (Number of Dwelling Units; Commercial Square Footage; Industrial Square Footage; Other Proposed usage and intensity):
N/A

Is proposed change a Development of Regional Impact? **No**

Comprehensive Plan Change Processing

Date/Time/Location Scheduled for Local Planning Agency Public Hearing
June 10, 2020 (The Town Council sits as the LPA)

Date/Time/Location Scheduled for Governing Body Public Hearing
June 10, 2020

Scheduled Date for Transmittal to DCA **June 11, 2020**

TOWN OF PALM BEACH

Planning, Zoning & Building Department

October 15, 2020

Ms. Stephanie Heidt, AICP,
Economic Development and Intergovernmental Programs Director
Treasure Coast Regional Planning Council
421 SW Camden Avenue
Stuart, FL 34994

Re: Proposed Town Palm Beach Amendment TOPB 20-01ESR
Water Supply Plan Update -Text Amendments to the Infrastructure Element

Dear Ms. Heidt:

In accordance with the 2011 Community Planning Act and Chapter 163 of the Florida Statues (F.S.), please find enclosed a copy of the proposed Text Amendment to the Comprehensive Plan of the Town of Palm Beach (TOPB 20-01ESR). The Town of Palm Beach is submitting the proposed Text Amendment to the Department of Economic Opportunity (DEO) under the Expedited State Review process.

Should you require additional information or have any questions, please do not hesitate to contact me directly at (561) 227-6426 or wbergman@townofpalmbeach.com.

Sincerely,

Wayne Bergman, Director

cc: Ray Eubanks, Plan Processing Administrator, Florida Department of Economic

Post Office Box 2029 • 360 South County Road • Palm Beach, Florida 33480
Telephone: (561) 838-5430 • Facsimile (561) 835-4621
E-Mail: pzb@townofpalmbeach.com • Website: www.townofpalmbeach.com

TOWN OF PALM BEACH

Planning, Zoning & Building Department

October 15, 2020

Mr. John Krane, P.E., District Planning and Environmental Administrator
Florida Department of Transportation – District IV
3400 West Commercial Boulevard
Fort Lauderdale, FL 33309

Re: Proposed Town Palm Beach Amendment TOPB 20-01ESR
Water Supply Plan Update -Text Amendments to the Infrastructure Element

Dear Mr. Krane:

In accordance with the 2011 Community Planning Act and Chapter 163 of the Florida Statues (F.S.), please find enclosed a copy of the proposed Text Amendment to the Comprehensive Plan of the Town of Palm Beach (TOPB 20-01ESR). The Town of Palm Beach is submitting the proposed Text Amendment to the Department of Economic Opportunity (DEO) under the Expedited State Review process.

Should you require additional information or have any questions, please do not hesitate to contact me directly at (561) 227-6426 or wbergman@townofpalmbeach.com.

Sincerely,

Wayne Bergman, Director

cc: Ray Eubanks, Plan Processing Administrator, Florida Department of Economic

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TOWN OF PALM BEACH

Planning, Zoning & Building Department

October 15, 2020

Ms. Terry Manning, AICP, Policy and Planning Analyst
South Florida Water Management District – Water Supply Coordination Unit
3301 Gun Club Road, MSC 4223
West Palm Beach, FL 33406

Re: Proposed Town Palm Beach Amendment TOPB 20-01ESR
Water Supply Plan Update -Text Amendments to the Infrastructure Element

Dear Ms. Manning:

In accordance with the 2011 Community Planning Act and Chapter 163 of the Florida Statues (F.S.), please find enclosed a copy of the proposed Text Amendment to the Comprehensive Plan of the Town of Palm Beach (TOPB 20-01ESR). The Town of Palm Beach is submitting the proposed Text Amendment to the Department of Economic Opportunity (DEO) under the Expedited State Review process.

Should you require additional information or have any questions, please do not hesitate to contact me directly at (561) 227-6426 or wbergman@townofpalmbeach.com.

Sincerely,

Wayne Bergman, Director

cc: Ray Eubanks, Plan Processing Administrator, Florida Department of Economic

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TOWN OF PALM BEACH

Planning, Zoning & Building Department

October 15, 2020

Attn: Plan Review
Office of Intergovernmental Programs
Florida Department of Environmental Protection
3900 Commonwealth Boulevard, Mail Station 47
Tallahassee, FL 32399-3000

Re: Proposed Town Palm Beach Amendment TOPB 20-01ESR
Water Supply Plan Update -Text Amendments to the Infrastructure Element

In accordance with the 2011 Community Planning Act and Chapter 163 of the Florida Statues (F.S.), please find enclosed a copy of the proposed Text Amendment to the Comprehensive Plan of the Town of Palm Beach (TOPB 20-01ESR). The Town of Palm Beach is submitting the proposed Text Amendment to the Department of Economic Opportunity (DEO) under the Expedited State Review process.

Should you require additional information or have any questions, please do not hesitate to contact me directly at (561) 227-6426 or wbergman@townofpalmbeach.com.

Sincerely,

Wayne Bergman, Director

cc: Ray Eubanks, Plan Processing Administrator, Florida Department of Economic

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E-Mail: pzb@townofpalmbeach.com • Website: www.townofpalmbeach.com

TOWN OF PALM BEACH

Planning, Zoning & Building Department

October 15, 2020

Robin Jackson, Historic Preservation Planner
Florida Department of State, Bureau of Historic Preservation
500 South Bronough Street
Tallahassee, FL 32399-0250

Re: Proposed Town Palm Beach Amendment TOPB 20-01ESR
Water Supply Plan Update -Text Amendments to the Infrastructure Element

Dear Ms. Jackson:

In accordance with the 2011 Community Planning Act and Chapter 163 of the Florida Statues (F.S.), please find enclosed a copy of the proposed Text Amendment to the Comprehensive Plan of the Town of Palm Beach (TOPB 20-01ESR). The Town of Palm Beach is submitting the proposed Text Amendment to the Department of Economic Opportunity (DEO) under the Expedited State Review process.

Should you require additional information or have any questions, please do not hesitate to contact me directly at (561) 227-6426 or wbergman@townofpalmbeach.com.

Sincerely,

Wayne Bergman, Director

cc: Ray Eubanks, Plan Processing Administrator, Florida Department of Economic

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TOWN OF PALM BEACH

Planning, Zoning & Building Department

October 15, 2020

Patricia Behn, Planning Director
Palm Beach County Planning Division
2300 North Jog Road, 2nd Floor
West Palm Beach, FL 33411-2745

Re: Proposed Town Palm Beach Amendment TOPB 20-01ESR
Water Supply Plan Update -Text Amendments to the Infrastructure Element

Dear Ms. Behn:

In accordance with the 2011 Community Planning Act and Chapter 163 of the Florida Statues (F.S.), please find enclosed a copy of the proposed Text Amendment to the Comprehensive Plan of the Town of Palm Beach (TOPB 20-01ESR). The Town of Palm Beach is submitting the proposed Text Amendment to the Department of Economic Opportunity (DEO) under the Expedited State Review process.

Should you require additional information or have any questions, please do not hesitate to contact me directly at (561) 227-6426 or wbergman@townofpalmbeach.com.

Sincerely,

Wayne Bergman, Director

cc: Ray Eubanks, Plan Processing Administrator, Florida Department of Economic

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TOWN OF PALM BEACH

Planning, Zoning & Building Department

October 15, 2020

Mark Weigly, Director
Florida Department of Education
Office of Educational Facilities
325 West Gaines Street, Suite 1014
Tallahassee, FL 32399-0400

Re: Proposed Town Palm Beach Amendment TOPB 20-01ESR
Water Supply Plan Update -Text Amendments to the Infrastructure Element

Dear Mr. Weigly:

In accordance with the 2011 Community Planning Act and Chapter 163 of the Florida Statues (F.S.), please find enclosed a copy of the proposed Text Amendment to the Comprehensive Plan of the Town of Palm Beach (TOPB 20-01ESR). The Town of Palm Beach is submitting the proposed Text Amendment to the Department of Economic Opportunity (DEO) under the Expedited State Review process.

Should you require additional information or have any questions, please do not hesitate to contact me directly at (561) 227-6426 or wbergman@townofpalmbeach.com.

Sincerely,

Wayne Bergman, Director

cc: Ray Eubanks, Plan Processing Administrator, Florida Department of Economic

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